Portland Harbor:
Industrial Land Supply Analysis

Prepared for the City of Portland:
Bureau of Planning and Sustainability

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Preface

This report addresses four questions about land in the Portland Harbor area. It supports the City of Portland's efforts to update its Economic Opportunities Analysis, plan for the land use in the Harbor area, and address issues related to the development and conservation of West Hayden Island.

ECONorthwest was the lead consultant to the City on this evaluation, assisted by subconsultants Maul Foster & Alongi, and Bonnie Gee Yosick LLC. This consultant team had substantial and appreciated assistance from many sources, but especially: City of Portland Bureau of Planning and Sustainability, Port of Portland, Port of Vancouver, Working Waterfront Coalition, and BST Associates.

Despite the assistance, ECONorthwest and its subcontractors alone are responsible for the report's contents. The report has been reviewed by City staff and an advisory committee, but the views expressed are those of the consultants and may not be shared by others who contributed to or reviewed this report.

Throughout the report ECONorthwest has identified sources of information and assumptions used in the analysis. Within the limitations imposed by uncertainty and the project budget, staff at ECONorthwest and the Bureau of Planning and Sustainability at the City of Portland have made every effort to check the reasonableness of the data, methods, and assumptions and to test the sensitivity of the results to changes in key assumptions. Any forecast of the future is uncertain. The fact that ECONorthwest and its team members evaluate the assumptions in this report as reasonable does not guarantee that those assumptions will prevail.

Summary

This evaluation starts from the assumption, embedded in the economic development policies of all local governments in the region, that the retention, expansion, and relocation to the region of industrial sectors is something that the region desires. It addresses the capacity of industrial land in the Portland Harbor area to accommodate future development, both for new public marine terminals and private marine-dependent businesses. It addresses *four questions posed by the City*:

1. Are the methods the City used to estimate the location and amount of vacant, partially vacant, and potentially buildable industrial land in the Portland Harbor area likely to yield reasonable estimates?
2. Given the estimated land supply in the Portland Harbor area, how suitable for a public marine terminal are the few sites identified by the City as having the best potential to accommodate such a terminal?
3. If those sites do not develop as marine terminals (for whatever reasons) to what extent can the Port of Vancouver play a role in accommodating forecasted cargo demand in the Portland region?
4. Finally, if existing vacant land in the harbor area and in Vancouver is estimated to be insufficient to accommodate forecasted or desired transshipment or industrial activity, what is the potential for more efficient use of industrial land in the Portland Harbor study area? That question implies answering the question: What does more efficient use of industrial land mean, and how would it be measured?

SUPPLY OF VACANT OR UNDERUTILIZED INDUSTRIAL LAND

The methods used for the City's evaluation of the supply of vacant land in the Harbor Area are sound, state of the practice, and produce results that have been confirmed by independent methods. When looking for where in the Harbor Area is vacant land that could potentially be assembled into a 100-acre (or, at a minimum, a 50-acre) site with waterfront access? the City correctly identified the two sites with greatest potential: Atofina and Time Oil.

POTENTIAL FOR MARINE TERMINAL SITES

Public marine terminals have specific land use requirements that are difficult to find. Ideally, sites must be large and flat, inside of an industrial zone, have significant shoreline on a navigable river, be served by both rail and truck, and free of contamination, wetlands, or other environmental constraints. Excluding West Hayden Island, there are no sites in the Portland Harbor that meet these ideal requirements, though there are a few sites that come close. This should not imply that West Hayden Island meets all the ideal site requirements (in fact West Hayden Island lacks sufficient truck access, and is constrained by wetlands), but is simply stating that the West Hayden Island site is outside the boundary of our study area. The questions are: how close do they come, and is there a way to cost-effectively develop these sites as productive public marine terminals?

The City of Portland identified the two sites in the Portland Harbor that are most likely to be suitable for development of a new public marine terminal: the Atofina site, and the Time Oil site. Of these two sites, development is technically possible on either, but there are major hurdles that would add significant costs. Both sites have some level of contamination, both sites would require negotiation and property acquisition from numerous property owners, and both sites are smaller than desirable, which precludes the possibility of an onsite rail loop. Ultimately, issues related to the Superfund cleanup of the Willamette River make all sites in the Portland Harbor very challenging (if not altogether unfeasible) for development in the near future.

ROLE OF VANCOUVER IN PROVIDING HARBOR-AREA INDUSTRIAL LAND

Recent forecasts suggest that under mid-range assumptions about cargo demand, the Port of Portland's existing marine terminals will reach the limits of their capacity (for at least some cargo types) in the next several decades. Once these facilities meet their capacity, the Port will need to develop new facilities, or else turn away demand. The Port of Vancouver shares many of the same attributes that make the Port of Portland an attractive place for marine shipping. Thus, the Port of Vancouver is a logical place to site new marine terminals, if sites are unavailable in the 4,000-acre Portland Harbor.

Projecting future land needs to accommodate demand for public marine terminals is difficult, and even the best forecasts suggest a wide-range of potential outcomes. Given our mid-range scenario for future demand, the Port of Vancouver may, in theory, have enough developable land to

accommodate regional growth in cargo volumes through 2040. The assumptions in variation of our medium scenario forecasts show the Portland-Vancouver Region needing about an additional 200 to 600 acres for new terminals by 2040: there is vacant industrial land with water-access that is in that range. In practice, however, competing demands for Port of Vancouver lands, policies and competition among affected jurisdictions, and the potential for higher growth in cargo volumes all make it possible, if not likely, that the land controlled by the Port of Vancouver would not be able to accommodate all of the regional demand for marine cargo. The "highest-scenario" forecast of land need for new marine terminals, for example, is three times the medium-scenario forecast land need.

From a regional perspective, it makes little difference whether terminal development occurs in Portland or Vancouver. Both cities function as part of the same regional economy, and share the same infrastructure and labor pool. At a local level, however, if demand for public marine terminals is shifted from Portland to Vancouver, the City of Portland would lose some industrial jobs and the income they generate to Vancouver.

POTENTIAL FOR INCREASED EFFICIENCIES IN THE USE OF LAND

Typical measures of efficiency of land use include employment, real market value, and built space. Harbor industrial development tends to have low floor-area ratios (FAR) and a relatively low number of jobs per acre. Thus, typical measures of efficiency would all tend to improve if industrial land were converted to other commercial uses. But industrial lands in general, and harbor lands in the case of this study, are clearly an important piece of the regional economy. Therefore, we suggest two alternative measures of efficiency that are more appropriate for harbor industrial land: value added and tonnage of cargo.

Data from recent years show some measures of economic output have been increasing faster than vacant land is being converted to developed land, and other measures have not. The region should continue to track these measures and adopt policies with the intention of increasing measures of economic output faster than vacant land is converted to developed land. This seems like an objective that could appeal to people with different interests: economic development, environmental amenity, or smart growth.

Table of Contents

Preface i

Summary iii
- **Supply of vacant or underutilized industrial land** iii
- **Potential for marine terminal sites** iv
- **Role of Vancouver in providing harbor-area industrial land** iv
- **Potential for increased efficiencies in the use of land** v

Table of Contents vii

Chapter 1 Introduction 1
- **1.1 Background and purpose** 1
- **1.2 Organization of this report** 5

Chapter 2 Framework and Methods 6
- **2.1 Framework** 6
  - 2.1.1 Why care about industrial land? 6
  - 2.1.2 Defining industrial land and users 6
  - 2.1.3 Supply of and demand for industrial lands 7
  - 2.1.4 "Efficient" use of industrial land 8
- **2.2 Methods** 9
  - 2.2.1 General data sources and techniques 9
  - 2.2.2 Evaluating City methods used to estimate Portland Harbor buildable land supply 9
  - 2.2.3 Addressing the potential sites for new marine terminals 10
  - 2.2.4 Addressing the role of Vancouver in harbor industrial land supply 10
  - 2.2.5 Addressing the potential for increased efficiencies 11

Chapter 3 Analysis 12
- **3.1 Evaluation of methods used by the city to estimate buildable land** 12
- **3.2 Potential sites for new marine terminals** 18
  - 3.2.1 Atofina 20
  - 3.2.2 Time Oil 23
  - 3.2.3 Implications 26
- **3.3 Role of Vancouver in harbor industrial land supply** 27
  - 3.3.1 Existing capacity 27
  - 3.3.2 Forecast of future cargo volumes 28
  - 3.3.3 Capacity shortfall 29
  - 3.3.4 Land need for new port terminals 31
  - 3.3.5 Port of Vancouver developable land 33
  - 3.3.6 Implications 36
- **3.4 Potential for increased efficiencies** 38
  - 3.4.1 Recent trends in efficiency of Portland Harbor lands 38
  - 3.4.2 Opportunities for increased efficiencies 42
  - 3.4.3 Implications 44

Chapter 4 Summary of findings 47

Chapter 1 INTRODUCTION

Section 1.1 describes events leading to this study and what the City hopes to learn from it. The City wants to evaluate the potential for the Portland Harbor to support economic activity. It has four questions about the capacity of land in the Portland Harbor to support future economic activity: (1) about the supply of vacant and underutilized land in the harbor area for marine terminals or water-dependent industrial uses; (2) about the land needs and potential land available for new port terminals; (3) about the role of Vancouver as a regional port; and (4) about potential changes in the use of industrial land (one aspect of which is referred to as "land efficiency"). **Section 1.2** describes how the rest of the report is organized.

1.1 BACKGROUND AND PURPOSE

The City of Portland (City) is the center of a large regional economy: there are about one million jobs in the seven-county metropolitan area, and almost 400,000 jobs within the city limits.

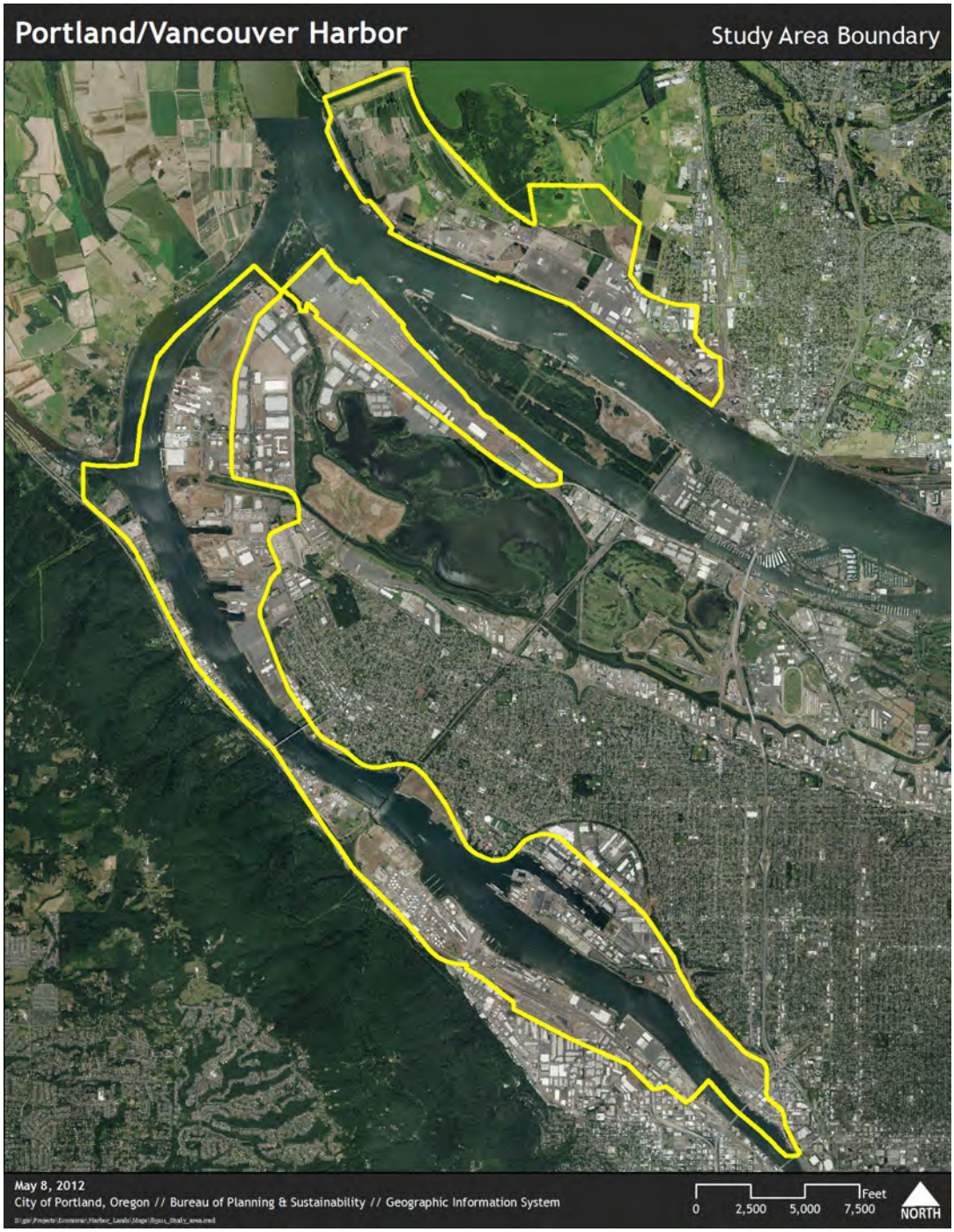
Many factors have contributed to the growth of the Portland economy, but one important factor is its ability to transport goods. Portland benefits from accessibility by highways (at the intersection of Interstates 5 and 84), rail (two Class 1 railroads - Union Pacific and BSNF, and short-line railroads), air (Portland International Airport), and sea (the Columbia and Willamette rivers).

The Portland Harbor is an industrial area located along the Willamette River that relies on the confluence of transportation infrastructure in the City (Exhibit 1.1). It contains about 4,000 acres of land located south of the Columbia River, west of I-5, and on both the east and west shores of the Willamette River. River-related industrial activities operate as a partnership between public marine terminals (owned and operated by the Port of Portland) and private businesses, including many marine-dependent industries. Key industrial sectors in the Portland Harbor include construction, manufacturing, warehousing, and transportation.

Over the past decade several studies of the Portland Harbor have been completed. The 2010 *West Hayden Island Economic Foundation Study* (prepared by Entrix for the City of Portland) summarized the conclusions of these studies:

> *"Portland Harbor serves as an economic engine for the metro regional economy… Past studies indicate that cargo and manufacturing activities dependent on waterborne transportation contribute significantly to the metro region's economy. These studies indicate that marine-related economic activity generates from 20,000 to 100,000 jobs and from $1.4 to 3.4 billion annually in regional income."*

Exhibit 1-1. Portland Harbor study area



Source: City of Portland, Bureau of Planning, 2011.

Another recent study, *Portland's Working Rivers: The Heritage and Future of Portland's Industrial Heartland* (2008 report prepared by Carl Abbott for the Working Waterfront Coalition) describes the impact of the harbor on the City. Some of its conclusions:

- The Portland Harbor is the nexus of a multi-modal system. The Willamette and Columbia rivers serve marine terminals, ocean shipping lines, barge lines, and bulk handling facilities. These waterborne facilities connect to railroads, interstates, commercial and general airports, and pipelines.
- Approximately 90% of harbor sites have access to rail routes, improving efficiency of transporting large loads from sea to land.
- Cargo forecasts by the Port of Portland further highlight the importance of the harbor: the volume of trade through Portland is expected to double by 2035.

In 2004, four river-related districts (Northwest Industrial District, Swan Island / Central Eastside, Rivergate, and Columbia Corridor) had employment about equal to the metropolitan area's three other industrial districts: the Sunset Corridor and 217 Corridor (where the electronics and computer industry is concentrated), and the Milwaukie/Clackamas Corridor (with a mix of manufacturing and distribution).

The importance of the harbor to the regional economy would be sufficient reason for the City to evaluate the harbor's needs for continued operation and expansion. But additional issues motivate the current evaluation. First, the City is in the process of concluding an extensive study of the City and regional economy (its *Economic Opportunities Analysis*, or EOA) as required by state land-use law. Second, the City has been engaged in studies of West Hayden Island, where there is a question about which land should be made available for future port development and which should preserved as natural areas.[1] Answering that question depends in part on whether alternative areas in or near the Portland Harbor study area have land that is appropriate and sufficient for the water- and port-related development that is expected or desired.

Thus, though several studies of development issues in the Portland Harbor area have occurred in the last five years, the City wanted an evaluation to (1) synthesize and evaluate the findings of previous studies as they relate to the harbor economy and industrial land uses, and (2) address three specific questions related to the development of industrial land in the Portland Harbor.

To that end, the City asked ECONorthwest (ECO) to re-examine the inventory of existing harbor lands, both in Portland and the broader region (including Vancouver). This report addresses the capacity of industrially-designated land in the harbor area to accommodate future development,

[1] A current proposal for West Hayden Island is to devote 300 acres of land for marine terminal development, while setting aside 500 acres for open space.

both for new public marine terminals and private marine-dependent businesses. It addresses four questions posed by the City, each new question building from the answer of the question preceding it:

1. Are the methods the City used to estimate the location and amount of vacant, partially vacant, and potentially buildable industrial land in the Portland Harbor area likely to yield reasonable estimates?
2. Given the estimated land supply in the Portland Harbor area, how suitable for a public marine terminal are the few sites identified by the City as having the best potential to accommodate such a terminal?
3. If those sites do not develop as marine terminals (for whatever reasons), to what extent can the Port of Vancouver play a role in accommodating forecasted cargo demand in the Portland region?
4. If existing vacant land in the harbor area and in Vancouver is estimated to be insufficient to accommodate forecasted or desired transshipment or industrial activity, what is the potential for more efficient use of industrial land in the Portland Harbor study area? That question implies answering the question: What does more efficient use of industrial land mean, and how would it be measured?

By answering these questions, this report helps the City move forward in its planning processes. It provides information to help with assumptions that the City's *Economic Opportunities Analysis* may be making about industrial land supply and the efficiency (density) at which that land is likely to develop. It helps the City assess the importance of West Hayden Island as a site for future development of new public marine terminals by evaluating the (limited) potential of suitable sites for such development elsewhere in the Portland Harbor.[2]

[2] This report does not, however, include any analysis regarding the applicability of its findings to state, regional or local planning policies: such information will presumably be provided as part of any additional analysis by the City.

1.2 ORGANIZATION OF THIS REPORT

This report has three additional chapters and three appendices:

Chapter 2, Framework and Methods: Summary of economic concepts underlying the analysis, and specific methods used to answer the four questions that are the focus of this report.

Chapter 3, Analysis: Current and likely future conditions for key factors affecting economic activity in the Portland Harbor.

Chapter 4, Summary of Findings: Briefly restates the important conclusions of our analysis.

Appendix A: Research Methods: Framework for understanding and methods for conducting our analysis (more detail than is provided in Chapter 2 of the main report).

Appendix B: Port Terminal Site Evaluation Criteria: Used by Maul Foster & Alongi, Inc. to evaluate the feasibility of potential sites in the Portland Harbor.

Appendix C: Analysis of Harbor Land Capacity and Demand, Portland and Vancouver: Provides greater detail (including a wealth of tables) on the data-driven methods used, in part, to determine the potential for the Port of Vancouver to accommodate forecast demand for the Portland Harbor, if there are insufficient sites in Portland to accommodate all of the expected demand.

Appendix D: Mapping Analysis: Presents the results of the City's visual survey of aerial maps of the Portland Harbor to classify the lands in one of several categories.

Chapter 2 FRAMEWORK AND METHODS

Section 2.1 discusses a *framework* for evaluation: concepts that underlie any evaluation of this type. It discusses (1) the role of industrial activity in the economy, (2) definitions of industrial use and industrial land, (3) factors relating to the supply of and demand for industrial land, and (4) the concept of land efficiency: what is it, why does it matter, and how is it measured. **Section 2.2** is more specific about the *methods* used for the evaluation (review of previous studies, secondary data, case studies, interviews) and how they are used to address this study's four questions. **Appendix A** provides a more detailed description of our framework and methods.

2.1 FRAMEWORK

2.1.1 WHY CARE ABOUT INDUSTRIAL LAND?

This study starts from the assumption, embedded in the economic development policies of all local governments in the region, that the retention, expansion, and relocation to the region of industrial sectors is something that the region desires. Industrial activity and employment is mainly classified as export oriented ("traded sector") and is likely to have jobs at higher than average wages.

2.1.2 DEFINING INDUSTRIAL LAND AND USERS

- **Industrial land:** What is commonly referred to as "industrial" land is land designated by a local government (in its comprehensive plan, and implemented by its zoning ordinances) to allow (but not necessarily require) industrial uses. In the Portland Harbor, the City does strictly limit non-industrial uses, and allows only river-related and river-dependent industry.
- **Harbor land:** A smaller subset of industrial land pertinent in this study is "harbor" land. For this study, we use the City's definition of the "Portland Harbor." A map of the Portland Harbor is shown previously in Exhibit 1-1.
- **Industrial users:** A recent analysis of industrial land published by the American Planning Association[3] used NAICS codes to define "industrial use" in urban areas, including a "strict" definition of construction, manufacturing, wholesale trade, and transportation and warehousing. This list, however, does not necessarily reflect the types of businesses that require industrial land. For example, many jobs in the construction industry are not physically located at a

[3] Howland, Marie. 2011. "Planning for Industry in a Post-Industrial World: Assessing Industrial Lands in a Suburban Economy." Journal of the American Planning Association. Winter, Vol 77, No 1. pp 39-53.

central, industrial location, but instead operate on sites throughout the region. Therefore, one should not focus exclusively on a list of NAICS codes to identify the range of businesses that could have demand for industrial land in Portland.

- **Public marine terminals:** Our analysis treats public marine terminals (i.e., the Port of Portland facilities) differently from other uses of harbor industrial land. These port terminals function as public infrastructure, facilitating economic activity for other industries in the region.

2.1.3 SUPPLY OF AND DEMAND FOR INDUSTRIAL LANDS

The total amount of land inside the Portland city limits is essentially fixed. Thus, for the City of Portland, the question of land supply focuses on how much land is vacant, partially vacant, or underutilized, and how much land is constrained (by environmental contamination, environmental overlays, and other issues).

In general, industrial land must accommodate most job growth in "industrial" sectors. It must also accommodate some job growth in "non-industrial" sectors. In other words, not all jobs in "industrial" sectors use industrially-designated land, and not all industrially-designated land is used by "industrial" sectors.

Analysis of land *supply* is about estimation, not forecasting. The use of "data layers" from Geographic Information Systems (GIS) is the standard technique for such estimation. Because it is estimation, the uncertainty is not about the future, but about the data and assumptions that are used to describe what is on the ground now. Our evaluation consists of a review of the data and assumptions.

Factors affecting supply and demand are not independent. Businesses and developers choose the land with the best value. Price makes a difference. In the Portland Harbor land may be more expensive (cost per acre) than at the region's periphery. But land in the Portland Harbor is also close to the downtown, labor markets, port terminals, and interstate highways. If it is only a little more expensive, it may still be a preferred location for growth. If it becomes too expensive, then prospective industrial users may locate elsewhere, on land that provides a better value (for example, because lower land cost and congestion are judged to more than offset the higher costs of being more distant from a preferred location). Businesses that need water access would have an incentive to bid more for land providing that access, and other businesses would find better value in alternative locations.

2.1.4 "EFFICIENT" USE OF INDUSTRIAL LAND

Efficiency is a measurement of how much output is produced per unit of input. In this case, the City's concern is about the amount of economic activity (output) generated per acre of land (input).

Traditional measures of efficiency

Typical measures of efficiency of land use include employment, real market value, and built space. These measures look at the amount of economic activity occurring on a property, but give relatively low marks to industrial development. Compared to an office tower, an acre of industrial development is likely to have much lower assessed value, employment, and gross square footage of built space. Thus, measures of the efficiency of employment land based on any of these measures in the numerator would all tend to improve if industrial land were converted to commercial uses.

But industrial lands (and harbor lands) are clearly important to the regional economy. If every jurisdiction allowed vacant industrial land to convert to commercial uses on the assumption that some other jurisdiction would provide the industrial land, the regional supply of industrial land would get smaller quickly. Land with port access is a particularly important and relatively rare component of all regional industrial land. Marine terminals provide access to other markets, facilitating commerce, and allowing traded-sector businesses to export their goods to other markets.

Alternative measures of the output component of efficiency

To evaluate the efficiency of the use of industrial land in the Portland Harbor, one needs a definition of efficiency that makes sense for industrial land. We suggest two alternative measures of efficiency that are most appropriate for harbor industrial land: value added, and tonnage of cargo.

- **Value added**: Value added is defined as the value of outputs (per unit or in the aggregate) minus the cost of inputs purchased from other firms used to create output.[4] Proponents of the industrial and manufacturing sectors point to its potential for high "value added." One measure of the efficiency of a fixed supply of industrial harbor land would be the amount of value added generated per acre for businesses located in the harbor.
- **Cargo:** There is a reasonable argument that much of the industrial land in the Portland Harbor area serves a regional need for

[4] In that sense, value added is a measure of a firm's contribution to GDP. Another way to think about this is that everything that a firm itself puts into the production of a product (primarily the labor of its employees and capital) "add value" to the raw materials and intermediate goods and services it purchases to make its final product.

transshipment. Therefore, a regional measure of transshipment activity might be appropriate for measuring the efficiency of such land. Some measure of cargo (e.g., tonnage, volume, value, berth utilization) is an obvious choice. Because data are more readily available for tonnage of cargo, that is an alternate measurement of land-use efficiency in the Portland Harbor that we examine in this report. If the City were interested in tracking these alternative efficiency measures in the future, then tracking multiple measures of cargo (i.e., tonnage and value) would provide a more complete picture of cargo trends.

2.2 METHODS

2.2.1 GENERAL DATA SOURCES AND TECHNIQUES

To conduct our analysis, we used the following data sources:

- **Existing studies**. Extensive analysis has been conducted regarding the Portland Harbor, industrial land, and port terminals. These efforts result in a library of reports and studies addressing different aspects of the regional economy. Appendix A includes a list of recent (or ongoing) studies that were reviewed in our analysis.
- **Secondary data sources**. ECO incorporated many secondary data sources into its analysis.[5] As with "existing studies," the objective is to leverage past research efforts to answer the questions posed in this study. Appendix A includes a list of the secondary data sources used in our analysis.
- **Interviews**: Many people in the Portland area have special knowledge of, and interest in, the Portland Harbor. ECO interviewed individuals from both the public and private sectors, and reviewed notes on past interviews that had been conducted for recent related studies.

2.2.2 EVALUATING CITY METHODS USED TO ESTIMATE PORTLAND HARBOR BUILDABLE LAND SUPPLY

ECONorthwest used the following methods to address this question:

[5] Secondary data sources are ones collected and readily available by someone other than the user (in this case ECONorthwest). Typical secondary sources are government agencies (e.g., U.S. Census, ODOT, Metro, Port of Portland).

- Review of studies summarizing industrial and harbor land supply: *Industrial Districts Atlas* (2004) and *Harbor ReDI Industrial Sites Analysis* (2009).
- Review of GIS shape files and cross-referencing to staff aerial analysis of harbor lands and Google Earth aerial photos (August 2011).
- Discussion of methods and BPS staff, and comparison to standard methods for developing land inventories and identifying buildable land.

2.2.3 ADDRESSING THE POTENTIAL SITES FOR NEW MARINE TERMINALS

To determine which sites might best accommodate a public marine terminal, we began by identifying the technical site requirements for a marine terminal. ECO interviewed representatives of the Port of Portland to identify their ideal site requirements, as well as which of these requirements could be reduced while still accommodating a working port facility. Members of the ECONorthwest team with experience running west coast ports looked for creative ways to adjust these site requirements to create a working terminal on smaller or otherwise constrained sites.

BPS staff identified sites that could potentially meet these criteria, based upon an aerial analysis of existing development in the Portland and Vancouver harbors.[6] ECO, reviewed the sites identified by the City of Portland, and toured the sites, conducting a visual inspection, documenting conditions affecting the suitability of each site for the proposed development.

2.2.4 ADDRESSING THE ROLE OF VANCOUVER IN HARBOR INDUSTRIAL LAND SUPPLY

We began by attempting a data-driven analysis. In principle, if we knew the capacity of existing marine terminals in Portland and Vancouver, and subtracted the forecast future demand for these areas, then we could identify the amount of demand that could not be accommodated by existing facilities. This demand (in tons of cargo) could then be translated into the acres of land necessary for new terminals to accommodate this growth. Comparing the required acres to support new terminals with the available land supply in the Portland Harbor and in Vancouver, we could identify how much of Portland's demand might need to be accommodated

[6] Aerial photos were taken in 2010 and 2011.

in Vancouver, and whether or not Vancouver had sufficient land to accommodate it.

This analysis established a high and low boundary for the potential land need. We also defined a medium scenario that falls between the two extremes. In order to give these numbers more context, and to help us arrive at the medium scenario, we conducted numerous interviews with representatives of the ports of Portland and Vancouver.

2.2.5 ADDRESSING THE POTENTIAL FOR INCREASED EFFICIENCIES

The City is interested in knowing if industrial land in the Portland Harbor can be used more efficiently in the future. To answer, we looked at recent economic trends in the Portland Harbor and in the City of Portland as a whole for changes in land-use efficiency for industrial users. For this analysis, we considered several measures of output in an efficiency measure: employment, real market value, value added, and tonnage.

We began by identifying all parcels in the Portland Harbor using GIS. We examined data from two different years: 2002 (one of the earliest years that data are available using North American Industry Classification System codes), and 2008 (the most recent year Quarterly Census of Earnings and Wages data are available). Comparing data from the two years we calculated the change in developed acreage in the Harbor, the corresponding change in real market value, and the net change in employment.[7]

We also collected data from different sources for two alternative measures of output (for the denominator): value added and cargo (volume, tonnage, and value). Unlike employment and real market value, data for value added and cargo tonnage is not tracked at a parcel-specific level. Instead, data is available at the regional, City, zip code or Census tract level. For our analysis, we used Port of Portland data on historical levels of cargo tonnage in the Portland Harbor, and the IMPLAN economic model for the zip codes that most closely align with the boundaries of the Portland Harbor for value added. We used the same years (2002 and 2008) as were used for other measures of efficiency.

[7] The time period used in this analysis, 2002 to 2008, does have limitations. Only having data for two years, doesn't allow for a detailed view of trends during the interim years. Moreover, a six-year period is relatively short, and may not be indicative of long-term trends. Nonetheless, these years allowed us to make the most efficient use of available data for our analysis. Moreover, the analysis focused on comparing how these different measures of efficiency changed relative to each other over the same period of time, and not on establishing long-term trends for each measure.

Chapter 3 ANALYSIS

Section 3.1 addresses whether or not the methods used by the City to estimate the location of buildable land in the Portland Harbor area yields reasonable estimates: it concludes that they are. **Section 3.2** addresses the potential for land in Portland Harbor (not including West Hayden Island) to accommodate a new Port terminal. It finds that the two areas that might have enough vacant land to be assembled into a development site of sufficient size are relatively constrained: they could, theoretically, accommodate small terminals of various types, but some of the costs of development would be high relative to alternative sites. **Section 3.3** addresses the potential for the Port of Vancouver to accommodate regional demand for expanded Port facilities. It concludes that under the medium scenario, the Port of Vancouver has about the right amount of land to accommodate the bulk of the region's forecast growth in marine cargo through 2040, but that alternative and reasonable assumptions lead to the conclusion that more land than what the Port of Vancouver now controls will be needed. **Section 3.4** addresses the potential for increased efficiency for the use of industrial land in the Portland Harbor. It concludes that value added and tonnage of cargo per acre are more appropriate than traditional measures of efficiency for harbor industrial lands, and that recent historical trends demonstrate the Portland Harbor has become more efficient by most efficiency measures.

3.1 EVALUATION OF METHODS USED BY THE CITY TO ESTIMATE BUILDABLE LAND

The question is whether the methods used by BPS to identify vacant and buildable land are likely to be accurate. Will they systematically over or under estimate the land supply? In particular, are they likely to miss areas of vacant, buildable land that are big enough for a marine terminal (sites of at least 50 acres of contiguous vacant of underutilized land that has river access and could be serviced)?

To begin to answer these questions, we looked at recent studies that sought to determine the supply of buildable land in the Portland Harbor. Exhibit 3-1 summarizes the findings of the City of Portland Economic Opportunities Analysis (EOA), including the first draft (Hovee, 2009), and final report (Hovee, 2012), as well as the West Hayden Island Economic Foundation Study (Entrix, 2011), and the City of Portland Bureau of Planning and Sustainability's internal effort to quantify buildable lands, described in Exhibit 3-2 as "BPS Aerial Survey."

Exhibit 3-1. Summary of previous study estimates of Portland Harbor buildable land supply

		City of Portland Harbor Land Supply		Parcels of Size: (3)	
Study	Year	Gross Acres (1)	Effective Acres (2)	50-250 Acres	250+ Acres
EOA Draft 1, Hovee	2009	266	61	0	0
EOA, Hovee, BPS	2012	326	108	0	0
Entrix, Inc.	2010	299	<50	2	0
BPS Aerial Survey	2011	586	174	3	0

Compiled by the City of Portland Bureau of Planning and Sustainability, from the following original data sources:
City of Portland Economic Opportunities Analysis, (E.D. Hovee and Company, 2012), and first draft (2009)
West Hayden Island Economic Foundation Study (Entrix, 2011)

Notes:
(1) Total acres of vacant land, without regard to environmental or contamination constraints
(2) Total acres adjusted for environmentally sensitive land, contaminated land, or land with insufficient infrastructure
(3) Number of individual parcels or polygons of the stated acreage

Although these recent studies come to different conclusions on the amount of vacant, buildable land, all of the studies show a relatively small supply of effective acres, ranging from less than 50 acres in the Entrix study, to 174 acres in the BPS Aerial Survey. For the purpose of identifying sites for public marine terminals, we need to consider not only the total acreage, but the size of the individual parcels Scattered small parcels of vacant land cannot accommodate a marine terminal, a single site (typically of 50 acres or more) is needed. These recent studies show that no more than three such sites are present in the Portland Harbor.

The City asked ECONorthwest to confirm that the methods used to identify these sites were reasonable. Some simple ideas and calculations help to answer that question:

- The state of the practice for land inventories is quite advanced. The Oregon statewide planning program's requirements for "buildable land analysis" (from the mid-1970s) spurred the use of Geographic Information Systems (GIS) throughout the state. All large cities and Metropolitan Planning Organizations in Oregon have been developing their GIS tools and datasets for over 25 years. Metro is looked to as a leader in the country on the use of GIS for land-use evaluation. The City of Portland has advanced its data in parallel with Metro. Databases that started as crude approximations have improved substantially. They have been reviewed and updated many times; data from more and more sources have been added (e.g.. tax assessment, public works); computer power and software have improved; digitized mapping of aerial photographs now allows accurate registration of those photographs to underlying layers of thematic maps. In short, the data are current and accurate, and the

ability to manipulate and summarize them is substantial, fast, and technologically reliable.

- The Portland Harbor area is not big by regional standards. The detailed BPS GIS data put it at just over 4,000 acres. As a back-of-the-envelop corroboration using different datasets and tools, ECO used Google-Earth to draw the approximate boundaries of the study area (Exhibit 1-1 above) and calculate areas: the result was 4,100 acres, the equivalent of a square 2.5 miles on a side. Just inspecting aerial photographs would allow one to find large, undeveloped acreages.
- The City has conducted three extensive studies of industrial and harbor land that resulted in detailed mapping: *Industrial Districts Atlas* (2004), *Harbor ReDI Industrial Sites Analysis* (2009), and the GIS-based inventory (2011). The 2011 inventory maps and data table are included as an Appendix to this report.
- ECO has worked on a dozen buildable land evaluations, and has written many reports on the steps for working from "all land" to "vacant, buildable land." ECO's conversations with BPS staff led to the conclusion that staff had used state-of-the-practice techniques. In summary, (1) from "all land" the land not in parcels is removed (e.g., water bodies, street and other rights of way); (2) of the land in parcels, the land that is developed and judged unlikely to redevelop easily (usually based on the value of improvements) is removed; (3) from the undeveloped or under-developed land, the land with physical or policy constraints is removed (e.g., wetlands, in flood ways, steep slopes).

All of the previous points strongly suggest that the information about the supply of developable industrial land in the Portland Harbor area that BPS has generated is very reliable. The buildable land inventory using GIS data that was done for the update of the Economic Opportunity Analysis looks reasonable by the tests we noted.

But despite good intentions and good analysis, there are details in any such analysis that require assumptions, and the assumptions can make a difference to the outcomes. For example:

- Which constraints are absolute, and which are restrictive? Does a slope of more than 10% preclude industrial development? 15%? What if the average slope on a large parcel is 10%, but half of the parcel has slopes less than 5%? What about soil contamination: can the site be remediated, or is the extent of the contamination and legal complexities such that the site is effectively off the market for the foreseeable future?
- When is land "underutilized"? Some vacant areas around buildings may be necessary for vehicle movement, production staging, or

occasional storage. Are large parking lots "vacant" or are they an essential part of the operations in the buildings adjacent to them? A low value for improvements does not necessarily mean that the owner has any interest in redevelopment.

- Ownership patterns. What might look like relatively large areas of vacant land on an aerial photograph may be in many parcels with many different owners. Land assembly and development may be very difficult. This point is illustrated by the findings in Exhibit 3-1, which show up to three sites with at least 50 acres using the BPS methods (ignoring parcel boundaries and looking at aerial photographs), but no sites of that size when using the methods in the Economic Opportunities Analysis (which did look at parcel boundaries).

For the Harbor Area land evaluation, our evaluation is that the buildable land inventory using GIS data that was done by BPS to update of the Economic Opportunity Analysis has generally made inclusionary rather than exclusionary assumptions: we think that is appropriate. BPS did not, for example, eliminate from its search for large, buildable parcels those with arbitrarily defined thresholds for buildability (e.g., proximity to services or the river, steep slopes, contamination), or those that had a particular ownership. All those parcels are still part of the dataset from which large sites were identified. The result, as Section 3.2 shows, is that the large sites identified have several challenges for development: challenges that were not screened out by earlier assumptions about buildability criteria. In other words, on that score, the methods used by BPS were inclusive, and the result is that there would be less chance of screening out land that might eventually prove to be capable of contributing to a large site for a marine facility.

An assumption that BPS did make, and that all buildable land evaluations that we are familiar with also make, is that developed parcels are, in general, not buildable parcels. They can, of course, become buildable parcels if their buildings are removed. Thus, it is theoretically possible that parcels that look developed (from assessment data, aerial photographs, and field surveys) could eventually be part of a land assembly large enough to accommodate a large marine terminal. The kind of detailed, property-level analysis needed to make judgments about land redevelopment and site assembly is not done as part of a regional or city buildable land evaluation.

But there is still the issue of "underutilized" land. A buildable land dataset, like the one BPS has developed, will be quite good (after field testing—and there has been plenty in the Harbor Area over the last 10 years) at distinguishing developed parcels from vacant parcels in most cases. But it is more difficult to determine when a generally vacant parcel is underutilized, and more difficult still to determine whether parcels that are

developed have underutilized remainders that might be considered as vacant and eligible for consolidation into a larger, developable site.

The documentation of the City of Portland's GIS-based Development Capacity Model[8] says that it (1) identifies (and presumably flags as undevelopable) "constrained" properties (i.e., significant environmental or historic resources), and (2) identifies developed parcels "significantly underutilizing their allowed development capacity (using less than 20% of available capacity, not including any development bonuses or incentives)" [that determination can be over-ridden by a judgment by BPS staff that a property is "likely" or "not likely" to redevelop]. The dataset has detailed information on parcel attributes (around 100 attributes per parcel), including building footprint (which allows a calculation of the amount of land not currently developed as a building). It has an algorithm for calculating "site area" by combining the acre of contiguous "underutilized" lots. In short, this is an extensive and well-documented dataset.

The BPS identification of potentially developable sites in the Portland Harbor did not rest entirely on technical analysis using GIS. Additional analysis done as part of the specific to the Harbor Lands Inventory also relied extensively on a review of aerial photographs, with staff performing a visual inspection of all sites along the Willamette River to ensure that any large areas of apparently vacant land had been included in the database of potential terminal sites, and that all of the sites identified by GIS appeared to have the development potential that was suggested by the data. Additionally, BPS staff made reasonable efforts to acquaint themselves with the sites, talking to Port of Portland officials, and visiting the areas, to make sure that the BPS analysis was grounded in a solid understanding of what was actually occurring on key sites in the Portland Harbor. In short, land uses and vacant lands identified in the visual survey were compared with the GIS/BLI data to ensure there were no large information gaps.

As a final check on the site inventory, we relied on our familiarity with the study area, the City documents cited above, and aerial photographs to see whether there were any large areas of vacant or underutilized land besides the two (Atofina and Time Oil sites) that the City identified as the best candidates for a new marine terminal. On the west bank of the Willamette River, we found nothing beyond the Atofina site: the north reach has only a narrow strip of mainly developed land; the south reach has a wider land area but is entirely developed along the waterfront. We found the following candidates on the east bank:

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[8]http://www.portlandonline.com/cgis/metadata/viewer/display.cfm?Meta_layer_id=52965&Db_type=sde&City_Only=False

- Swan Island Industrial Park. Land at the south edge on the NE bank of the Willamette River could be classified as underutilized: it is an operation for transshipment of aggregate (10 acres). But even if the parking and storage on both sides of the site is counted, the site would still fall way short of the minimum threshold of 50 acres.
- McCormick and Baxter site, SE of BNSF bridge on east side of the Willamette River. Depending on what land is counted (e.g., backing out land for rail right of way, some existing buildings), this site may be 50 – 70 acres in size. This site was excluded from the City's analysis, primarily because it was recently proposed to be rezoned as EG2 in the River Plan, which (although it allows industrial development) does not allow rail yards, and requires greater setbacks and landscaping than other industrial zones (like IH for heavy industrial). Conversations with BPS staff indicate that the EG2 zone designation is one element of the River Plan that has been challenged, and there is a good chance that a revised River Plan will not propose the EG2 zoning for the site, which would make this site potentially available for marine terminal development.
- "Underutilized" land north of St. John's Bridge on east side of the Willamette. What may seem underutilized from a high-level aerial photograph is actually space for parking new cars from Asia—this is the Port of Portland's Terminal 4 operation (about 260 acres total, handling autos, forest products, steel, and dry and liquid bulks). This site is already part of the Portland area's supply of marine terminals and cannot be counted to add new capacity, unless it were redeveloped. Evaluating that possibility is beyond the scope of our study.
- Sites in the Terminal 5 and Terminal 6 area. There are some sites for infill (e.g., 50 acres off North Lombard in Terminal 6) but there is no water frontage available for a new terminal. Evaluating redevelopment of Port terminals is beyond the scope of our study.
- Kelly Point Park. About 50 acres at the confluence of the Willamette and Columbia Rivers, abutting Port properties of Terminals 5 and 6 is park land that is not available for development.

Of all the sites examined (beyond the Atofina and Time Oil sites already identified by BPS), the only one that met the minimum size requirements (and was not parkland) was the McCormick and Baxter site. The development potential of this site was studied extensively by the City in the past, and the results are described in the *McCormick & Baxter Site Reuse Assessment: Final Report* (June, 2001). The site could have potential for marine terminal development, but (as detailed in the 2001 site assessment) it is heavily constrained in several areas: relatively shallow water at the shoreline, inability to expand to adjacent parcels due to existing uses (Metro

open space and University of Portland campus), isolation from truck routes that require traveling through residential neighborhoods and up a relatively steep bluff, other infrastructure insufficiencies, and significant liens and encumbrances. While the challenges are substantial, they are not necessarily insurmountable, and the other sites identified by BPS face some similar challenges.

Ultimately, the site was excluded from further analysis, because it is less likely that adjacent lands could be assembled into the site, due to the adjoining zoning, and because past brownfield remediation work on the site was carried out in a way that limits future industrial uses, unlike the Atofina and Time Oil sites. Our brief review of the site constraints suggest it is at least as constrained as the Atofina and Time Oil sites, and would not be a better site for marine terminal development, due to the access constraints mentioned above. Thus, our answer to question posed is:

- BPS has used appropriate measures to identify vacant and buildable land.
- The two sites it has identified as meeting the minimum size requirements for a new marine terminal (Atofina and Time Oil) appear to be the two best sites that meet that size requirement with vacant land. Any other location would require assembling and redeveloping properties that now have buildings on them.[9]

3.2 POTENTIAL SITES FOR NEW MARINE TERMINALS

This section addresses the question: How suitable for a public marine terminal are the few sites in the Portland Harbor that have been identified by the City as having the best potential to accommodate such a terminal? Through previous planning efforts,[10] the City of Portland Bureau of Planning and Sustainability (BPS) identified the following minimum criteria to meet forecasted demand for new marine terminal sites in the Portland Harbor:

- Industrial zoning
- Deep-water harbor access
- Railroad access

[9] Whether such redevelopment could be, in some cases, financially feasible is a question beyond the scope of this study.

[10] West Hayden Island Economic Foundation Study, prepared by Entrix and Bonnie Gee Yosick LLC for the City of Portland Bureau of Planning and Sustainability, May 2010. City of Portland Economic Opportunities Analysis: Working Draft, prepared by E.D. Hovee and Company, LLC for the City of Portland Bureau of Planning & Sustainability, June 2011.

- Truck street access
- Vacant (unimproved or unoccupied brownfield) site-assembly area approaching 100 acres.

Using the methods described in Section 3.1 above, BPS staff identified only two sites that could potentially meet all these criteria. These are the two largest vacant sites in the Portland Harbor area: the 59-acre Atofina site, and the 43-acre Time Oil site. Both are brownfields, and both could potentially be assembled with nearby vacant sites.

This analysis looked only at vacant sites. It is always possible that some sites that are non-vacant today could be redeveloped as marine terminals in the future. When considering the opportunity to redevelop non-vacant sites, it is important to look at the net impact in economic activity. In other words, redeveloping existing sites would only be beneficial to the economy if the new use of the site were more efficient and able to accommodate more economic activity (whether measured by employment, output, cargo volumes, etc.) on the same acreage. Evaluating all non-vacant sites in the Portland Harbor to attempt to determine which might be most likely to redevelop in the future was beyond the scope of our analysis.

The ECONorthwest team reviewed the two vacant sites identified by the City of Portland, and evaluated maps of the Portland Harbor, including zoning, infrastructure and aerial photographs. Our preliminary review confirmed the City's findings: most of the Portland Harbor has active development on it, and these two sites have the greatest opportunity to accommodate new public marine terminals.

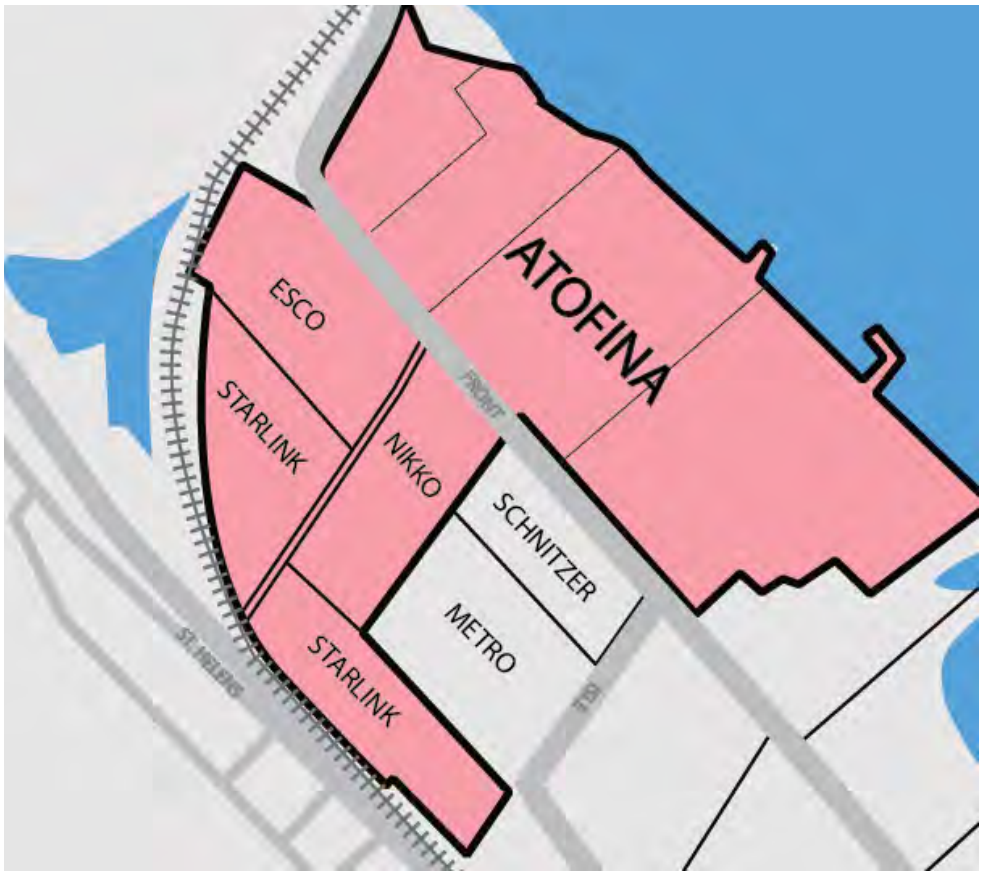
Staff from ECONorthwest and Maul Foster & Alongi toured these sites with BPS staff, documenting conditions affecting the suitability of each site for the proposed development. Key factors considered in the evaluation were: site access, existing uses, natural features, and contamination / remediation. After conducting this site visit, Maul Foster & Alongi developed a set of criteria for evaluating site feasibility for typical port terminals (see Appendix B).

Using these criteria, Maul Foster & Alongi evaluated the potential opportunities and constraints of these sites to accommodate development of a public marine terminal. A cursory site visit is insufficient to make a final determination of site feasibility. Nonetheless, the methods are consistent with the scope and budget, and are sufficient for identifying major opportunities and constraints for these potential sites, and for making a preliminary determination of site feasibility. Further investigation of these sites could be conducted to refine our feasibility findings.

3.2.1 ATOFINA

The Atofina site is a collection of parcels under several ownerships, which total approximately 114 acres (59 acres in the four main Atofina parcels, and an additional 55 acres in adjacent parcels across Front Ave.). The parcels are zoned heavy industrial (IH), and are bordered by industrial uses. The site is adjacent to SR 30 and fronts the Willamette River within the Portland Harbor. Exhibit 3-2 shows a map of the Atofina site.

Exhibit 3-2. Atofina site



Source: ECONorthwest, 2011.

The parcels that the Atofina site comprises have the following owners:

- Atofina: four vacant parcels totaling 59.14 acres
- Schnitzer: an 8.32-acre parcel, currently occupied by Air Liquide America Corporation
- Metro: a 10.43-acre parcel housing the regional solid waste transfer station
- Nikko (Gould Electronics): a 9.21-acre parcel, which is partially occupied by an operating RCRA C hazardous material landfill
- ESCO: a 10.51-acre parcel, which is a former landfill

- Starlink (Aventis Cropscience USA LP; Rhone Poulenc Ag): two significantly contaminated parcels totaling 16.42 acres, currently under remediation.

Access

Water depth in the Willamette River near the Atofina site ranges from 30 to 40 feet. The site has historically been used as a bulk-commodity manufacturing and shipping terminal. The waterside parcels (Atofina) provide a total of 2,700 feet of shoreline, and currently accommodate three existing piers on leases from the State of Oregon, Department of State Lands.

The aggregated Atofina site is served by a rail siding from the BNSF mainline. The siding is approximately 2,200 feet in length with three road 'at grade' crossings. While the site has rail access, it appears to be of insufficient size to accommodate a loop track, which would hamper efforts to build an efficient, modern port facility. Highway 30 access has been somewhat hampered by the closure of local streets accessing the highway.

Existing uses

Current industrial uses on the Schnitzer property as well as the Metro property seemingly eliminate 18.75 acres, while the existing Gould Superfund disposal site on the Nikko property reduces the available footprint by an additional 9.21 acres. The Nikko property contains an operational on-site 4.5-acre containment facility (Subtitle C closed hazardous waste landfill), and is approximately 25 to 30 feet higher in elevation than the surrounding property, with a structured fill containing 77,000 cubic yards of contaminated materials. The former ESCO landfill received non-recyclable wastes (e.g., foundry sand, slag, demolition debris) from ESCO's foundry operations from approximately 1953 to 1983. The landfill was closed with the approval of the Oregon Department of Environmental Quality (DEQ) and the Oregon State Health Division in 1983. The Starlink properties are undergoing extensive investigation and remediation.

Natural features

The property generally rises in grade from the Front Street ROW in the east to the rail ROW in the west, and has considerable natural gain exclusive of the Subtitle C landfill mass. Along the north and northwest perimeter of the site is a berm with a steep slope leading up to the BNSF main line on its approach to the rail bridge. Across the rail line, North Doane Lake and an environmental conservation land designation wrap the 'site' to the north and west.

The waterside parcel is partially within the FEMA Special Flood Hazard Area or was partially inundated by a 1996 flood event. The area is in a low to moderate earthquake hazard exposure area.

Contamination and remediation

The Atofina parcels are being remediated by Legacy Site Services (LSS), as the Atofina agent, under a consent order with DEQ, requiring source control and a site-wide feasibility study. The source control measures include both groundwater and stormwater migration controls. The site is included in the area of the Lower Willamette River that was designated a Superfund site in 2000 by the Environmental Protection Agency. Final remediation plans for the Portland Harbor Superfund site have not been determined. The potential liability for remediation of the Superfund adds a high level of risk for all affected properties, making prospective real estate transactions or development unlikely.

Other constraints

In addition to these property encumbrances the Atofina site is transected by Front Avenue (Service Level B; Priority Truck Route; peak-hour volume average of 106 vehicles and an average daily traffic volume of 640 vehicles, of which 92% are automobiles). Front Avenue separates the Atofina-owned parcels from the remainder of the site. Front Avenue provides primary access to the adjacent Siltronic site and is a public right of way. The Siltronic property does have alternate direct highway access to US 30, but there is an 'at-grade' rail crossing, and it does not readily serve the current land use configuration for the site. In addition to the Front Avenue ROW there is a pipeline easement adjacent to the east side of the street ROW.

While the total aggregated acreage appears to adequate for serving as a barge or bulk facility, current encumbrances, uses, and rights of way limit the useable area to 59 acres: the four parcels owned by Atofina to the East of Front Avenue, fronting the Willamette River.

Site assessment

Significant changes would need to be overcome to develop this site as a productive public marine terminal. To develop the entire site, NW Front Avenue would need to be closed, requiring additional infrastructure investments to provide alternative access to the Siltronic property. Without closing NW Front Avenue, this site is practically limited to 59 useable acres, with limited road and rail siding access.

While the site has rail access, site size and dimensions are insufficient to accommodate a rail loop track. Providing adequate rail service for the site is

even more challenging if development is limited to the 59 acres east of NW Front Avenue.

If NW Front Avenue were closed to accommodate development of the 114-acre site, the properties owned by Metro and Schnitzer are in active use, and would be unlikely to relocate. Property acquisition for the remaining parcels would be challenging, as it would require negotiations with five different private property owners. While acquiring these properties would provide additional acreage for development, acquisition would also involve additional costs as well as need for environmental remediation on these sites.

Ultimately, the site may be suitable for break bulk commodities, such as project cargoes, but the uncertainty of the planned and ongoing environmental remediation on the Atofina parcels--in addition to the uncertain liability for the Lower Willamette River Superfund remediation--probably make the cost of the land prohibitively high. The site *could* be big enough for a terminal, but the cost of preparing the site to accommodate such a terminal will make the effective land price very high relative to other industrial properties.

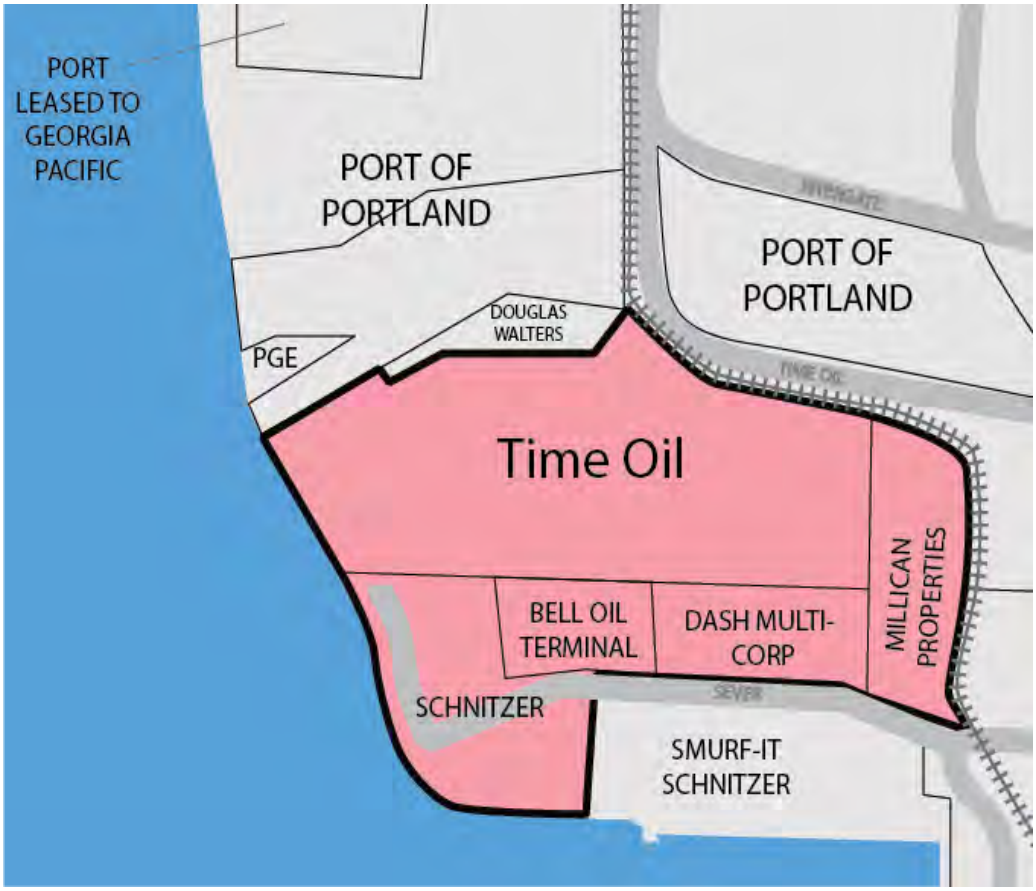
3.2.2 TIME OIL

The Time Oil site includes several separately owned parcels totaling approximately 84.2 acres. The subject parcels are adjacent to the Willamette River within the Portland Harbor and are zoned heavy industrial (IH) with a 'River' overlay designation. The site is bordered by industrial uses and also an area governed by a soon-to-expire natural resource management plan. Exhibit 3-3 shows a map of the Time Oil site.

The Time Oil site comprises parcels with the following owners:

- Time Oil: 43.41 acres
- Schnitzer Investment Corporation: 13.79 acres
- Bell Oil: 6.04 acres
- Dash Multi Corporation: 9.82 acres
- Millican Properties: 11.12 acres

Exhibit 3-3. Time Oil site



Source: ECONorthwest, 2011.

In addition to the aggregated property initially considered for the Time Oil site, there appears to be additional parcels totaling approximately 57 acres to the east of the Time Oil site, and bounded by Time Oil Street and Burgard Street. Including these parcels (not shown in Exhibit 3-3), the total potential aggregate site would be approximately 139 acres.

Access

Water depth in the Willamette River ranges from 30 to 40 feet. The aggregated site has approximately 1,400 feet of shoreline (pier head): the Time Oil parcels with 550 lineal feet, and the Schnitzer parcel with 850 lineal feet.

Historically there have been two piers on the parcels. The side channel serving the Schnitzer parcel is navigable, and is likely to be addressed in the Portland Harbor cleanup project.

The Time Oil site is served by a rail siding from the Union Pacific Railroad mainline of approximately 2,500 feet in length with two road 'at-grade' crossings and on-site railroad access. While the site has rail access, it appears to be of insufficient size to accommodate a loop track, which would

hamper efforts to build an efficient, modern port facility. Access to the specific site would require use of a private or Port-owned right of way, connecting to either Rivergate Blvd. or Burgard St., ultimately connecting to N Lombard St, a district collector and priority truck roadway.

Existing uses

Current industrial uses on the Schnitzer property appear to be temporary in nature. The Bell Oil Terminal is inactive; the Millican parcel is underutilized, and the Dash Multi Corp parcel is an operational tire recycler. There are several existing structures on the Time Oil and Schnitzer site, and evidence of removal of liquid storage tanks. The western half of the site is in a floodplain.

Contamination and remediation

Like most properties in the Portland Harbor, sediment in the adjacent channel and berthing area have known or suspected contamination. The upland properties have known or suspected contamination and are in various regulatory phases of investigation and remediation. The site is included in the area of the Lower Willamette River that was designated a Superfund site in 2000 by the Environmental Protection Agency. Final remediation plans for the Portland Harbor Superfund site have not been determined. The potential liability for remediation of the Superfund adds a high level of risk for all affected properties, making any real estate transactions or development highly unlikely.

Other constraints

To the north of the subject site there are high-tension power lines; a small parcel owned by PGE and a series of parcels owned by the Port of Portland with the presence of wetlands (some of these wetlands have environmental conservation zoning). The site is generally flat with mild slope to the river.

Site assessment

The Time Oil site faces challenges that would need to be overcome to be developed as a productive public marine terminal. While the core of the site (57 acres) has only two different private property owners, the remainder of the site is divided into several different owners. Depending on the desired use and scale of a proposed port terminal, additional property to the east of the site may need to be acquired. The number of private properties and owners makes site assembly a challenge, but not an insurmountable obstacle.

Compared to the Atofina site, the Time Oil site appears to have fewer challenges to redevelopment: it does not require closing a public street, it

appears to have less severe environmental contamination, and the possibility exists to acquire a larger aggregate site. The contamination is mainly along the river, not upland. It may be possible that lower lying contaminated land could be used as fill on other parts of the site and capped under the footprint of a new building.

The site would be a viable candidate for a marine terminal with the appropriate aggregation of key properties. Aggregating 80 to 140 acres would accommodate the transshipment of break bulk and some bulk commodities. Property configuration to make 1,400 feet of pier face accessible is critical to its usability. This site could be explored further for marine terminal use. It will be difficult, however, to negotiate any real estate transactions for this site while the liability for the Lower Willamette River Superfund remediation remains uncertain.

3.2.3 IMPLICATIONS

Public marine terminals have specific land use requirements that are difficult to find. Ideally, sites must be large and flat, inside of an industrial zone, have significant shoreline on a navigable river, be served by both rail and truck, and free of contamination, wetlands, or other environmental constraints. There are no sites in the Portland Harbor that meet these ideal requirements, though there are a few sites that come close. The questions are: how close do they come, and is there a way to cost-effectively develop these sites as productive public marine terminals?

The City of Portland identified the two sites in the Portland Harbor that are most likely to be suitable for development of a new public marine terminal: the Atofina site, and the Time Oil site. Of these two sites, development is technically possible on either, but there are major hurdles that would add significant costs. Both sites have some level of contamination, both sites would require negotiation and property acquisition from numerous property owners, and both sites are smaller than desirable, which precludes the possibility of an onsite rail loop.

Of the two sites, the Time Oil site is most suitable for development, as it does not have certain challenges faced by the Atofina site. The development of the Atofina site is further restricted by NW Front Ave. that bisects the site, and provides primary access to the Siltronic property. With this road in place, the site is limited to just 59 acres. Vacating the road would be costly, and would likely require significant infrastructure investments to be made to provide access to the Siltronic property. Even if the road were vacated, property on the other side of the road is contaminated or in active use. And the nature of the contamination on the Atofina site is considered to be more severe than contamination elsewhere in the Portland Harbor.

Ultimately, issues related to the Superfund cleanup of the Willamette River make all sites in the Portland Harbor unfeasible for development in the near future. Until a final agreement is reached, determining the specific liability for all property owners in the Harbor, there is too much cost uncertainty to negotiate a reasonable price for the land acquisition that would be necessary to assemble a site large enough for a new public marine terminal.

3.3 ROLE OF VANCOUVER IN HARBOR INDUSTRIAL LAND SUPPLY

The third question we were asked by the City is: What role can the Port of Vancouver play in accommodating forecast demand for cargo volumes in the Portland region? To answer this question, we reviewed estimates from recent studies on the current capacity and forecast demand for cargo in the region, and augmented this data-driven analysis through interviews with port officials. A more detailed description of our analysis is found in Appendix C: Analysis of Harbor Land Capacity and Demand, Portland and Vancouver.

3.3.1 EXISTING CAPACITY

The Port of Portland has four marine terminals located along the Willamette and Columbia Rivers. These terminals accommodated 575 ocean-going vessels in 2010, though over the past two decades it was not uncommon for the Port to accommodate 800 to 1,000 ocean-going vessels in a year. Not counting cargos received or shipped via inland barges, the Port of Portland shipped over 13 million short tons of cargo in 2010.

While the Port's existing marine terminals have excess capacity, that capacity is limited. As demand increases over time, the Port will reach a point when existing facilities are unable to accommodate the demand that is forecasted. If the Port is unable to find new ways to improve the efficiency of existing terminals, or find suitable sites to build new terminals, then the Port of Portland may miss potential cargo opportunities. The Port of Vancouver, located across the Columbia River from the Port of Portland, could accommodate some unmet demand.

Exhibit 3-4 summarizes the estimated capacity of public marine terminals in the Port of Portland. Total capacity for all cargo types in the Port of Portland is estimated to be over 21,000,000 metric tons. This capacity is significantly above current cargo volumes for all cargo types, except for grain, which saw a reduction in capacity when the Port closed the terminal

4 grain elevator in recent years, and is unable to accommodate historical levels.

Exhibit 3-4. Estimated capacity of public marine terminals, and recent peak cargo volumes, Port of Portland

Cargo Type	Estimated Capacity	Recent Peak Volume	Peak Year
Automobiles (units)	675,000	460,000	2006
Containers (TEUs)	700,000	330,000	1995
Metric Tons			
Automobiles	889,000	606,000	
Containers	3,999,000	1,885,000	
Breakbulk	2,100,000	1,130,000	2007
Grain	4,100,000	5,400,000	1995
Dry Bulk	10,700,000	5,460,000	2008
Liquid Bulk	-	-	N/A
Total	**21,788,000**	**14,481,000**	

Source: Estimates of capacity are from Port of Portland, reported in West Hayden Island Economic Foundation Study (Entrix, 2010), and confirmed through interviews with Port of Portland officials.
Reported recent peak cargo volumes are from Port of Portland Marine Terminal Statistics, 1980-2010.

3.3.2 FORECAST OF FUTURE CARGO VOLUMES

Our analysis did not include forecasting future cargo demand for the region. Instead, we were tasked with obtaining and reviewing the most recent forecasts. These forecasts were contained in the *Portland and Vancouver Harbor Forecast Update* (BST Associates, 2012). These forecasts were based on a 2010 study by BST Associates, but were refined to specifically call out cargo demand for the City's of Portland and Vancouver, and were updated with the most recent economic data.

Exhibit 3-4 shows the *capacity* of *existing public* marine terminals. Exhibit 3-5 shows the forecast *demand* for *existing and future public and private* marine terminals (measured as cargo volume) in the City of Portland in 2040. The forecast demand ranges from 28 million to 43 million metric tons. For context, in 2010 (the most recent year for which data is available) the Port of Portland reports it moved 13 million tons of cargo. Even the low scenario forecasts demand to be more than double 2010 levels by the year 2040, with an average annual growth rate of 1.5% per year.

Exhibit 3-5. Forecasted cargo volume, public and private, City of Portland, 2040

Cargo Type	Low	Mid-Range*	High
Automobiles (units)	811,000	912,500	1,014,000
Containers (TEUs)	379,000	452,500	526,000
Metric Tons			
Automobiles	1,076,000	1,206,000	1,336,000
Containers	2,162,000	2,583,500	3,005,000
Breakbulk	1,132,000	1,242,000	1,352,000
Grain	6,686,000	9,078,000	11,470,000
Dry Bulk	10,278,000	14,093,500	17,909,000
Liquid Bulk	6,912,000	7,461,500	8,011,000
Total	**28,246,000**	**35,664,500**	**43,083,000**

Source: Low and High forecasts were made by BST Associates for the *Portland and Vancouver Harbor Forecast Update* (2012).
*Mid-Range scenario is calculated by ECONorthwest as the average of the BST low and high scenarios.

Note that 2040 is an arbitrary date. It is not a key milestone. Demand for cargo does not stop growing for some assumed reason in 2040. It is simply the last date for which there is a forecast for cargo demand. Thus, our advice is not to focus on exact tonnage requirements, or exact acres needed to accommodate demand in 2040. It is more important to focus on the big picture. The City of Portland has a limited supply of land suitable for marine terminal development, and this supply will not increase. Demand for cargo has increased steadily for decades, and is forecast to continue to do so in the future. Over a long-enough period, the City will use its capacity to accommodate future growth. As it does, land prices will increase and redevelopment will become more possible than it appears now.

Nonetheless, the inevitable reduction of vacant land available for water-dependent uses in the Portland Harbor area is the motivation for considering ways to use the land efficiently, and whether neighboring jurisdictions might accommodate some additional amount of the forecasted growth. Looking at the 2040 gives good idea of how close the City (and the region) is to reaching its full capacity for public marine terminals.

3.3.3 CAPACITY SHORTFALL

Comparing the capacity of existing facilities with the forecast demand provides an estimate of the potential capacity shortfall for the Port of Portland is in 2040. Two factors complicate this analysis: (1) private marine terminals also handle a portion of the City's cargo volume, and there are not accurate estimates of the capacity of private terminals in the City; and (2) if the growth in cargo volumes comes from a different mix of clients and commodities than the terminals are currently handling, then the existing facilities may not be able to accommodate the new opportunities, which means these facilities may not reach 100% of their capacity before new terminals are needed.

Our analysis needed to make assumptions on how to deal with these two issues. Variations in assumptions, combined with the wide range of the BST forecasts for cargo demand in 2040, result in an even wider range of estimates for capacity shortfall. To bookend our analysis, we created assumptions that would give us the lowest and highest possible shortfall, and then selected assumptions for a medium scenario.

The lowest shortfall scenario assumes the low demand forecast from BST, and assumes that existing facilities would be able to operate at 100% efficiency to accommodate forecast demand, and that private terminals will be able to continue accommodating cargo at their recent peak levels. The highest shortfall scenario uses the high demand forecast from BST, and assumes that existing facilities would continue operating at their historical peak levels, with all additional demand coming from new market opportunities that require new terminals. The medium scenario uses assumptions that fall between the range of these two bookends. Key assumptions for the medium scenario are existing facilities operate at 90% of capacity (i.e. to accommodate the forecast growth in cargo, we do not assume that existing facilities are able to use 100% of their capacity, since part of the growth in cargo volumes may be due to new users and new commodities that cannot use existing facilities), and we use the mid-range demand scenario, calculated as the average of the low and high scenario by BST Associates.

The results of these three scenarios are shown below in Exhibit 3-6. Note that the potential capacity shortfall ranges from less than 200,000 metric tons in the low shortfall scenario to more than 17 million metric tons in the high scenario. Ultimately, our medium scenario shows a potential shortfall of 5,760,000 metric tons, with all of the shortfall occurring in dry bulk, grain, and automobiles.

Exhibit 3-6. Potential capacity shortfall, City of Portland, public and private marine terminals, 2040 (metric tons)

Cargo Type	Low	Medium	High
Automobiles (units)	(136,000)	(310,000)	(554,000)
Containers (TEUs)	-	-	(196,000)
Metric Tons		-	
Automobiles	(187,000)	(410,000)	(730,000)
Containers	-	-	(1,120,000)
Breakbulk	-	-	-
Grain	-	(2,390,000)	(4,370,000)
Dry Bulk	-	(2,960,000)	(10,949,000)
Liquid Bulk	-	-	-
Total	**(187,000)**	**(5,760,000)**	**(17,169,000)**

Source: Calculated by ECONorthwest, with demand forecasts from BST Associates (2012).

3.3.4 LAND NEED FOR NEW PORT TERMINALS

Translating cargo volumes into acres for port terminals is challenging, and depends on a host of variables for which we have little or no data for this analysis. Will the terminal need rail access, if so will it need a dedicated rail loop, or will it be able to share rail infrastructure with adjacent terminals? Would another rail configuration like a ladder track work?[11]

The composition of the demand is important as well. For example, if you have demand for 10 million pounds of dry bulk, will that all be the same commodity type? If not, you may not be able to use the same terminal (for example a coal exporter and potash exporter may need to have completely separate terminals even though they are both dry bulk and would have very similar needs. Even the ownership of the cargos makes a difference (e.g., one exporter with a throughput of 10 million tons of potash may require different facilities, than 5 exporters each handling 2 million tons of potash a piece).

Because of the many variables, it is difficult to translate the potential shortfall numbers shown in Exhibit 3-6 into the number of terminals that would be needed to service that demand, and even more difficult to translate the number of terminals into acres. For the purposes of our analysis, we first looked to recent studies to find an industry standard or a rule of thumb for the size of marine terminals for various cargo types. The three sources we looked at were the *West Hayden Island Economic Foundation Study* (Entrix, 2010), the Draft Report on *Operational Efficiencies of Port/Terminal World Wide* (Worley Parsons, 2012), and the Maul Foster and Alongi evaluation criteria included with this report as Attachment B.

Unfortunately, there is little consensus among these sources on the land needed for each terminal. This is because the unique characteristics of each site, the needs of each unique user and commodity, and the market conditions and technologies available at the time existing facilities were built result in a wide-range of variables that are difficult to control for. In short, no conclusive rule of thumb exists, and if it did exist, it would not necessarily be applicable to each of the sites in the Portland and Vancouver harbors. Nonetheless, for the purposes of our analysis, we needed to make some assumptions on the acreage requirements for new terminals for various commodities. We again sought to use different assumptions to present a high and low bound on our analysis, and then to select

[11] Representatives of businesses in the Portland Harbor, as well as Port Officials, and other consultants with expertise in marine terminal development and cargo forecasts have stressed that there is no equal substitute for a loop track, and that other rail configuration such as a ladder track will not work, for attracting new port users in a competitive global economy.

assumptions in the middle of the range that we believe resulted in a medium scenario.

The details of these scenarios are shown in Appendix C: Analysis of Harbor Land Capacity and Demand, Portland and Vancouver. The medium scenario uses our medium capacity shortfall estimates, and assumptions on throughput (tons per acre of terminal land) from the *Operational Efficiencies of Port/Terminal World Wide* (Worley Parsons, 2012), based on tons per acre for case study ports in North America and Europe. It is optimistic, however, to think that all new terminals would achieve the level of efficiency identified in the Worley Parsons draft report, so we have shown another column for the "case study example" (i.e., more conservative assumption) land need, based on an average value of the assumptions in the various supporting documents used in our analysis. A final column was added to show the land need, if a dedicated rail loop is included with the terminals that would require rail access. Exhibit 3-7 shows the results of our medium scenario, with at least 170 acres of land needed, and up to 470 acres if rail access is included.

Exhibit 3-7. Acres of land needed for new public marine terminals in the City of Portland, 2040

Cargo Type	Capacity Shortfall (Tons)	New Terminal Space Needed	Acres Needed		
			Minimum	Case Study Examples	w / rail
Automobiles	(410,000)	Yes	120.0	270.0	270.0
Containers	-	No	-	-	-
Breakbulk	-	No	-	-	-
Grain	(2,390,000)	Yes	30.0	50.0	100.0
Dry Bulk	(2,960,000)	Yes	20.0	70.0	100.0
Liquid Bulk	-	No	-	-	-
Total	**(5,760,000)**		**170.0**	**390.0**	**470.0**

Source: Calculated by ECONorthwest
Note: This table estimates acreage needed, not the number of terminals needed. Terminal size can range from 150 to 200 acres for automobiles and containers, to as small as 5 acres for liquid bulk. Depending on terminal size assumptions, the acreage need for automobile cargo could be accommodated by anywhere from one to five terminals in the City of Portland.

Comparing the demand for land for public marine terminals in the City of Portland shown in Exhibit 3-7, with the supply of land in the Portland Harbor shown in Exhibit 3-1, shows an insufficient land supply. As described in Sections 3.1 and 3.2, the Portland Harbor has the potential for two (or perhaps three, if the barriers to development at the McCormick and Baxter site can be overcome) sites to accommodate public marine terminals. These sites (Atofina and Time Oil) have serious development constraints, and even if these constraints can be overcome, they would each only be able to accommodate one terminal of practical size.

The Portland Harbor probably has insufficient land to accommodate the forecast growth for public marine terminals in the City of Portland. An

optimistic scenario would show the Portland Harbor with capacity to accommodate perhaps two terminals of relatively small size (and without a modern rail loop to serve these terminals). A more conservative outlook (and a real possibility) is that the two potential sites in the Portland Harbor may be unable to overcome their significant barriers to redevelopment, which would mean the Harbor may not have any capacity to accommodate future development of marine terminals.

Given the expected growth in demand over the next 30 years, there are few easy solutions to accommodate the City of Portland's anticipated shortfall in land for public marine terminals. The City can take action to address the existing constraints to facilitate redevelopment, or look elsewhere for buildable land for public marine terminals. The following section addresses the latter solution: looking outside of the City of Portland for land for new marine terminals.

3.3.5 PORT OF VANCOUVER DEVELOPABLE LAND

This analysis presupposes that from a regional perspective, there is no benefit to having port development occur in Portland vs. Vancouver. Leadership for the ports, and for the cities, counties, and states they are located in, may have different opinions. Indeed many public policies exist that emphasize the importance of retaining and attracting industrial jobs, like those created by marine terminal development. However, the purpose of this analysis was to determine if it was *technically* possible (as opposed to *politically* desirable) to accommodate future marine terminal demand at the Port of Vancouver.

Additionally, our analysis assumed that the type of port users that would be attracted to the Port of Portland if land were available, would find the Port of Vancouver equally as attractive if there were no developable sites in Portland. This assumption may be true for many, but not necessarily all public marine terminal users. Portland and Vancouver are similar in many ways, sharing the same regional infrastructure and labor pool. But differences do exist between the two jurisdictions, and more so for specific sites within each jurisdiction. For the purposes of our analysis, we have assumed land at the Port of Vancouver would be an acceptable substitute for potential marine terminal users unable to find developable land in the Port of Portland.

Ideally, our analysis for the supply and demand for public marine terminals in the Port of Vancouver would have used the same methods as were used for the Port of Portland. Unfortunately, our analysis was constrained by both data limitations, and time/budget. Thus, we were asked to conduct a less rigorous analysis of the Vancouver land supply,

making use of the best available data, gathered mostly from conversations and correspondence with officials from the Port of Vancouver.

ECO interviewed officials with the Port of Vancouver to understand their long-term plans for harbor industrial lands, and the challenges and opportunities that would arise from a greater share of regional industrial development locating in Vancouver versus Portland.

The Port of Vancouver is located along the banks of the Columbia River, with access to the same markets and same multi-modal transportation infrastructure as the Port of Portland. The port handles more than 500 ocean-going vessels each year, as well as river barges, with total annual cargo of more than 5 million metric tons.

The Port of Vancouver has room to grow. An analysis of aerial photos of Port land indicate roughly 750 vacant acres. The Port of Vancouver sent a memorandum to the City of Portland that further clarified their intentions for these 750 acres. The land includes approximately 450 acres of undeveloped greenfield land called Columbia Gateway. Approximately 350 acres of this property is planned to be developed as maritime, and the remaining 100 acres planned for heavy industrial. In addition, the port has 110 acres of available undeveloped light industrial land called Centennial Industrial Park. The light industrial properties could be available for development within 12-14 months, while the Columbia Gateway area is not expected to be ready for development for another 8-15 years. The Centennial properties are not waterfront parcels.

Terminal 5, now under development, added 200 acres of heavy industrial and maritime land. All but four acres of this property is river-dependent maritime land. The maritime portion has been, or will be, filled with rail infrastructure, new tenants, and cargos, including wind energy exports and a dry bulk exporter with up to 16 million ton export capacity. The sole industrial tenant is a rail-dependent propane distributor.

The Port of Vancouver is in a period of rapid growth and is currently undertaking a number of public and private development projects, including the West Vancouver Freight Access project. This public rail improvement project will create a unit train facility, more than doubling the miles of track within the port, along with adding a new, grade separate entrance from the BNSF Railway mainline. This project will increase capacity from 45,000 rail cars per year, to more than 160,000 per year, with 40 percent less delay.

Given the Port of Vancouver's holdings of vacant land, the recent dredging of the Columbia River to a depth of 43 feet, and ongoing investment in new rail infrastructure (i.e., the West Vancouver Freight Access project), the Port of Vancouver is well positioned to capture growth

in the future. Officials from the Port of Vancouver believe that neither the Port of Portland nor the Port of Vancouver have sufficient land and resources to accommodate **all** of the region's future growth on their own. Instead, ports on both sides of the Columbia River will need to supply land for new public marine terminals.

The Port of Vancouver's undeveloped, unpermitted maritime and industrial land will accommodate some regional growth – from those businesses selecting the Washington business environment and requirements. Using the BST forecasts of cargo demand for the City of Vancouver, we conducted a similar capacity shortfall analysis for Vancouver as we did for Portland (as was described in sections 3.3.1 to 3.3.4).

Combining these analyses allows us to view the regional demand for and supply of land for public marine terminals. The result of this analysis is shown in Exhibit 3-8. Our medium scenario shows that regional cargo volumes in 2040 could require between 210 and 570 acres of land for new marine terminals.

Exhibit 3-8. Acres of land needed for new public marine terminals in the Portland Metro Region (including Portland and Vancouver), 2040

Cargo Type	Capacity Shortfall (Tons)	New Terminal Space Needed	Acres Needed		
			Minimum	Case Study Examples	w / rail
Automobiles	(570,000)	Yes	160.0	370.0	370.0
Containers	-	No	-	-	-
Breakbulk	(90,000)	No	-	-	-
Grain	(2,390,000)	Yes	30.0	50.0	100.0
Dry Bulk	(2,960,000)	Yes	20.0	70.0	100.0
Liquid Bulk	-	No	-	-	-
Total	**(6,010,000)**		**210.0**	**490.0**	**570.0**

Source: Calculated by ECONorthwest with demand forecasts from BST Associates, and other assumptions based on conversations with officials from the Port of Portland and Port of Vancouver, as well as supporting documents including: *Operational Efficiencies of Port/Terminal World Wide* (Worley Parsons, 2012) and *West Hayden Island Economic Foundation Study* (Entrix, 2010).
Note: This table estimates acreage needed, not the number of terminals needed. Terminal size can range from 150 to 200 acres for automobiles and containers, to as small as 5 acres for liquid bulk. Depending on terminal size assumptions, the acreage need for automobile cargo could be accommodated by anywhere from one to seven terminals in the Portland Region.

If each new port terminal requires a dedicated rail loop, the total acreage needed to accommodate regional cargo volumes in 2040 exceeds the current supply of 350 acres of vacant developable land at the Port of Vancouver planned for marine terminal development.[12] However, the Port

[12] It is important to note that these projections are based on our medium scenario. The range of possible assumptions that could be used in this analysis is significant. When using our most conservative assumptions, our analysis showed a regional land need as low as 70 acres, and our most aggressive assumptions resulted in a land need of over 2,250 acres.

of Vancouver has about 200 acres of vacant developable land that could technically accommodate marine terminal development, but is planned for other industrial uses. But about 100 acres of this amount is part of Centennial Industrial Park and are not on the waterfront parcels or linked to waterfront parcels, so 100 acres might be a more appropriate estimate. If these acres were included in the total supply, then the Port of Vancouver comes close to having a supply of land to accommodate regional cargo demand through 2040.

While this scenario is technically possible, it may not politically feasible or consistent with adopted policies of the affected jurisdictions: Vancouver's land supply could fall short. The high and low demand forecasts differ by + or – 20% from the mid-range forecast, and assumptions about whether a new terminal has rail loop access or not can easily double the need for land. Portland and Vancouver probably have adequate land now to accommodate a low-demand forecast with few new terminals sized for loop trains. But in our simulations, high demand plus loop-train access at all new terminals led to an overall land shortfall of almost 1,500 acres. If only 350 acres at the Port of Vancouver are available for marine terminal development (its current estimate based on policy), then unmet demand for public marine terminals in the region would be around 1,100 acres.[13]

3.3.6 IMPLICATIONS

The most recent forecasts for future cargo demand show the Port of Portland will be unable to accommodate forecast demand by 2040 without adding new capacity. However, the extent of that capacity shortfall depends on the assumptions used. Interviews with officials from the Port of Portland, and the author of the most recent cargo forecasts indicate that although actual tonnage for specific cargo types may differ from the forecasts, long-term trends have shown past forecasts for total cargo volume to be fairly accurate, and the most recent forecasts should be seen as reliable.[14]

Taken at face value, these forecasts suggest that additional port capacity will likely be utilized in the future; however, accurately and reliably forecasting the future is impossible. Although our forecasts (and the BST forecasts which underpin them) include a broad range of assumptions,

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[13] Although this is the "high-scenario," it is not also "highly unlikely." BST Associates, authors of the cargo forecasts used in this analysis, note that the high-scenario calls for 3.1% growth in cargo volumes per year, which is actually lower than the 4.1% average annual growth experienced on the Columbia River between 1962 and 2011.

[14] Comments from Port of Portland officials, and the author of the most recent BST forecast for cargo volume indicate that they perceive the high-scenario demand forecasts to be the most reasonable.

reflecting the high degree of uncertainty, there is no way to guarantee that the future will fall within our forecast range, let alone our medium scenario. No one knows exactly how demand for port facilities in the lower Columbia will change in the future. Economist HE Haralambides effectively summarizes the difficulty forecasting port demand, stating:[15]

> "As a result of intertwined and extended hinterlands; abundant land infrastructure and short-sea feedering networks; continuously evolving liner shipping networks; and the infamous `mobility' of the container, demand is very volatile and unpredictable. Port market shares are unstable; investments in one region or country have an impact on another … In such a `fluid' environment, how could one forecast port demand with any degree of credibility?"

Competitive and volatile environments do not support reliable forecasting because outcomes depend on many randomly moving variables. Ultimately, whether or not demand for additional port facilities on the lower Columbia materializes will depend on market conditions – demand (what's produced and consumed in the Portland region), supply (what technologies are used to ship goods, what competing port capacity exists), and price. These factors will inevitably change over the next 30 years in ways that no one can predict, which means any attempt to forecast them should be taken with a grain of salt.

In other words, individual cargo types fluctuate year to year and are difficult to predict with accuracy, but long-term historical trends show that demand for total cargo volumes is less volatile, more predictable, and tends to grow at a pace that is linked to the global economy. While the Port's four public marine terminals are not operating at 100% of capacity today, it is very likely that they will reach the limits of their capacity in the next several decades, as demand increases. Once these facilities reach capacity, or as new opportunities present themselves, the Port of Portland will need to develop new facilities, or else turn away demand.

The Port of Vancouver shares many of the same attributes that make the Port of Portland an attractive place for marine shipping. Thus the Port of Vancouver is a logical place to site new marine terminals, if sites are unavailable in Portland.

From a regional perspective, it makes no difference whether terminal development occurs in Portland or Vancouver. Both cities function as part of the same regional economy, and share the same infrastructure and labor

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[15] Haralambides, H.E. (2002), Center for Maritime Economics and Logistics, "Competition, Excess Capacity, and the Pricing of Port Infrastructure".

pool. However, at a local level, if demand for public marine terminals is shifted from Portland to Vancouver, the City of Portland would lose out on high-paying industrial jobs (and some of the residents that fill those jobs), which would have a detrimental effect on the Portland economy, and a positive impact on Vancouver's. In other words, some amount of economic activity (measured any number of ways: jobs, wages, output, value added, etc.) would occur in Vancouver, rather than Portland, and Portland would miss out on the resulting direct, indirect, and induced economic benefits.

Given the most recent forecasts of demand, and reasonable assumptions on current capacity and the likely size of new terminals, it would appear that the Port of Vancouver has a surplus of vacant industrial land to accommodate their likely future demand, and should the Port of Portland be unable to accommodate forecast growth, the Port of Vancouver could accommodate some (and perhaps all) of that growth. However, officials from the Port of Vancouver stress that a regional strategy will be necessary to respond to future demand for public marine terminals in the region, and if actual cargo volumes reflect the high-scenario projections from the BST forecasts, then the region is likely to have a significant shortfall of suitable land for new public marine terminals.

3.4 POTENTIAL FOR INCREASED EFFICIENCIES

What is the potential for more efficient use of industrial harbor land? The total amount of land inside the Portland city limits is essentially fixed. Unless submerged land is filled to create new dry land, the only way the City can get more land is to expand its boundaries, which is unlikely to occur due to the constraints of surrounding land. Therefore, the City is interested in using its supply of industrial land as efficiently as possible to accommodate the most economic activity.

3.4.1 RECENT TRENDS IN EFFICIENCY OF PORTLAND HARBOR LANDS

We examined trends in efficiency in the Portland Harbor using several measures. Because of data limitations (see Chapter 2 and Appendix A) we focused our analysis on the period between 2002 and 2008. We calculated the economic activity in the Portland Harbor for these years, measured in terms of employment, real market value, value added, and cargo tonnage. We then divided each of these measures by the number of developed industrial acres in the Portland Harbor for each year to get a measure of land efficiency: i.e., some amount of some measure of economic activity, per acre. We then looked as the change in that measure of efficiency over this period of time.

Recent trends in the Portland Harbor show different results, depending on the measure of efficiency used. These results are summarized in Exhibit 3-9.

Exhibit 3-9. Measures of economic activity per acre, Portland Harbor, 2002 and 2008

	2002	2008	AAGR
Value Added	$1,147,614	$1,217,173	1.0%
Real Market Value	$776,715	$838,091	1.3%
Employment	6.21	5.75	-1.3%
Cargo Tonnage	3,873	4,928	4.1%

Calculated by ECONorthwest with data from:
Value Added: IMPLAN
Real Market Value: Metro RLIS
Employment: Oregon Employment Department, Quarterly Census of Employment and Wages
Cargo Tonnage: Port of Portland
Acreage: Metro RLIS and Multnomah County Office of Assessment and Taxation

From 2002 to 2008, developed industrial land within the Portland Harbor increased from 2,757 acres to 2,863 acres, an average of 18 acres per year. Value added, real market value, and cargo tonnage all grew at a faster pace than developed industrial acres. By those measures, land was used more efficiently. Employment in the Portland Harbor, however, declined over that period (both in absolute terms, and per acre of developed industrial land). The measure of efficiency that is chosen makes a difference when evaluating trends in land use efficiency.

The next section explains each of these measures in more detail.

Employment

Employment density is a traditional measure of land-use efficiency. In fact, it is typically the basis for forecasting supply of and demand for employment land for all jurisdictions across the State, as they conduct periodic Economic Opportunity Analyses that are required by State law.

For our analysis, we obtained employment data from the Oregon Employment Department for all businesses in the City of Portland for 2002 and 2008. We used GIS software to isolate all employment located within the Portland Harbor for these two years. Total employment in the Portland Harbor declined from 17,134 to 16,466 over this period, a decline of roughly 111 jobs per year (or -0.7% per year). When adjusting for the number of developed acres in the Portland Harbor, the growth rate falls to -1.3% per year, as shown in Exhibit 3-9.

The Oregon Employment Department QCEW data do have limitations that are worth noting:

- Although the geocoding process OED uses produces accurate results, it is possible that the exact location of some employers could

be wrong by one or two hundred feet. This means that some employment in the Portland Harbor may appear outside the harbor boundary when using QCEW data, and conversely, some employment that is actually outside of the Portland Harbor may appear inside the harbor boundary.

- Some firms have multiple locations, but may only report employment at one location (such as at a company headquarters). Depending on how a company reports multi-site employment, all of the company's employment may be incorrectly reported as being inside or outside of the Portland Harbor boundary.

- QCEW data represents the number of *covered workers*. The data excludes members of the armed forces, the self-employed, proprietors, domestic workers, unpaid family workers, and railroad workers covered by the railroad unemployment insurance system. In the case of the Portland Harbor, the most important of these omissions is likely railroad workers. Other studies have shown a significant economic impact from railroad activity in the Portland Harbor, but these workers are excluded from the data.

We do not wish to imply that tracking employment density as a measure of economic activity is wrong or pointless. It is indeed an important measure, and one that the policy-makers, and the general public find useful for understanding the scale of economic activity. Despite the limitations listed above, the QCEW data is widely recognized as one of the most accurate employment data sources updated on an annual basis with site-specific data on all industries. We are just acknowledging that employment isn't the **only** measure of economic activity, and due to its limitations, other alternative measures may prove more useful for evaluating the economic performance of the Portland Harbor.

Real market value

Real market value is another typical measure of land-use efficiency. The relationship is a fundamental principle of urban economics: higher prices reflect the relative scarcity of some type of land or location, and that relative scarcity causes developers to substitute capital for land (i.e., to build more intensively). Higher-value development typically translates into higher assessed values and property taxes, which is seen as a benefit to local governments.

For our analysis, we obtained real market value for all parcels in the Portland region from Metro RLIS data for 2002 and 2008. Using GIS software, we calculated the sum of the real market value of all parcels within the Portland Harbor. The Harbor saw real market values grow from $2.14 billion in 2006 to $2.40 billion in 2008, an average annual increase of

1.9%. When adjusting for the number of developed acres in the Portland Harbor, the growth rate falls to 1.3% per year, as shown in Exhibit 3-9. However, the US Consumer Price Index grew by 3.0% per year over this same time period, indicating that real market value in the Portland Harbor grew at less than the pace of inflation.

Data on real market value for this time period should be treated cautiously. The local and national real estate markets were booming during this period. Multnomah County real estate values grew at above average rates: more than 8% during this period. The region has now had three consecutive years of declining real market values since 2008; a detailed analysis of property values in the Portland Harbor would probably mirror these broader regional trends. Over a long period (long enough to include the ups and downs of several business cycles—say, 20 years) inflation-adjusted changes in real market value in the Portland Harbor might be a useful indicator of land-use efficiency. For shorter periods, it is not a measure that can be used without interpretation.

Value added

Value added is a measure of economic activity that is not commonly used to measure land use efficiency. Value added, simply defined, is the difference between the sale price and the production cost of a good or service.[16] It is directly comparable to Gross Domestic Product (GDP) at the national level. Value added only considers the final cost of goods and services (the total of four components: wages, business income, other income, and indirect business taxes), and excludes the value of intermediate goods, to avoid double counting.

While value added is a good measure of economic activity at a regional level, the data are not typically collected at smaller geographic levels, and certainly are not available as time-series data at a parcel-specific level. This presents challenges for using value added as a measure of efficiency for the Portland Harbor.

We used the IMPLAN economic modeling software to obtain value added information for the smallest geographic areas possible (zip codes). ECO used the IMPLAN forecast of value added for the four zip codes that overlap the Portland Harbor for 2002 and 2008. Using a geographic boundary that is close to, but not exactly the same as, that of the Portland Harbor means that the measure of value added per gross developed acre should not be viewed as accurate in an absolute sense. But because our

[16] More accurately, the production costs are the outside purchases of materials and services, but do not count payments to employees for wages, salaries, and benefits. Thus, a lot of value added is a "return to labor;" it also includes returns to land and capital.

geographies and data sources were consistent in both years, the measure is still useful for observing trends over time.

Our analysis showed value added in the zip codes approximating the Portland Harbor increased from $3.16 billion in 2002 to $3.48 billion in 2008, an increase of 1.6% per year. When adjusting for the number of developed acres in the Portland Harbor, the growth rate falls to 1.0% per year, as shown in Exhibit 3-9. However, the US Consumer Price Index grew by 3.0% per year over this same time period, indicating that value added in the Portland Harbor grew at less than the pace of inflation.

Cargo

The Port of Portland tracks cargo tonnage on a monthly basis and publishes annual data, dating back 30 years. While the data are only available for Port of Portland public marine terminals, and not privately-operated terminals, they are a good proxy for cargo shipped in the Portland Harbor, and the most comprehensive historical data available. The Port data show cargo volumes (measured in short tons[17]) increased from 10.7 million in 2002 to 14.1 million in 2008, an increase of 4.8% per year. When adjusting for the number of developed acres in the Portland Harbor, the growth rate falls to 4.1% per year, as shown in Exhibit 3-9. Over this period, cargo volumes experienced more robust growth than any of the other efficiency measures used in this analysis. In other words, despite a decline in employment, and modest gains in real market value and value added, the Portland Harbor saw strong growth in cargo volumes per developed acre of industrial land.

Note that is not the same as saying that land in the Portland Harbor is what generated or somehow caused that tonnage to go through the Port.

3.4.2 OPPORTUNITIES FOR INCREASED EFFICIENCIES

The available data provide limited answers for understanding the potential for industrial land in the Portland Harbor to be used more efficiently. To supplement them, we interviewed key stakeholders in the Portland Harbor to solicit their input on (1) ways to measure efficiency, (2) challenges to improving efficiency, and (3) strategies to overcome those challenges.

To conduct these interviews as efficiently as possible, ECO staff met with about a dozen members of the Working Waterfront Coalition (WWC), rather than conducting separate interviews with similarly qualified individuals. Established in 2005, the WWC is an organization of businesses

[17] 2,000 pounds per ton, as opposed to metric tons (1,000 kilos, about 2,200 pounds).

concerned about the environmental health and economic vitality of the Portland Harbor. Members of the WWC who were interviewed for this project, included representatives of the following businesses and organizations:

- The Greenbrier Companies
- CalPortland
- Northwest Pipe Company
- Schwabe, Williamson & Wyatt
- Kinder Morgan
- Smart Decisions
- Port of Portland
- Perkins Coie
- Schnitzer Steel
- Columbia Pacific Planning
- Evraz Oregon Steel Mills

Group members had different views based on their individual experiences in the Portland Harbor, yet the group as a whole agreed on most key points. Although no votes were taken at the meeting, the following points seemed to achieve consensus:

- **The Portland Harbor has many attributes that provide a competitive advantage for water-dependent industrial activity**. The Harbor benefits from its amazing connectivity: the confluence of two rivers, access to domestic markets via two major rail lines, inland waterways via the Columbia/Snake River system, and I-5 and I-84, and access to global markets via the Pacific Ocean. Having all of this connectivity in the heart of the City of Portland, with strong local policies in place to preserve harbor land for industrial use, creates a special place for water-dependent industrial firms. Members of the WWC recognize the importance of the Portland Harbor, and are committed to maintaining and enhancing its competitive advantages.
- **The constrained land supply is an issue**. Members of the WWC recognize that the industrial harbor land supply in the Portland region is fixed, and vacant developable land is rare and constrained. They believe this limitation is an important issue, and one that will become more important over time.
- **Businesses adjust to these constraints by taking measures that have the effect increasing output on an existing site (i.e., of increasing land efficiency).** Such measures include extra shifts, better machinery, tighter processing procedures, and more.
- **There are bigger public policy issues that are affecting demand for new development in the Portland Harbor**. While members of the WWC were concerned about the constrained land supply, they were more concerned with issues affecting demand: Superfund liability and a burdensome permitting process.

- **Superfund liability**. The specter of the Superfund is hanging over the heads of all property owners in the Portland Harbor. They know that their liability for the Willamette River cleanup effort will be significant, but they do not know what their individual liability will be, or when a final agreement will be reached. Members of the WWC expressed concern that it is nearly impossible to sell land in the Portland Harbor for new industrial development until a final agreement has been reached on the Superfund liability.
- **Permitting process**. Members of the group believe the local permitting processes to be time consuming, costly, and uncertain. Such beliefs are typical of most cities. But members of the group who operate facilities across the globe expressed their view that Portland's permitting process is more costly and difficult than most other places they do business. An implication for land efficiency is that permitting, its other intended benefits notwithstanding, makes private sector efforts to improve sites and increase efficiency more difficult. Thus, the City should be sure that the intended benefits are worth the tradeoff, and adjust its permitting process if they do not appear to be.

- **Traditional measures of efficiency do not apply for harbor industrial land, and alternative measures should be used**. Regarding the efficiency of land use, members of the WWC supported the conclusions of this report, that traditional measures (employment, real market value, and FAR) are ill suited for measuring the performance of water-dependent industrial land. The group suggested other measures of economic output, such as value added and cargo tonnage, are more appropriate measures of land-use efficiency in the Portland Harbor.

3.4.3 IMPLICATIONS

In our opinion, the main value of this attempt to measure land-use efficiency was to show what a slippery notion it is, and why simple statements about that efficiency are more likely to derive from opinion and a simple causal model than from an even semi-rigorous empirical analysis. In other words, things are complicated.

For example, many would say that land is being used more efficiently if it accommodates more employees. That kind of definition would be consistent with land-use planning practice and law in Oregon. By that measure, land use efficiency in the Portland Harbor decreased from 2002 to 2008.

But an alternative view—and one more likely to be taken by economists—is that labor (employment) and land are both inputs to a production process. They may be substitutes, or at least there is no necessity that they move together. If a business can use less land and even less labor and still increase its production, it is getting more efficient. If a lot of businesses in an area are increasing their output on the same land they have always been on, then "land efficiency" can be said to be increasing.

In Portland Harbor the data shows mixed results. Despite declining employment, and growth in real market value and value added that is less than the rate of inflation, the Portland Harbor experienced an increase in efficiency as measured by cargo tonnage. If the City is interested in generating the most economic activity on the fixed supply of harbor industrial land, then value added and cargo tonnage may be more appropriate measures than employment. But these measures are inconclusive on whether the harbor increased in land use efficiency from 2002 to 2008.

That last point leads to a suggestion for policy discussion: instead of talking broadly about "land efficiency," talk specifically about changes in certain economic output per acre. Accept that there are different measures of output, and track several of them. That is what we did above. Our conclusion is that some measures of economic output have been increasing faster than vacant land is being converted to developed land, and other measures have not. The region should continue to track these measures, and adopt policies with the intention of increasing measures of economic output faster than vacant land is converted to developed land. This seems like a good objective for people with different passions: economic development, environmental amenity, or smart growth.

Finally, our simple analysis does not answer other questions that could be important for policy, such as (1) What is causing the increase or decrease in economic activity? (2) How does that change compare with other areas in the Portland region, or with other port areas in the U.S.? and (3) What policies would allow for even greater growth?

Chapter 4 SUMMARY OF FINDINGS

This report focused on issues related to the demand for and supply of land for water-dependent industrial employment in the Portland Harbor (about 4,000 acres of land along the Willamette River, from approximately the I-405 Bridge north of downtown to the confluence of the Willamette and Columbia Rivers). Its main conclusions are:

- The City and its partner agencies have spent years in study and data development for the study area. The City's mapping of vacant parcels is detailed and support its conclusion that outside of land already in Port of Portland Terminals, the best potential sites in the study area of a location and size that a new marine terminal would require are Atofina and Time Oil.
- These two sites meet mandatory criteria for minimum size (more than 50 acres) and location (frontage on the Willamette River) for a new marine terminal. That makes them *possible* sites, but not necessarily *likely* sites. The analysis in this report reconfirms findings of previous studies: small size and a lot of site constraints (especially the need to deal with the legal liabilities of prior soil contamination) make development of these sites for a marine terminal challenging.
- Even using the most detailed and recent data available, it is difficult to predict future land needs for public marine terminals with precision. While the potential land need through 2040 varies greatly depending on key assumptions, the medium scenario shows that the Port of Vancouver may, in theory, have enough developable land to accommodate regional growth in cargo volumes through 2040. In practice, however, competing demands for Port of Vancouver lands, competition among and public policies of affected jurisdictions, and the potential for higher growth in cargo volumes all make it possible, if not likely, that the land controlled by the Port of Vancouver would not be able to accommodate all of the regional demand for marine cargo.
- Regarding the efficiency of land use, for the time periods evaluated, we found a decline in employment, modest growth in real market value and value added (though less than the rate of inflation), and stronger growth in cargo volumes per developed acre of industrial land. The mixed results of the various measures of economic activity prevent us from drawing a strong conclusion. The region should continue to track these measures, and adopt policies with the intention of increasing measures of economic output faster than vacant land is converted to developed land. This seems like an objective that could appeal to people with different interests: economic development, environmental amenity, or smart growth.

Appendix A Research Approach

Section A.1 describes why getting clear about definitions and assumptions at the beginning of a study is important. **Section A.2** discusses a *framework* for evaluation: concepts that underlie any evaluation of this type. It discusses (1) definitions of industrial use and industrial land, (2) factors relating to the supply of and demand for industrial land, (3) the role of industrial activity in the economy and (3) the concept of land efficiency: what is it, why does it matter, and how is it measured. **Section A.3** is more specific about the *methods* used for the evaluation (review of previous studies, secondary data, case studies, interviews) and how they are used to address four key questions: about land supply for water-dependent uses, a new marine terminal, the role of Vancouver in the regional land supply for marine terminals, and land efficiency.

A.1 OVERVIEW

The purpose of research on public policy issues to provide information to a public debate about public action. The research *informs* decisions; it does not *make* decisions. Those decisions are usually made by elected and appointed officials on behalf of the citizens they represent.

Some of the issues that require action are controversial. People and groups have different opinions about the extent of the problem, its causes, and best ways it can be mitigated. Ultimately, most solutions that get adopted are a result of debate and compromise. Fundamental to a productive debate about problems and solutions are (1) an agreement on definitions, and (2) clarity about assumptions. Many discussions fail to lead to consensus on action because there was never consensus on definitions. Moreover, it is common for evaluation results to depend more on the assumptions selected than on the data collected in support of those assumptions.

Thus, the analysis in this report starts by trying to describe clearly the context for the questions being asked. That context is a foundation from which to identify data sources and analytical methods. Stated another way, the methods used for evaluation should be consistent with generally accepted ideas about how a regional economy and industrial development work. What do theory and prior empirical work suggest are fundamental contributors to (causes of) economic activity and industrial development, and which of those factors are most closely related to the questions this study is addressing?

Section A.2 provides a *framework* for evaluation: evaluation concepts that underlie any evaluation of this type. Section A.3 then discusses more specific *methods* for data collection and analysis that are consistent with that framework.

A.2 FRAMEWORK FOR THE EVALUATION

This section discusses a *framework* for evaluation. It discusses (1) definitions of key concepts used in the analysis, (2) the role of industrial activity in the economy, (3) factors relating to the supply of and demand for industrial land, and (4) the concept of land efficiency: what it is, why it matters, and how it is measured.

A.2.1 WHY CARE ABOUT INDUSTRIAL LAND?

No city or region exists that does not engage in economic activity. A concentration of economic activity is a defining characteristic of all cities.

A substantial but inconclusive literature investigates which economic activities provide the greatest net benefits to cities. Most of that literature assumes, at least implicitly, that (1) specialization allows consumers to get a variety of goods and services at lower prices; (2) if places specialize where they have comparative advantages, they will (a) produce goods more efficiently and be more competitive, but (b) have to trade to get everything they want; and (3) trading requires having something to trade; it means exporting some goods and services so that that money is available to pay for imports. It is that logic that leads economic development specialists to emphasize the importance of growing and retaining local firms that export goods and services: the payment for those exports brings money into the local economy that, among other things, allows purchases of desired goods and services not provided in the local economy.

Whether industrial activity generates larger economic benefits than other economic activities is a matter of debate in the professional literature of development economics.[1] Most economic development practitioners, however, believe that:

- Manufacturing is central to a strong regional economy (for a variety of reasons related to assumptions about greater value added, export

[1] See a recent debate sponsored by *The Economist* on the motion "This house believes that an economy cannot succeed without a big manufacturing base." (http://www.economist.com/debate/days/view/714; accessed 24 August 2011). The opening remarks of the moderator stated "Our topic for the next few days is one that has divided economic practitioners and commentators for as long as anyone can remember: how important is manufacturing?" Hypothetically, if the U.S. were manufacturing more products being sold abroad, its debt would be less. But are global and U.S. economic conditions such that manufacturing is the comparative advantage of the U.S.; maybe it should be exporting services (e.g., financial, accounting, medical, engineering, and so on) instead. Pro and con arguments are posted on-line and readers vote. Readers voted 3 to 1 in favor of the proposition.

orientation, multiplier effects, average wages, and employment social diversity) and their missions.[2]

- By extension, the supply of land to accommodate manufacturing (i.e., industrial land) is important: too little industrial land hinders the growth or utilization of regional economic capacity. It is not uncommon for economic development discussions to include a statement that a region lacks sufficient land for industrial development at what someone has judged to be reasonable prices.

While proponents of manufacturing and industrial development have arguments and data to support their beliefs, so do groups that have different opinions about the importance of manufacturing relative to other sectors. Some of their arguments: too much industrial land could impose opportunity costs on the regional economy and hinder the growth or utilization of regional economic capacity; land markets and resulting land price should be allocating land to highest and best use, and that preserving land for industrial users at the exclusion of non-industrial users would reduce regional economic well-being.

The disagreement between groups stems from different assumptions about the value of industrial uses on particular parcels of land relative to alternative uses. In debates about public policy on land use and development, advocates for any particular use usually argue that:

- Their preferred use of the lands in question generates greater net benefits for a region than the other potential uses.
- Regions should preserve lands for their preferred use even if other users are willing to pay higher prices for these lands. Stated differently, all sides frequently assume that their uses produce positive externalities for a local economy that justify the effective subsidy associated with keeping other users that might pay more for the lands at issue.
- Where the alternative use would pay *less* for land than their preferred use, their arguments go the other way: the preferred uses generate greater net benefits to a region because the alternative uses will not generate sufficient positive externalities to offset the lost consumer and producer surplus that results from requiring the land to be used for purposes that the market prices do not show to be the highest and best use.

[2] One should note, however, the likelihood of self-selection bias here: local economic development has typically been funded with a mission to retain and attract manufacturing jobs, and people attracted to the field of economic development are likely to start with or acquire that point of view.

The arguments for public-sector involvement in urban land markets (e.g., planning, zoning, urban renewal) are based fundamentally on arguments about external effects that are not incorporated into the market price of land transactions. Proponents for policies favoring industrial land (or any type of land use[3]) might make both sides of the argument: because of the important external benefits of industrial use (1) protect industrial land from being converted to uses that will pay more for that land, and (2) do not prohibit industrial uses from converting other land to industrial uses when it is willing to pay more for the land than those other uses.

This study cannot resolve the longstanding debate about the net benefits of industrial uses and land relative to other uses and land. Rather, *this study starts from the assumption, embedded in the economic development policies of all local governments in the region, that the retention and expansion of industrial sectors is something that the region desires*. The City of Portland specifically addresses industrial land uses in its Comprehensive Plan and Zoning Code. The Urban Development goal of the Comprehensive Plan calls for industrial sanctuaries, where industrial land is preserved for manufacturing purposes exclusively. This stance is reiterated in Goal 5: Economic Development, which identifies retention of industrial sanctuary zones, including maximizing linkages with and within these areas, as a primary objective. These policies are implemented via the city's zoning code, which restricts certain commercial uses in industrial zones and only permits changes to Industrial and Employment Comprehensive Plan designations, if stringent criteria are met. These policies demonstrate the City of Portland's commitment to protecting industrial lands for industrial use. With this commitment in mind, this study then investigates land and in the Portland Harbor to see what capacity they have (given different assumptions about user types and changes in technology and operations) to accommodate industrial users.

A.2.2 DEFINING INDUSTRIAL LAND AND USERS

A.2.2.1 Industrial land

What is commonly referred to as "industrial" land is land designated by a local government (in its comprehensive plan, implemented by its zoning ordinances) to allow (but not necessarily require) industrial uses.[4] Thus, land may be defined by public policy (e.g., plan or zone designation) or by actual uses. Such definitions may lead to an identification of roughly the

[3] For example, the fundamental argument for the preservation for West Hayden Island is that such preservation has external natural and social benefits that make the land more valuable to the region in its natural state than in development.

[4] Much of the overview in section A.2.2 is drawn from previous work ECO has done on industrial lands, especially work for the City of Tukwila, WA.

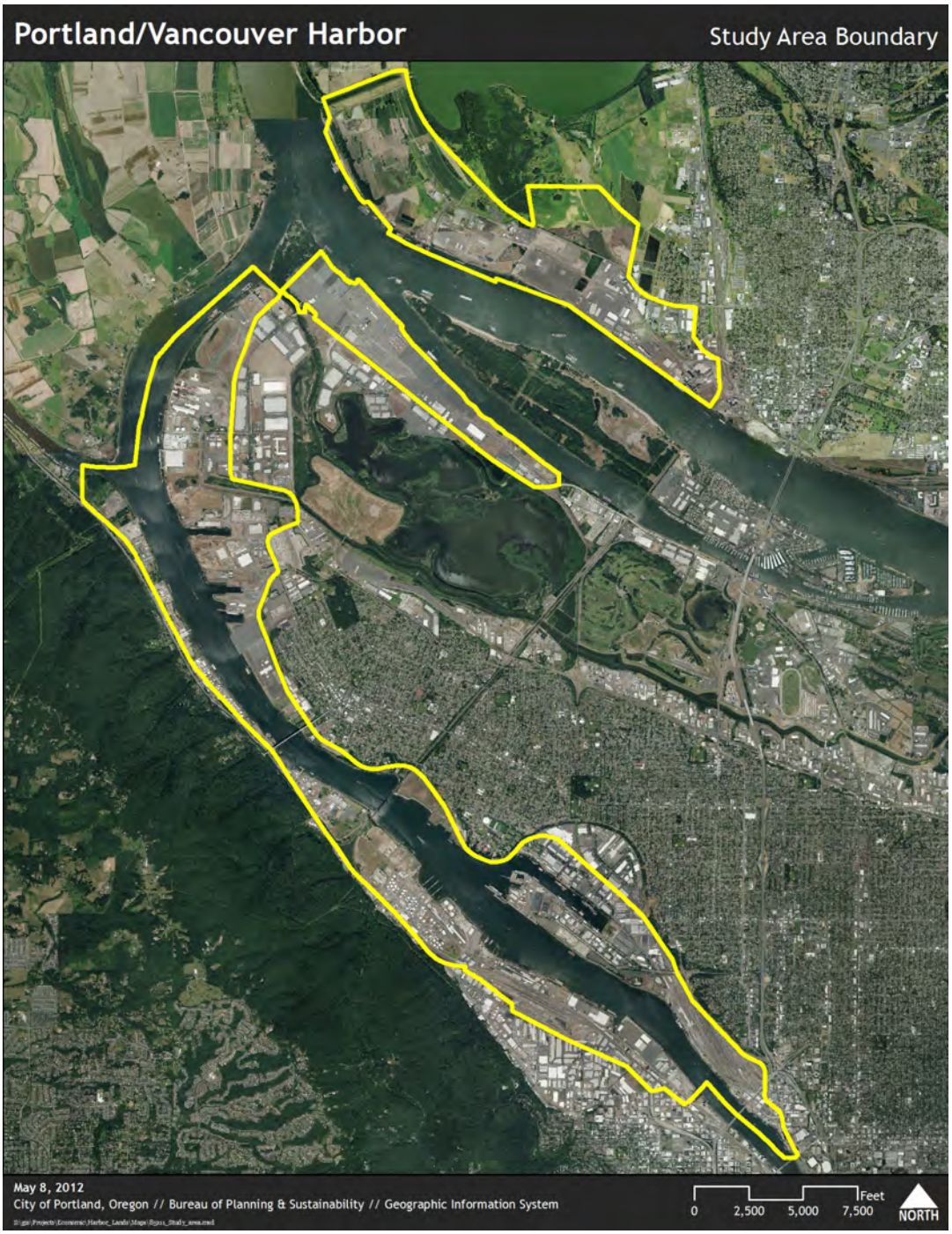
same land, but they are not identical. Industrial uses exist on land not zoned for those uses, and non-industrial uses exist on lands zoned industrial. Either definition, or both, may be appropriate for a particular policy issues.

A smaller subset of industrial land pertinent in this study is "harbor" land. That land could be defined in any of several ways. It could be, for example, land parcels that are within the boundaries defined for this study and also:

- With docking facilities
- Abutting a navigable waterway
- With active water-dependent industries (however "water-dependent" may be defined
- Owned by the Port of Portland
- Any combination of the above.

For this study, we use the City's definition of the "Portland Harbor," based on land designated industrial by the City's Comprehensive Plan in close proximity to the Willamette River. A map of the City's harbor lands is shown below in Exhibit A-1.

Exhibit A-1. Map of harbor lands in Portland



Source: City of Portland, 2011.

A.2.2.2 Industrial users

All industrial users

Land is designated industrial because it meets, or is intended to meet, the needs of the industrial users. These needs typically include proximity to transportation routes (interstate roadways, rail, water ports, airports),

relatively low-cost land (to accommodate the relatively large land needs of many industries), and a location that reduces conflict with other uses.

Industrial users are usually identified as a collection of sectors from the North American Industrial Classification System (NAICS). A recent analysis of industrial land published by the American Planning Association[5] used NAICS codes to define "industrial use" in urban areas. It described a *strict* definition and *loose* definition. The industries included in both definitions are shown in Exhibit A-2.

Exhibit A-2. NAICS codes presumed to be highly correlated with industrial land use

NAICS	Industry
Strict Definition	
23	Construction
31-33	Manufacturing
42	Wholesale trade
48-49	Transportation and warehousing
Loose Definition	
23	Construction
31-33	Manufacturing
42	Wholesale trade
48-49	Transportation and warehousing
221	Utilities
444	Building material and garden equipment and supplies dealers
511	Publishing industries (except Internet)
517	Telecommunications
518	Internet service providers, web search portals, and data processing services
562	Waste management and remediation services
811	Repari and maintenance
812	Personal and laundry services

Source: *Planning for Industry in a Post-Industrial World*, Marie Howland. See text for full citation.

These sectors share some basic characteristics. First, they are often referred to as part of the "traded" sectors, presumably because they have a greater propensity to be export-oriented and involved in direct creation of physical goods.[6] Second, they generally have the same building and land needs and site requirements. They cannot typically locate in high-rise office space or in storefront retail space, or in converted homes. This limitation is in part related to possible external effects that can make them unattractive neighbors; they can generate more noise, dust, smells, and visual impacts than other uses. (But many industrial uses can have *fewer* external impacts

[5] Howland, Marie. 2011. "Planning for Industry in a Post-Industrial World: Assessing Industrial Lands in a Suburban Economy." Journal of the American Planning Association. Winter, Vol 77, No 1. pp 39-53.

[6] But note that this distinction has always been fuzzy and is getting blurrier in today's economy. Many businesses in the Services sector are export-oriented: e.g., business services and tourism. Moreover, the notion of "basic" is also fuzzy and increasingly questioned.

of some types than businesses in other sectors have: e.g., on traffic). The limitation also relates to their general need for cheap land and proximity to transportation routes.

The industrial sectors shown in Exhibit A-2 are defined by industrial activities, but the list does not necessarily reflect the types of businesses that require industrial land. For example, many jobs in the construction industry are not physically located at a central, industrial location, but instead operate on sites throughout the region. Similarly, many utility jobs in the region are often in office towers in the Central City, and do not require industrial land. Therefore, the list of NAICS codes that constitute industrial uses (as defined by the American Planning Association) do not necessarily reflect the range of businesses that would have demand for industrial land in Portland.

Water-dependent industrial users

For this analysis, more important than "all industrial" users is the subset of industrial users that are either "water dependent" or "water related." Every type of job must, by definition, fit into one of 17 broad ("two-digit") NAICS categories. But at the most detailed level (six-digit) there are about 1,175 categories. If one wants information about "water-dependent" employment, one must define it as some combination of NAICS codes, and those codes, even at the finest level of disaggregation, may have firms that one might call water-dependent and others one would not. No standard data source defines business this way; one has to either combine NAICS codes or do primary research (e.g., site evaluations of phone surveys).

Even seemingly obvious NAICS codes like 3366, ship and boat building, may not be completely populated by water-dependent firms: smaller pleasure boats may be built or refurbished for shipping by truck or rail. And codes that may appear to have little to do with water (e.g., 3112, oil seed and grain milling) may have reasons to be close to the water because of the importance of bulk shipment. This report does not conduct analysis that requires a definition of water-dependent industrial users, and because of the difficulties of defining water-dependent industries by NAICS codes, we have not attempted to do so.

The City of Portland defines river-dependent uses as those that can be carried out only on, in, or adjacent to a river because they require access to the river for waterborne transportation or recreation. Included is any development, which by its nature, can be built only on, in, or over a river. The zoning language, however, does not distinguish specific water-dependent industrial uses.

Public marine terminals

Our analysis treats public marine terminals (i.e., the Port of Portland facilities) differently from other users of harbor industrial land. These port terminals function as public infrastructure, facilitating economic activity for other industries in the region. In this report, we examine certain questions related to broader harbor industrial land efficiencies, and other questions related to land supply specifically for new public marine terminals.

A.2.3 EVALUATING THE SUPPLY OF AND DEMAND FOR INDUSTRIAL LANDS

This section looks at how cities answer critical questions like: How much developable industrial land is there? How is it likely to be used? Will it be enough for the expected demand in the future?

A.2.3.1 Supply of industrial land

The total amount of land inside the Portland city limits is essentially fixed. Unless submerged land is filled to create new dry land, the only way the City can get more land is to expand its boundaries. But such expansions are unlikely, because the City is mainly surrounded by rivers, protected areas (Forest Park), and incorporated municipalities.

Thus, for the City of Portland, the question of land supply focuses on how much land is vacant, partially vacant, or underutilized, and how much land is constrained (by environmental contamination, environmental overlays, and other issues).

The Bureau of Planning and Sustainability (BPS) at the City of Portland has done extensive work to characterize the land supply in the Portland Harbor. It uses state-of-the-practice procedures (e.g., GIS data layers) consistent with Oregon planning law (e.g., statutes and administrative rules for statewide Goals 9 and 14).

Exhibit A-4 shows the typical process for categorizing and evaluating land supply. In summary:

- All land is either fully developed or not.
- If not, it is either (1) under development (in the pipeline), (2) buildable, or (3) not buildable (because of prohibitive physical or policy constraints.
- If buildable, a parcel of land may be (1) fully vacant, (2) partially vacant, or (3) potentially redevelopable.

- Buildable land in any of those categories has a *capacity* to accommodate new development. That capacity is defined by public policy and may be partially constrained by public policy.

Exhibit A-4. Conceptual framework for buildable land inventory and capacity analysis

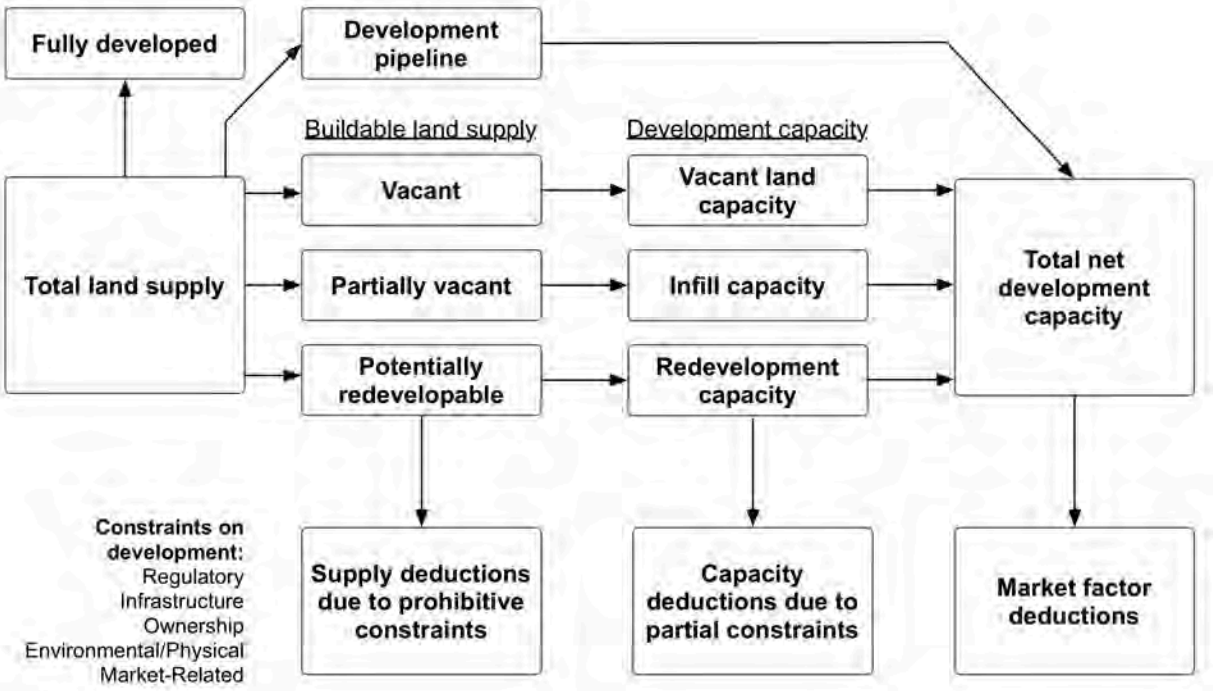


Fig. 7-4 Land supply and capacity analysis process. *Source: Moudon and Huber 2000. This material is used by permission of John Wiley & Sons, Inc.*

The concepts and definitions illustrated in Exhibit A-4 are relatively well understood in Oregon planning practice. Our investigation suggests that the extensive work by BPS on the land supply in the Portland Harbor generally accepts these concepts, even if its definitions and methods are slightly different.

A.2.3.2 Demand for industrial land

Forecasting demand for industrial demand begins by identifying what types of users will consider locating on land designated industrial. In general, industrial land must accommodate most job growth in "industrial" sectors. It must also accommodate some job growth in "non-industrial" sectors.

Not all jobs in "industrial" sectors use industrially-designated land. For example, a head office of a manufacturing company may be in a downtown office/commercial zone rather than in an industrial part of a city. Another

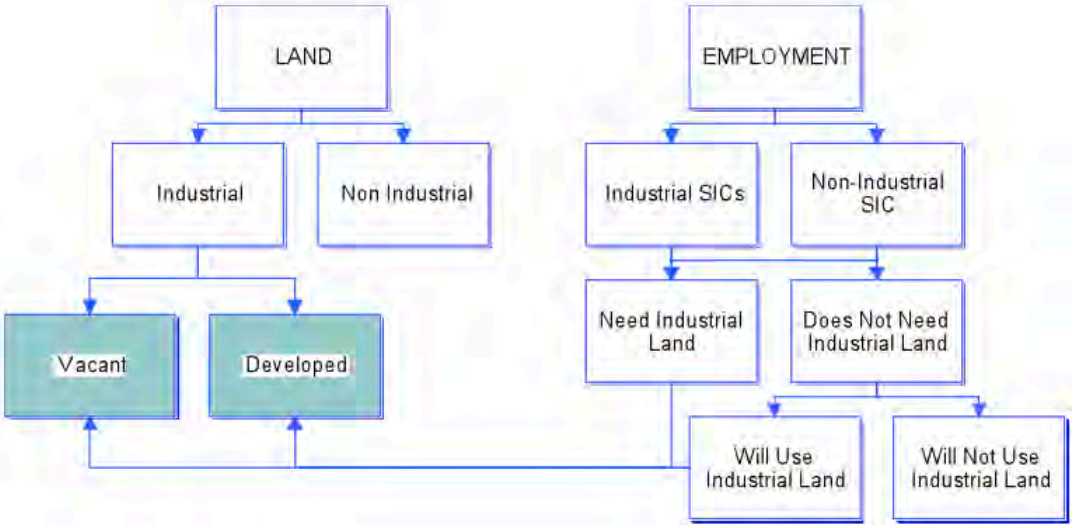
example is that some firms in the industrial sectors are allowed to locate in general commercial or mixed-use zones and may do so.

Not all industrially-designated land is used by "industrial" sectors. Some businesses that are referred to by the NAICS system as "services" need industrial land (for example, auto repair) because they share the same need for a location where land is cheap and where their activity is compatible with the surrounding neighborhood. In addition, non-industrial uses that don't necessarily *require* the characteristics of industrial land (low price, access to transportation, etc.) may nevertheless locate there if (1) they are not prohibited from doing so, and (2) the market conditions allow them to out-bid industrial uses. Big-box retailers with sufficient drawing power may not need surrounding retail: they can stand alone in industrial areas, where they may find cheaper land and better access to customers and suppliers. Services may locate in an industrial area to serve food and other convenience needs of industrial workers. Residential uses may also find an industrial area attractive if the environmental effects of industry are not too deleterious and the location is convenient for residential living. Most significantly, given the focus of this study, professional offices and other commercial uses may locate on industrial land because they can out-bid industrial uses.

This is one of the City of Portland's concerns: that large amounts of industrial land will convert to non-industrial uses. The City has already taken actions to alleviate this concern. Existing policies in the City's Comprehensive Plan and Zoning Ordinance (see Section A.2.1 of this document) aim to prevent the use of industrial land for non-industrial uses. Industrial sanctuary zones, for example, preserve land zoned as industrial for industrial purposes exclusively. The code does, however, allow for conditional use of industrial land for non-industrial purposes in these same areas.

Exhibit A-5 shows this relationship between "industrial" uses (as measured by industrial employment) and "industrial" land, and why studies of industrial land like this one are tricky.

Exhibit A-5. How industrial and non-industrial businesses use industrial land



Source: ECONorthwest, 2011.

On the "Land" side, the analysis in this study is concerned with only land designated as industrial, and is concerned with both vacant and developed industrial land. On the "Employment" side, the study cannot limit itself to industrial NAICS codes[7]: non-industrial users use industrial land. It also cannot limit itself to a subset of businesses that in some sense "need" industrial land, because many businesses that fail to meet whatever need criteria we might develop will still be users of industrial land.

In Oregon, state law requires that cities provide adequate land for 20 years of forecasted economic growth (Goals 9 and 14 of the statewide planning goals). As a matter of practice, (1) the common measure of economic growth used in a 20-year forecast is employment, and (2) some estimate of employees per developed acre, by broad industry type (e.g., retail, office commercial, industrial), is used to convert forecasted future employment to needed acres of land.

For several reasons related to market conditions and public policy, it is possible for (1) employment density to increase over time, and (2) an increasing amount of new employment-related development to occur as an intensification of development on an already developed parcel (rather than as new development on a "greenfield" parcel). If a region uses its land more "efficiently" (due to public policies, market forces, or a combination of both), then the ratio of employees per acre should increase, which would reduce the amount of demand for land in the forecast period.

[7] Formerly SIC codes, as shown in Exhibit A-3.

While employment is typically the measurement used to forecast demand for land, it may not be the best measurement for forecasting industrial land demand. Later, this appendix discusses other measurements that could be used to forecast demand, and to measure land efficiency.

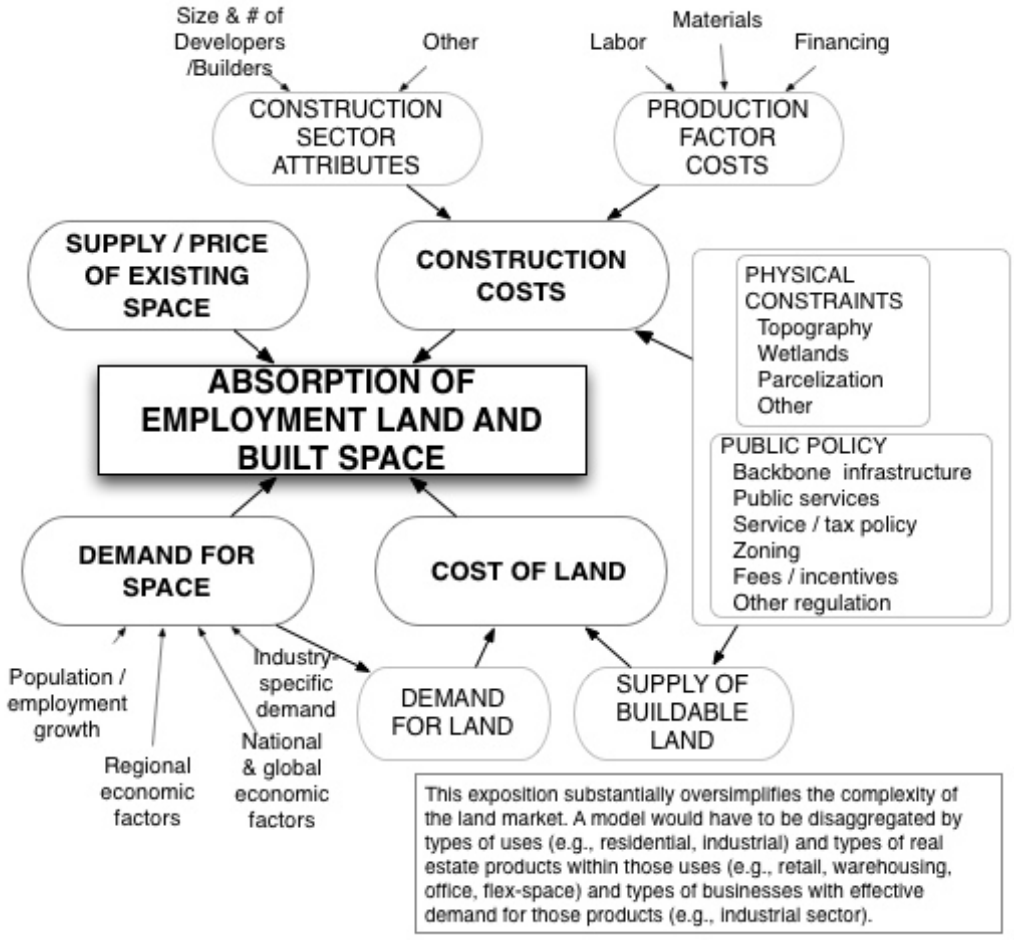
A.2.3.3 Comparing supply and demand

Factors affecting demand and factors affecting supply are not independent: in theory those factors interact to result in a market clearing price. Businesses and developers do not necessarily choose the cheapest land or the best (most expensive) land: they choose the land with the best value. In other words, price makes a difference. Below are some key points that describe how factors of supply and demand interact to determine where industrial development occurs:

- In any production processes, businesses try to economize on scarce (relatively expensive) resources by finding substitutes or changing the production process. For example, if serviced lands become scarcer, their prices should increase and businesses will substitute other factors (e.g., equipment) for land. In other words, as land gets scarcer, its price should rise and it should get used more intensively.
- With a fixed supply of total land, the supply of vacant, buildable land will decrease as development occurs.
- As the supply decreases (and as the real costs of providing services to that land increase), the price of land for new development will increase.
- As the price increases, users of land (businesses and developers) will try to economize on the use of land. They may do that by (1) using the available land in Portland more intensively, (2) choosing locations in other cities in the region more distant from the center that have more and less expensive buildable land, or, if no land elsewhere in the region has the desirable attributes at an affordable price, then (3) locating somewhere other than the Portland region.

Exhibit A-6 shows some of the many factors that affect the absorption of employment built space and land.

Exhibit A-6. Factors affecting the price and absorption of vacant land



Source: ECONorthwest, 2011

In the Portland Harbor, for example, land may be more expensive (cost per acre) than at the region's periphery. But land in the Portland Harbor is also close to the downtown, labor markets, port terminals, and interstate highways. If it is only a little more expensive, it may still be a preferred location for growth. If it becomes too expensive, then prospective industrial users may locate elsewhere, on land that provide a better value. If there is no land within the Portland region that provides this value, then the prospective industrial users may locate in other regions instead of Portland.

In an idealized market, such a value differential would be spotted by developers and businesses. In their efforts to secure the land they would bid up its price until it had little net advantage relative to all other land. In that idealized situation, all industrial land is equally suitable and every sub-area will, over time, get its share of new development.

But more realistically, a particular firm may have particular needs that are best met by land at a certain location. Though businesses on average

may be filling to pay only, say, $5 per square foot for the land, such a firm may be willing to pay, say, $8 per square foot. Thus, the question becomes one of making some assessment of whether the particular package of land attributes for properties in the Portland Harbor is going to be especially desired by some subset of businesses (e.g., water-dependent businesses).

A.2.4 "EFFICIENT" USE OF INDUSTRIAL LAND

Efficiency is a measurement of how much output is produced per unit of input. Thus, an efficiency measure requires a numerator (output) and a denominator (input). In this case, we care about the amount of economic activity (output) generated per acre of land (input). The denominator—acres—is relatively clear in theory and straightforward to measure. Thus, the bigger challenge is in choosing and measuring the numerator: economic activity. This section describes the various ways to measure efficiency of industrial land, and why some of these measures may be more appropriate than others.

If land use in an area becomes more efficient, then any given amount of economic activity will require less land than it would have otherwise. In an area with a fixed supply of industrial land, like the Portland Harbor, it makes sense to consider ways to use the land more efficiently to accommodate more economic activity. Typical measures of efficiency, however, may not be ideal for evaluating industrial land and marine terminals.

A.2.4.1 Traditional measures of efficiency

Typical measures in the numerator of an efficiency measure of land use include employment, real market value, and built space. These measurements look at the amount of economic activity occurring on a property. In general, advocates of economic development would prefer larger buildings, with higher value, and more employees to locate on a given parcel of land. But these measures of efficiency tend to give relatively low marks to industrial development.

Harbor industrial development tends to have low floor-to-area ratios (FAR) and a relatively low number of jobs per acre. Compared to an office tower, an acre of industrial development is likely to have much lower assessed value, employment, and gross square footage. Thus, measures of the efficiency of employment land based on any of these measures in the numerator would all tend to improve if industrial land were converted to commercial uses.

But industrial lands in general, and harbor lands in the case of this study, are clearly an important piece of the regional economy. If every

jurisdiction allowed vacant industrial land to convert to commercial uses on the assumption that some other jurisdiction would provide the industrial land, the regional supply of industrial land would get smaller quickly and, at the margin, industrial expansion would be slower than it would have been. Land with port access is a particularly important and relatively rare component of all regional industrial land. Marine terminals provide access to other markets, facilitating commerce, and allowing traded-sector businesses to export their goods to other markets.

In the context of the discussion in A.2.1 above, land with port access is necessary for the development of port and port-related facilities, and such facilities may have large external benefits for the region. Since the benefits are external (and, by definition, cannot be readily captured by owners of the land), they do not influence the price that private developers will pay for land. Thus, land prices that industrial users are willing to pay for land in the Portland Harbor probably do not reflect the full value to the Portland region of having that land in industrial use.[8]

A.2.4.2 Key issues for measuring efficiency

Regardless of what measure of economic activity is used in the numerator for calculating efficiency, there are fundamental issues that present challenges for defining and measuring efficiency and changes in efficiency for industrial land.

Efficient use of land versus efficient production of goods and services

Fundamental to land-use planning regulation in Oregon is the assumption that sprawl is inefficient, and that reducing sprawl saves valuable natural land (for farming, forestry, and the provision of ecosystem services) and promotes more intensive use of urban land (i.e., more density). This system intends to promote more efficient use of land. Denser development, however, does not necessarily mean more efficient production of goods and services for all types of businesses. Put another way, a public-sector mandated increase in certain measures of intensity of industrial land use (e.g., minimum FAR) may or may not increase the efficiency of a particular operation (measured by value added, employment, etc.).

This issue is critical when discussing land-use efficiency in the Portland Harbor. For some (perhaps many) industrial businesses located in the

[8] Proponents of other uses could make the same argument: that their external benefits are substantial and not capitalized in land value. A full technical evaluation of the relative net benefits would require extensive empirical work, is unlikely to be definitive, and is beyond the scope of this study.

Portland Harbor, pressure to develop at greater density is unlikely to increase the efficiency of their operations.

Site-specific land efficiency versus regional land efficiency

Site-specific efficiency refers to the economic activity on an individual site. If a user of a one-acre industrial parcel were to double some measure of economic activity (e.g., employment, value added, etc.) without developing more land, one could call that an example of increasing the efficiency of industrial land as a factor of production. This is often what is meant by increasing efficiency.

But what if a parcel serves the regional economy: in other words, what if it provides external benefits? For example, a warehouse may allow other businesses in the region to transport their goods. The warehouse could appear unchanged over time by many measures of economic activity (e.g., assessed value, employment, FAR), but it may be accommodating more goods for other businesses in the region, allowing these businesses to grow.

There are at least three implications. First, standard measures of economic activity like employment may be the wrong ones. The warehouse and its employment may not have changed: it may be that both are now more efficient because the warehouse is now processing more goods because of increases in demand, changes in technology, or some other factor. Second, even if the production per acre for that warehouse were to remain the same in terms of tons or cubic feet of cargo processed, the value of that cargo may have increased (so an argument can be made that efficiency should be measured as value, not tonnage). Third, and related, even if the value of cargo did not change much, its transshipment is a necessary component of what may be a different and rapidly growing industrial sector that is contributing to the regional economy.

An example of this regional land efficiency is the Port of Portland itself. A port's economic impacts extend well beyond its land and the land that surrounds it. In Oregon, the economy of eastern Oregon and Washington depend on the port facilities in the Portland area to ship grain and other products. Looking just at measures of production on land around a port can easily miss the point: a port is a regional facility that may benefit many businesses a great distance from the port. Thus, it may be "efficient" for a port to have relatively low-density uses that allow efficient transportation of goods, facilitating economic growth throughout the region.

Economies of scale and threshold effects

For many enterprises, as they grow for small and start-up to bigger and established, they achieve economies of scale. There are start-up costs that they have to incur, and there are relatively fixed ongoing operating costs

that must be amortized. It is common for costs per unit of output (or, in the case of transshipment) throughput to decline.

Economies of scale (because of declining marginal costs) almost certainly exist for port facilities. There is a large initial capital investment in facilities: once they are there, they can be used more intensively at a low additional (marginal) cost per unit of activity (e.g., tonnage handled). As more facilities, even of different types are available, the per-unit cost of operation and maintenance can decrease, and the attractiveness of and demand for the facilities may increase for users.

Politically, getting to some scale is probably important for users and for higher levels of government (state and federal) that provide financial assistance to ports: in the case of Portland especially, for dredging the Columbia River. In other words, there may be subtle or not-so-subtle threshold effects: if port operations drop below some level, its ability to sustain even those lower levels of activities may be seriously diminished.

Markets versus public policies

Many economists would argue that the best judges of the efficiency of a particular industrial use at a particular site are the owners and managers of the use in question. If they believe that they can operate more efficiently by adding employees, buildings, or equipment to their site, they will do so. If they believe they can profitably increase production without adding land, they will do so. If their land and land around their site has locational characteristics that make it particularly valuable for certain types of production, and if there are a number of businesses involved in that type of production, its price will rise, and the price is a measure of the increasing value (efficiency) of the land in production.

That argument, however, does not address a concern of cities like Portland about that market-based process: what if non-industrial and non-water-dependent commercial uses (e.g., offices and retail) outbid industrial uses for the land? Yes, the land value has increased (as have the cities' property-tax revenues), but perhaps at a greater cost to the regional economy.

A.2.4.3 Alternative measures of the output component of efficiency

In short, to address the question about the efficiency of the use of industrial land in the harbor area, one needs a definition of efficiency that makes sense for industrial land. Such a definition must make sense not only in theory, but also in the context of the data and methods that are available for measuring efficiency. We suggest two alternative measures of efficiency

that are most appropriate for harbor industrial land: value added, and tonnage of cargo.

Value added

Proponents of the industrial and manufacturing sectors point to its potential for high "value added." Value added means that the value of outputs (per unit or in the aggregate) less the cost of inputs purchased from other firms used to create output.[9] In economic terms, industrial activity is a "goods-producing" activity, and is generally considered to have strong potential for value added. A service industry, in contrast, tends mainly to sell transformed labor services. There is value added, of course, but this value added is often lower than in a goods-producing setting.[10]

Setting aside cross-sector comparisons, value added may be a better measure of output over time *within* sectors than employment or built square footage. A measure of the efficiency of a fixed supply of industrial harbor land would be the amount of value added generated per acre for businesses located in the harbor.

Cargo

There is a reasonable argument that much of the industrial land in the Portland Harbor area serves a regional need for transshipment. Therefore, a regional measure of transshipment activity might be appropriate for measuring the efficiency of such land. Some measure of cargo (e.g., tonnage, volume, value) is an obvious choice. Because data are more readily available, we suggest tonnage of cargo as an alternate measurement of land-use efficiency in the Portland Harbor.

The economic activity occurring on a parcel is only part of the impact that land has on the regional economy. Many users of harbor industrial land facilitate economic activity throughout the region. While most measures of efficiency fail to measure this broader impact, tonnage of cargo is a measurement that is consistent with the idea that port facilities have broader regional economic benefits.

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[9] In that sense, value added is a measure of a firm's contribution to GDP. Another way to think about this is that everything that a firm itself puts into the production of a product (primarily the labor of its employees and capital) "add value" to the raw materials and intermediate goods and services it purchased to make its final product.

[10] Often lower, but not always lower. Service sectors that use highly-trained human capital may have high productivity and high value added. In addition, as technology increases the productivity of physical capital, less manufacturing and construction activity is required to produce the same output. Communication systems, for example, are much more productive than they were in the past, but require much less "brick and mortar" type activities and, hence, less construction activity.

Methodologically, such an analysis should be done for the Portland Harbor in the aggregate, not for individual businesses or parcels. For this measure, it does not matter how much cargo occurs on a given parcel; it matters how much the amount of tonnage per developed acre of land is increasing.

A.3 METHODS

Section A.2 is a *framework*: it is about definitions and concepts related to the issues this study is investigating. It is a basis for selecting specific methods (data and analytical approaches) for addressing the four questions posed:

- Are the methods the City used to estimate the location and amount of vacant, partially vacant, and potentially buildable industrial land in the Portland Harbor area likely to yield reasonable estimates?
- How suitable for a public marine terminal are the few sites in the Portland Harbor that have been identified by the City as having the potential to accommodate such a terminal?
- What role can the Port of Vancouver play in accommodating forecast demand for cargo volumes in the Portland region?
- What is the potential for more efficient use of industrial harbor land?

We describe the methods we used to answer those questions in the rest of this section.

A.3.1 GENERAL DATA SOURCES AND TECHNIQUES

To conduct our analysis, we used the following data sources:

- **Existing studies**. Extensive analysis has been conducted regarding the Portland Harbor, industrial land, and port terminals. Local governments and service districts in the region (e.g., Metro, the City of Portland, the Port of Portland) are constantly evaluating past economic growth patterns, and planning for future economic development opportunities. These efforts result in a library of reports and studies addressing different aspects of the regional economy. These recent (as well as ongoing) efforts contain useful information for the analysis. *The scope for this study emphasized synthesizing and interpreting existing data over collecting new data*. Thus, ECO reviewed these related research efforts, and pulled their key findings into the analysis where appropriate.

  The City of Portland provided ECO with a list of over 30 recent, relevant documents. After an initial review of all of these documents,

ECO selected a subset of documents of particular value to its analysis:

- Portland Economic Opportunities Analysis (2010)
- West Hayden Island Economic Foundation Study (2010)
- West Hayden Island: Marine Cargo Forecasts & Capacity Assessment (2010)
- Portland Vancouver Trade Capacity Analysis (2006)
- West Hayden Island Planning Document
- Oregon Commodity Flow Forecast (2005)
- Portland's Working Rivers: The Heritage and Future of Portland's Industrial Heartland (2008)
- Port of Portland annual reports

ECO focused on data and text related to historical trends and future projections for economic growth: in the region in general and the Portland Harbor in particular.

- **Secondary data sources**. ECO incorporated many secondary data sources into its analysis.[11] As with "existing studies," the objective is to leverage past research efforts to answer the questions posed in this study. Examples of secondary data sources we used are:
  - Buildable Lands Inventory (City of Portland). This source includes multiple data layers in the City's Geographic Information System (GIS)
  - Port of Portland Marine Terminal Statistics
  - Multnomah County Assessment & Taxation
  - RLIS (Metro)
  - Quarterly Census of Employment and Wages
  - IMPLAN
- **Interviews**: Many people in the Portland area have special knowledge of, and interest in, the Portland Harbor. ECO interviewed individuals from both the public and private sectors, and reviewed notes on past interviews that had been conducted for recent related studies. Interviewees included:

[11] Secondary data sources are ones collected and readily available by someone other than the user (in this case ECONorthwest). Typical secondary sources are government agencies (e.g., U.S. Census, ODOT, Metro, Port of Portland).

- Port of Portland officials
- Port of Vancouver officials
- Authors of relevant studies and reports
- Members of the Working Waterfront Coalition
- Other local economic development professionals

Data from these sources were used to address the three specific questions that are the focus of this study. The next sections explain how.

A.3.2 EVALUATION OF PRIOR EFFORTS TO IDENTIFY LAND SUPPLY IN THE PORTLAND HARBOR

The City asked ECO to evaluate whether the methods the City used to estimate the location and amount of vacant, partially vacant, and potentially buildable industrial land in the Portland Harbor area likely to yield reasonable estimates? More specifically, the question was whether it is reasonable to assume that the two sites that the City identified (Atofina and Times Oil) are the only two in the Harbor study area (as defined in Exhibit A-1) that are of a size and location that they *might* be suitable for a new Port of Portland marine terminal?

To answer that question we needed an estimate of the minimum feasible size of a marine terminal. Maul, Foster & Alongi provided that estimate (documented in Section 3.2 of the report and Appendix B): 50 acres. We then looked for 50 acres of vacant land with waterfront access in the study area by:

- Reviewing studies summarizing industrial and harbor land supply: *Industrial Districts Atlas* (2004) and *Harbor ReDI Industrial Sites Analysis* (2009).
- Reviewing GIS shape files and cross-referencing to Google Earth aerial photos (August 2011).
- Discussing methods with BPS staff, and comparing those to standard methods for developing land inventories and identifying buildable land.

A.3.3 ADDRESSING THE POTENTIAL SITES FOR NEW MARINE TERMINALS

Much of the analysis in this report deals with the supply of harbor industrial lands in general: it includes both public and private ownership and uses of the land. This task deals specifically with land supply for new, public, marine terminals.

To determine which sites might best accommodate a public marine terminal, we began by identifying the technical site requirements for a marine terminal. ECO interviewed representatives of the Port of Portland to identify their ideal site requirements, as well as which of these requirements could be reduced while still accommodating a working port facility. ECO compared these site requirements with the findings of the Worley Parsons, a consultant to the City evaluating the potential site design of a new marine terminal on West Hayden Island. Finally, ECO turned to internal team members with experience running west coast ports, and looked for creative ways to adjust these site requirements to create a working terminal on smaller or otherwise constrained sites.

BPS staff identified only two sites that could potentially meet these criteria. ECO, reviewed the sites identified by the City of Portland, and evaluated maps of the Portland Harbor, including zoning, infrastructure and aerial photographs. Our preliminary review confirmed the City's findings, that most of the Portland Harbor has active development on it, and these two sites have the greatest opportunity to accommodate new public marine terminals.

The ECONorthwest Team, including Maul Foster & Alongi, Inc., toured these sites with BPS staff. Maul Foster & Alongi, Inc. conducted a visual inspection of the sites, documenting conditions affecting the suitability of each site for the proposed development. Key factors considered in our analysis were: site access, existing uses, natural features, and contamination/remediation. After conducting this site visit, we developed a set of criteria for evaluating site feasibility for typical port terminals. This set of criteria is included with this document as Appendix C.

Using these criteria, Maul Foster & Alongi evaluated the potential opportunities and constraints of these sites to accommodate development of a public marine terminal. A cursory site visit is insufficient to make a final determination of site feasibility. Nonetheless, our methods are consistent with our scope and budget, and are sufficient for identifying major opportunities and constraints for these potential sites, and making a preliminary determination of site feasibility.

A.3.4 ADDRESSING THE ROLE OF VANCOUVER IN HARBOR INDUSTRIAL LAND SUPPLY

The third question we were asked by the City is: What role can the Port of Vancouver play in accommodating forecast demand for cargo volumes in the Portland region? To answer this question, we used a combination of interviews with port officials and reviews of past reports.

We began by attempting a data-driven analysis. In principle, if we knew the capacity of existing marine terminals in Portland and Vancouver, and subtracted the forecast future demand for these areas, then we could identify the amount of demand that could not be accommodated by existing facilities. This demand (in tons of cargo) could then be translated into the acres of land necessary for new terminals to accommodate this growth. Comparing the required acres to support new terminals with the available land supply in the Portland Harbor and in Vancouver, we could identify how much of Portland's demand might need to be accommodated in Vancouver, and whether or not Vancouver had sufficient land to accommodate it.

The specific steps in our analysis, and detailed tables showing our results are contained in Appendix C: Analysis of Harbor Land Capacity and Demand, Portland and Vancouver. In short, we relied on the following data sources:

- Capacity of existing facilities: Estimates for the public marine terminals in the Port of Portland were taken from the *West Hayden Island Economic Foundation Study*, prepared by Entrix for the City of Portland in May 2010. These estimates were produced in interviews conducted by Entrix with Port of Portland staff. For estimates of capacity of private terminals in the City of Portland, as well as all terminals in the City of Vancouver, we relied on historical data on cargo volumes reported by BST Associates in their *Portland and Vancouver Harbor Forecast Update*, prepared for the Port of Portland in February 2012. Our estimates were confirmed and refined through interviews with Port of Portland officials.

- Future cargo demand: Estimates of cargo demand for all public and private terminals in the cities of Portland and Vancouver in the year 2040 were taken from the BST Associates *Portland and Vancouver Harbor Forecast Update*. These forecasts included a low and high scenario.

- Acreage necessary for new terminals: Estimates of the acreage required for new marine terminals were taken from a variety of sources, including the *West Hayden Island Economic Foundation Study* (Entrix, 2010), the Draft Report on *Operational Efficiencies of Port/Terminal World Wide* (Worley Parsons, 2012), and the Maul Foster and Alongi evaluation criteria included with this report as Attachment B.

- Available land supply: Finally, estimates of available land in the Portland Harbor are based on our own analysis of developable sights, described in Sections A.3.2 and A.3.3. Estimates of available

land in Vancouver, were based on the *West Hayden Island Economic Foundation Study* (Entrix, 2010), and verified through GIS analysis, and conversations with officials from the Port of Vancouver.

The data-driven method described above has many advantages: it is a logical way to conduct the analysis, it relies on the best and most recent data and forecasts, and with any one-set of assumptions used in the analysis, it results in a definitive answer of the acres of land needed for new terminal development. However, there is one major limitation to this method: it relies on so many assumptions, which can be pulled from such a broad range, with each assumption compounding on all previous assumptions, that using different sets of reasonable assumptions can create largely different results.

Therefore, our analysis uses the data to establish a high and low boundary for the potential land need, and describes a "most-likely" scenario that falls between the two extremes. In order to give these numbers more context, and to help us arrive at the most-likely scenario, we also conducted numerous interviews with representatives of the ports of Portland and Vancouver.

A.3.5 ADDRESSING THE POTENTIAL FOR INCREASED EFFICIENCIES

Section A.2.4 provides a context for defining and evaluating the efficiency of the use of industrial land. This section builds on that context to describe specific data and analytical techniques that this study uses.

The City is interested in knowing if industrial land in the Portland Harbor can be used more efficiently in the future. To answer we looked at recent economic trends in the Portland Harbor and in the City of Portland as a whole for changes in land-use efficiency for industrial users. For this analysis, we considered several measures of output in an efficiency measure: employment, real market value, value added, and tonnage.

Ideally, we would like to have data with a long time series (20 – 30 years) for each efficiency measure. But changes in the type, definition, and collection of data make it impossible to get consistent time-series data for both the numerators and denominators of efficiency measures. Our method is an approximation based on available data. We create different measures of efficiency for two different time periods: (1) 2002 – 2008, when detailed and consistent data are available on both output and land area, and (2) 1960 - 1997 when the Port of Portland did occasional studies of its land and activity.

For 2002- 2008 we began by identifying all parcels in the Portland Harbor using GIS. We examined data from two different years: 2002 (one of the earliest years that data are available using NAICS codes), and 2008 (the most recent year QCEW data are available). Comparing data from the two years we calculated the change in developed acreage in the Harbor, and the corresponding change in real market value, and employment.

We also collected data from different sources for two alternative measures of output (for the denominator): value added and cargo (volume, tonnage, and value). Unlike employment, and real market value, data for value added and cargo tonnage is not tracked at a parcel specific level. Instead, data is available at the regional, City, zip code or Census tract level. For our analysis, we used Port of Portland data on historical levels of cargo tonnage in the Portland Harbor, and the IMPLAN economic model for the zip codes that most closely align with the boundaries of the Portland Harbor for value added. We used the same years (2002 and 2008) as were used for other measures of efficiency.

In summary, we created various measures of change in land-use efficiency between 2002 and 2008.

This method has limitations. Six years is not a long time to observe economic trends and changes in land-use efficiency if one is hoping to use those trends as a basis for long-run forecasts. Moreover, the period includes the recent recession, which began in 2007. Ideally, our analysis would include years before 2002, as well as years later than 2008. However, data after 2008 are not yet available, and data before 2002 have significant limitations. Prior to 2000, employment was recorded by SIC codes, rather than NAICS. The change in classification makes comparing data across this time period difficult and unreliable for time-series analysis. Additionally, land-use data, including data from the County Assessor is less accurate prior to 2000, as GIS and other technology had not yet been widely adopted.

For a long-run look at trends, we used yet another method based on cargo tonnage as a measure of output. The Port of Portland conducts periodic studies of land use and development in the Portland Harbor. The earliest Port study dates back to 1960, with additional studies in 1990 and 1997. Additionally, various data sources, including the Port of Portland, the US Department of Transportation, and the Corps of Engineers track cargo tonnage that is shipped through the Portland Harbor. Comparing these datasets, we were able to calculate the tons of cargo that were shipped per developed acre in the Portland Harbor from 1960 through 1997, and observe trends over this 37-year period.

Appendix B Criteria for Evaluating Potential Sites for Marine Terminals

One of the four questions that this study addressed was, "How well do the characteristics of the Atofina and Time Oil sites (the two identified by the City as meeting the minimum requirements for size and waterfront access) match the characteristics that would be needed to create a reasonable probability the sites could be developed as marine terminals?" To answer that question the consultant team had to specify those characteristics. Team member Maul, Foster & Alongi created the evaluation criteria summarized in the table that follows. Those criteria are used in the evaluation reported in Section 3.2 of the main report.

Marine Terminal Criteria

Criteria	Considerations	Comments
Water Access	Depth	Both berth and channel water depth are limiting considerations on vessel size and ultimately cargo type: (1) Barge: 15 to 20'; (2) Bulk: 35 to 52'; (3)Break Bulk: 30 to 40'
	Dredge Maintenance	Ability to maintain navigational depth through routine dredging. It is a function of siltation rate, cost, regulatory hurdles and physical restraints such as the presence of contaminated sediments.
	Pier Face Capacity	Vessel length and number of number of berths determine cargo type: ▪ Barge: 200 to 500' ▪ Bulk: 330 to 1200' ▪ Break Bulk: 400 to 800
Land side transportation	Mainline Rail	Multiple rail service is desirable for competitive rates.
	Rail Siding	On site useable rail siding with sufficient on site car storage. The requirements for train length storage awaiting loading or unloading is a function of the cargo type. Bulk facilities including autos require 9.000 to 12,000 feet of track, whereas specialty project cargos can be managed on much smaller sidings and onsite storage track systems.
	Road	Proximity and ease of access to interstate freeway systems is an important criterion for marine terminals. Access should be on designated, all-weather truck routes with high levels of service including the access ramps to the interstate system.
Size	Total Acreage	Minimal acreage for cargo handling is required for various cargo types:* ▪ Barge: 10 to 75 acres (Mixed, bulk and project cargos) ▪ Bulk: 10 to 200 acres (Liquid and dry commodities) ▪ Break Bulk: 20 to 100 acres (Project cargos; autos)

Criteria	Considerations	Comments
Size (continued)	Unity of Ownership	Total acreage is a critical consideration and the assembly of property is often hampered by cost and timely assembly.
	Configuration	Parcel shape for marine terminals has an impact on terminal operating efficiency, most notably distance to pier face from remotest staging area. Configurations vary with cargo type and loading techniques. Dry conveyor and liquid piping configurations as well as auto handling are somewhat more forgiving.
Physical	Slope and elevation	Generally speaking facilities need to have minimal elevation change and slope. Bank heights have practical limitations, but fixed pier systems can be engineered to accommodate water to upland elevation differentials.
	Utilities	Power demands are limited to electricity for equipment operation and "at berth" vessel operations for on board systems to avoid ship engine fuel burn consistent with zero discharge environmental goals. Stormwater management is also a prime concern, but can readily be managed on most sites.
	Encumbrances	Encumbrances include easements, public rights of way and other deed restrictions that restrict or otherwise limit a site's efficient use.
Regulatory	Zoning	Appropriate zoning is required consistent with local land use regulations. In Portland, although several zoning classifications may be appropriate for some aspects of marine terminals, the heavy industrial (IH) zone allows for the widest range of primary and assessor uses necessary for marine terminals; such as rail yards or handling of hazardous materials.
	Overlay Regulations	While Oregon does not have shoreline regulations, the City of Portland has overlay zones which may impose additional restrictions and protections.

Criteria	Considerations	Comments
Environmental and Natural Resources	Contamination	Shipping terminals have historically been in industrial sites which quite frequently have been exposed to contamination. Remediation of these sites are typically held to a long time industrial use standard and as a result continuing industrial use for shipping are wholly compatible with industrial level cleanup standards. However it should be noted that previously remediated sites are likely to have deed covenants on future use such as restrictions on potable water wells (not an encumbrance in a serviced urban environment), penetrations into protective caps and disruption of in situ treatment processes.
	Flood Plain	Flood plains are a consideration as most shipping terminals are at elevations that are often included in exposure areas.
Cultural & Historic	Historical and Cultural Significant Sites	Like critical areas, industrial properties that have been historically used for industrial purposes are unlikely to present any encumbrances for cultural and historical uses.

*Acreages vary considerable depending on the precise cargo handling and storage requirements. Storage and handling approaches that dramatically affect the required acreage include: on site storage in rail cars, bulk tanks and silos; warehouses and open air facilities, as well as handling mechanisms such as cranes, loading ramps and bulk material (dry and liquid) conveyors. These ranges are generally useable for the cargo category, but need to be further refined for a specific cargo. In selecting a site, one would err to the higher side of the range to afford the maximum market flexibility. The planned use of rail storage sidings has the single greatest impact on size, and materially affects a site's usability.

Appendix C Analysis of Harbor Land Capacity and Demand, Portland & Vancouver

The City of Portland asked us: to what extent can the Port of Vancouver play a role in accommodating forecast cargo demand in the Portland region? This question is addressed Section 3.3 of the main report. This appendix provides additional tables with more detail than was presented in the main report. Our analysis finds that the Portland Harbor has very limited capacity to accommodate future demand for public marine terminals, but that the Port of Vancouver may technically have sufficient capacity to accommodate all forecast demand for cargo for both the cities of Portland and Vancouver through the year 2040.

C.1 DISCLAIMER

All of this analysis described in this appendix depends on estimates of current variables that are uncertain, and forecasts that are even more uncertain, and themselves dependent on a wide range of possible assumptions. Like any analysis of future economic conditions, this one is built upon many layers of assumptions: each assumption widens the range of potential outcomes, and each layer of assumptions compounds on the previous layer to provide an even wider range of potential results. That fact does not necessarily make the analysis irrelevant: it can definitely inform public policy about possible and likely futures. Despite the uncertainty inherent in this analysis, it is helpful for bookending the potential land need for public marine terminals. Assumptions in the middle of the range give conclusions that should be useful for planning purposes, even if actual results may vary.

C.2 DEMAND FOR MARINE CARGO

We were tasked with obtaining and reviewing the most recent forecasts. These forecasts were contained in the *Portland and Vancouver Harbor Forecast Update* (BST Associates, 2012). These forecasts were based on a 2010 study by BST Associates, but were refined to specifically call out cargo demand for the City's of Portland and Vancouver, and were updated with the most recent economic data. Exhibit C-1 shows the forecast demand for public and private marine terminals in the City of Portland in 2040.

Exhibit C-1. Forecast cargo demand, public and private marine terminals, City of Portland, 2040

Cargo Type	Low	Mid-Range	High
Automobiles (units)	811,000	912,500	1,014,000
Containers (TEUs)	379,000	452,500	526,000
Metric Tons			
Automobiles	1,076,000	1,206,000	1,336,000
Containers	2,162,000	2,583,500	3,005,000
Breakbulk	1,132,000	1,242,000	1,352,000
Grain	6,686,000	9,078,000	11,470,000
Dry Bulk	10,278,000	14,093,500	17,909,000
Liquid Bulk	6,912,000	7,461,500	8,011,000
Total	**28,246,000**	**35,664,500**	**43,083,000**

Calculated by ECONorthwest with source data from BST Associates (2012).

Exhibit C-2 shows the forecast demand for public and private marine terminals in the City of Vancouver in 2040.

Exhibit C-2. Forecast cargo demand, public and private marine terminals, City of Vancouver, 2040

Cargo Type	Low	Mid-Range	High
Automobiles (units)	159,000	197,000	235,000
Containers (TEUs)	-	-	-
Metric Tons			
Automobiles	226,000	278,500	331,000
Containers	-	-	-
Breakbulk	534,000	568,500	603,000
Grain	3,808,000	4,109,000	4,410,000
Dry Bulk	5,931,000	11,663,500	17,396,000
Liquid Bulk	510,000	802,500	1,095,000
Total	**11,009,000**	**17,422,000**	**23,835,000**

Calculated by ECONorthwest with source data from BST Associates (2012).

BST Associates estimates that the regional demand for cargo at marine terminals will range from 39,255,000 to 66,918,000 metric tons in 2040, with roughly two thirds of the demand coming from Portland, and the remainder from Vancouver. Dry bulk is forecast to be the cargo type with the most demand (as measured by tonnage) in 2040, comprising just over half of total tonnage in the region.

C.3 EXISTING CAPACITY

Estimates of existing cargo capacity are difficult to obtain, particularly since our analysis looked at multiple geographies (Portland and Vancouver), and multiple ownerships (public and private). We used two methods to bookend our estimates of existing capacity, based on two different assumptions (1) assuming current facilities operate at 100% of maximum capacity before new terminals are needed, and (2) assuming all

growth in demand is from new opportunities that require new facilities, and current facilities continue to operate at current levels.

The Port of Portland provided us with estimates of maximum capacity, as well as annual historical cargo volumes for each cargo type for public marine terminals in the City of Portland. These estimates of capacity are shown in Exhibit C-3.

Exhibit C-3. Existing cargo capacity, public marine terminals, City of Portland

Cargo Type	Estimated	Recent Peak Volume	Peak Year
Automobiles (units)	675,000	460,000	2006
Containers (TEUs)	700,000	330,000	1995
Metric Tons			
Automobiles	889,000	606,000	
Containers	3,999,000	1,885,000	
Breakbulk	2,100,000	1,130,000	2007
Grain	4,100,000	5,400,000	1995
Dry Bulk	10,700,000	5,460,000	2008
Liquid Bulk	-	-	N/A
Total	**21,788,000**	**14,481,000**	

Calculated by ECONorthwest with source data from the Port of Portland, 2012.
Note: Recent peak volume for grain is no longer applicable, as the Terminal 4 grain elevator has closed since 1995 when the peak was measured.

For private marine terminals in the City of Portland, we compared historical data for total cargo volumes for the years 2000 and 2010 from the BST report with anecdotal data and conversations with the Port of Portland to determine the estimated current capacity. Key assumptions are that all historical liquid bulk cargo, and that none of the automobile and container cargo shown in the BST report for the City of Portland is handled by private marine terminals. For private marine terminals we only used one method for estimating existing capacity, under the assumption that existing facilities do not have significant excess capacity, and that recent historical peaks are a reasonable estimate of capacity.

Exhibit C-4. Existing cargo capacity, private marine terminals, City of Portland

Cargo Type	Estimated	Notes
Automobiles (units)	-	No private auto terminals
Containers (TEUs)	-	No private container terminals
Metric Tons		
Automobiles	-	
Containers	-	
Breakbulk	250,000	Conversation with Port of Portland.
Grain	3,000,000	Existing private terminals are old and nearing obsolesence
Dry Bulk	1,500,000	Conversation with Port of Portland, recent historical peak.
Liquid Bulk	8,280,000	BST reports citywide liquid bulk in 2000.
Total	**13,030,000**	

Source: ECONorthwest, informed by "Portland and Vancouver Harbor Forecast Update" (BST Associates, 2012) and conversations with officials from the Port of Portland.

For the City of Vancouver, we were unable to obtain estimates of capacity from the Port of Vancouver or from the Port of Portland. Nor were we able to obtain detailed historical data by cargo type isolating public terminals from private terminals. Instead, we relied on the BPS report, which reported cargo volumes for just two years: 2000 and 2010. In our evaluation of Port of Portland public marine terminals (described previously in this section), we found that the recent peak volumes were equal to 66% of the total capacity. We applied that same percentage to the recent peak volumes for the City of Vancouver to estimate the total capacity, shown in Exhibit C-5. One adjustment, however, had to be made. The Port of Vancouver is in the planning process of developing a potash terminal, which will have capacity for up to 16 million tons of dry bulk. We added this capacity to the estimated capacity shown in Exhibit C-5.

Exhibit C-5. Existing cargo capacity, public and private marine terminals, City of Vancouver

Cargo Type	Estimated	Recent Peak	Peak Year
Automobiles (units)	90,000	60,000	2010
Containers (TEUs)		-	
Metric Tons			
Automobiles	137,000	91,000	
Containers	-	-	
Breakbulk	531,000	354,000	2000
Grain	5,544,000	3,696,000	2010
Dry Bulk	17,556,000	1,037,000	2010
Liquid Bulk	1,110,000	740,000	2000
Total	**24,878,000**	**5,918,000**	

Source: ECONorthwest, informed by "Portland and Vancouver Harbor Forecast Update" (BST Associates, 2012) and conversations with officials from the Port of Portland.

C.4 CAPACITY SHORTFALL

Determining the capacity shortfall should be as simple as subtracting the existing capacity from the projected demand. However, we have two different estimates of capacity, and three different estimates of demand. And since we are interested in identifying the shortfall for public marine terminals, we also need to make assumptions for what portion of future demand for what cargo types will be accommodated by private terminals.

We created three scenarios for cargo capacity: low, high, and most likely. These scenarios are based on the following assumptions:

- The low shortfall scenario takes the estimates of facility capacity and subtracts the low BST forecast for 2040 demand. This assumes that all existing facilities are pushed to 100% of capacity to accommodate the forecast future demand.
- The high scenario takes the recent peak volume for facility capacity, and subtracts the high BST forecast for 2040 demand. This assumes that all facilities continue to operate at their current levels and that all additional demand will need to be accommodated in new facilities.[1]
- The most-likely scenario takes the estimates of facility capacity and reduces them by 10% (this reduction reflects the fact that some forecast demand will be from new market opportunities that will not be able to take advantage of existing facilities, and therefore despite forecasting a capacity shortfall in the aggregate, not all existing facilities will be operating at 100% of capacity), then subtracts the mid-range demand forecasts (that we calculated as the average of the high and low BST forecasts). This scenario assumes that demand will fall in the middle of the range that BST forecast, and that existing facilities will be able to accommodate some of the future growth, but will never operate at 100% of capacity.

Exhibits C-6 through C-8 show the forecast of the cargo capacity shortfall for public marine terminals in 2040 for each of these three scenarios. In Exhibit C-6, we see the shortfall for the City of Portland public marine terminals could range from 187,000 metric tons to more than 17 million metric tons, with the medium scenario showing some shortfall for automobiles, grain, and dry bulk cargoes.

[1] Since the recent historical peak for grain for public marine terminals in the City of Portland is not applicable, due to the removal the Terminal 4 grain elevator, we used the estimated capacity for grain in this scenario.

Exhibit C-6. Forecast cargo capacity shortfall, public marine terminals, City of Portland, 2040

Cargo Type	Low	Medium	High
Automobiles (units)	(136,000)	(310,000)	(554,000)
Containers (TEUs)	-	-	(196,000)
Metric Tons		-	
Automobiles	(187,000)	(410,000)	(730,000)
Containers	-	-	(1,120,000)
Breakbulk	-	-	-
Grain	-	(2,390,000)	(4,370,000)
Dry Bulk	-	(2,960,000)	(10,949,000)
Liquid Bulk	-	-	-
Total	**(187,000)**	**(5,760,000)**	**(17,169,000)**

Calculated by ECONorthwest with source data from Portland and Vancouver Harbor Forecast Update" (BST Associates, 2012) and conversations with officials from the Port of Portland.

Exhibit C-7 shows the forecast cargo capacity shortfall for public marine terminals in the City of Vancouver could range from less than 100,000 to 1.9 million metric tons, with the medium scenario showing a shortfall of 250,000.

Exhibit C-7. Forecast cargo capacity shortfall, public marine terminals, City of Vancouver, 2040

Cargo Type	Low	Medium	High
Automobiles (units)	(69,000)	(120,000)	(175,000)
Containers (TEUs)	-	-	-
Metric Tons		-	
Automobiles	(89,000)	(160,000)	(240,000)
Containers	-	-	-
Breakbulk	(3,000)	(90,000)	(249,000)
Grain	-	-	(714,000)
Dry Bulk	-	-	(359,000)
Liquid Bulk	-	-	(355,000)
Total	**(92,000)**	**(250,000)**	**(1,917,000)**

Calculated by ECONorthwest with source data from Portland and Vancouver Harbor Forecast Update" (BST Associates, 2012) and conversations with officials from the Port of Portland.

Exhibit C-8 shows the combined shortfall for public terminals in the City of Portland and City of Vancouver for the year 2040. The total shortfall is estimated to range from 279,000 metric tons to more than 19 million metric tons, with a medium scenario showing a shortfall of 6 million metric tons.

Exhibit C-8. Forecast cargo capacity shortfall, public marine terminals, Portland / Vancouver region, 2040

Cargo Type	Low	Medium	High
Automobiles (units)	(205,000)	(430,000)	(729,000)
Containers (TEUs)	-	-	(196,000)
Metric Tons			
Automobiles	(276,000)	(570,000)	(970,000)
Containers	-	-	(1,120,000)
Breakbulk	(3,000)	(90,000)	(249,000)
Grain	-	(2,390,000)	(5,084,000)
Dry Bulk	-	(2,960,000)	(11,308,000)
Liquid Bulk	-	-	(355,000)
Total	**(279,000)**	**(6,010,000)**	**(19,086,000)**

Calculated by ECONorthwest with source data from Portland and Vancouver Harbor Forecast Update" (BST Associates, 2012) and conversations with officials from the Port of Portland.

C.5 TERMINAL SIZE

We were asked to translate the forecast cargo capacity shortfalls (described in Section C.4) into acres of land for public marine terminals. To accomplish this, we need assumptions on the size of public marine terminals.

As stated in Section C.1, all of this analysis suffers from a high degree of uncertainty and a wide range of possible assumptions. This aspect of the analysis (converting tons of cargo into acres of land for new terminals) is probably the most uncertain. There is no accepted rule of thumb for the minimum size of marine terminals, let alone the standard or average size. Some aspects of marine terminal size can scale with cargo volumes (e.g., an automobile terminal moving 100,000 cars may require roughly half the acreage of an automobile terminal moving 200,000 cars.). However, other aspects of terminal size may not scale proportionately to cargo volume.

We attempted to assemble recent studies from the City of Portland to see what we could learn about the likely size of marine terminals that would be needed to accommodate future demand in the City of Portland. The West Hayden Island Economic Foundation Study (Entrix 2011), provided a summary of site characteristics for marine-related land uses, including an acreage approximation for terminals of various cargo types in the Portland Harbor and other west coast harbors. The Operational Efficiencies of Port/Terminal World-Wide (Worley Parsons, 2011 – Draft) provides other assumptions for terminal sizes for automobiles, grain, and dry bulk, based on case studies from North American and European terminals. The Worley Parsons analysis also provides a range of potential throughput per acre based on these case study ports.

Ultimately, we looked at both of these sources of data, and the Criteria for Evaluating Potential Sites for Marine Terminal produced by Maul, Foster & Alongi as part of the consultant team for this study (included as Appendix B to this same report) to determine a range of reasonable terminal sizes. These assumptions are shown in Exhibit C-9. We show both a minimum size, and a practical, case study-supported size. Note that the size for these marine terminals does not necessarily reflect land required for rail infrastructure to support these terminals.

Exhibit C-9. Summary of assumptions on acreage requirements for public marine terminals by cargo type

	ENTRIX		Worley Parsons		For This Analysis	
Cargo Type	Minimum	Practical	Minimum	Practical	Minimum	Practical
Automobiles	75	100	47	150	50	150
Containers	50	200			50	200
Breakbulk	15	50			15	50
Grain	40	50	15	45	30	50
Dry Bulk	5	100	30	30	20	70
Liquid Bulk	5	20			5	20

Source: ECONorthwest, with original data and input from:
West Hayden Island Economic Foundation Study (Entrix, 2011)
Operational Efficiencies of Port/Terminal World-Wide (Worley Parsons, 2011- Draft)
Appendix B: Criteria for Evaluating Potential Sites for Marine Terminal (Maul, Foster & Alongi, 2012)

Other experts and stakeholders may have different opinions on what is truly a practical size for a new marine terminal. The assumptions used in this analysis, are not asserted as the definitive answer for what size terminal is best for any and all new marine terminals. These assumptions simply reflect the range of terminal sizes that were reported as reasonable and practical in the two source documents that we reviewed. For this reason, in the rest of this document, we refer to the "practical" terminal sizes in Exhibit C-9, as "case study supported" terminal sizes.

C.6 EVALUATION OF LAND NEED FOR PUBLIC MARINE TERMINALS

Determining the land needed for public marine terminals is as simple as multiplying the demand shortfall (in metric tons) by a ratio of tons per acre for cargo size. However, the estimate of shortfall does not tell us how many terminals will be needed. If for example, we see a shortfall of 10 million tons of dry bulk, it could potentially be accommodated in one terminal, or in many terminals. For each of the terminals, they could be operating at 100% of capacity, or at only a small fraction of capacity (if they were sized to accommodate future growth, beyond the 2040 horizon). Additionally, we have multiple scenarios for the cargo capacity shortfall (low, medium, and high), and multiple measures of cargo size (minimum, and case study-

supported). One final challenge is that some terminals will require rail access, and if a dedicated rail loop is needed, then it will require about 100 acres of land, regardless of our other assumptions on minimum or case study-supported terminal size.

In this section, we present results only in terms of the minimum number of acres needed to absorb the capacity shortfall, and do not estimate the number of terminals the acreage equates to. We ultimately provide assumptions for determining the number of terminals required to accommodate the projected cargo capacity shortfall.

Exhibits C-10 through C-12 show projected capacity shortfall, needed acreage to fulfill the shortfall, and whether new terminal space is needed for the six cargo types under the lowest scenario in the City of Portland, City of Vancouver, and the two combined. This scenario uses the low estimate of cargo capacity shortfall and assumes the minimum acreage requirement for each cargo type.

For the City of Portland automobile shortfall, we used an estimate of throughput per acre from the Operational Efficiencies of Port/Terminal World-Wide (Worley Parsons, 2012), which used case study examples to show that automobile terminals can achieve 2,688 autos per acre. For the City of Vancouver automobile shortfall, we assumed the 89,000 metric tons, could be accommodated by improved efficiencies at their existing facility, and would not be sufficient demand to necessitate development of a new terminal. Exhibits C-10 through C-12 show the results of the lowest scenario for public marine terminals in Portland and Vancouver.

Exhibit C-10. Lowest Scenario, Forecast land need for new public marine terminals, City of Portland, 2040

Cargo Type	Capacity Shortfall (Tons)	New Terminal Space Needed	Minimum Acres Needed
Automobiles	(187,000)	Yes	51.0
Containers	-	No	-
Breakbulk	-	No	-
Grain	-	No	-
Dry Bulk	-	No	-
Liquid Bulk	-	No	-
Total	**(187,000)**		**51.0**

Source: ECONorthwest, with original data and input from:
West Hayden Island Economic Foundation Study (Entrix, 2011)
Operational Efficiencies of Port/Terminal World-Wide (Worley Parsons, 2011- Draft)
Appendix B: Criteria for Evaluating Potential Sites for Marine Terminal (Maul, Foster & Alongi, 2012)
Portland and Vancouver Harbor Forecast Update" (BST Associates, 2012)
Conversations with officials from the Port of Portland

Exhibit C-11. Lowest Scenario, Forecast land need for new public marine terminals, City of Vancouver, 2040

Cargo Type	Capacity Shortfall (Tons)	New Terminal Space Needed	Minimum Acres Needed
Automobiles	(89,000)	No	-
Containers	-	No	-
Breakbulk	(3,000)	No	-
Grain	-	No	-
Dry Bulk	-	No	-
Liquid Bulk	-	No	-
Total	**(92,000)**		**-**

Source: ECONorthwest, with original data and input from:
West Hayden Island Economic Foundation Study (Entrix, 2011)
Operational Efficiencies of Port/Terminal World-Wide (Worley Parsons, 2011- Draft)
Appendix B: Criteria for Evaluating Potential Sites for Marine Terminal (Maul, Foster & Alongi, 2012)
Portland and Vancouver Harbor Forecast Update" (BST Associates, 2012)
Conversations with officials from the Port of Portland

Exhibit C-12. Lowest Scenario, Forecast land need for new public marine terminals, cities of Portland and Vancouver, 2040

Cargo Type	Capacity Shortfall (Tons)	New Terminal Space Needed	Minimum Acres Needed
Automobiles	(276,000)	Yes	51.0
Containers	-	No	-
Breakbulk	(3,000)	No	-
Grain	-	No	-
Dry Bulk	-	No	-
Liquid Bulk	-	No	-
Total	**(279,000)**		**51.0**

Source: ECONorthwest, with original data and input from:
West Hayden Island Economic Foundation Study (Entrix, 2011)
Operational Efficiencies of Port/Terminal World-Wide (Worley Parsons, 2011- Draft)
Appendix B: Criteria for Evaluating Potential Sites for Marine Terminal (Maul, Foster & Alongi, 2012)
Portland and Vancouver Harbor Forecast Update" (BST Associates, 2012)
Conversations with officials from the Port of Portland

The previous set of tables show that in the lowest scenario, demand for new public marine terminals in Portland and Vancouver could be as low as 51 acres. Exhibits C-13 through C-15 show the opposite bookend, the highest scenario. This scenario uses the high estimate of cargo capacity shortfall, assumes low estimates of throughput per acre for automobile terminals, and assumes terminals for dry bulk, grain, and containers require a dedicated rail loop.

Exhibit C-13. Highest Scenario, Forecast land need for new public marine terminals, City of Portland, 2040

Cargo Type	Capacity Shortfall (Tons)	New Terminal Space Needed	Maximum Acres Needed
Automobiles	(730,000)	Yes	577.0
Containers	(1,120,000)	Yes	100.0
Breakbulk	-	No	-
Grain	(4,370,000)	Yes	100.0
Dry Bulk	(10,949,000)	Yes	200.0
Liquid Bulk	-	No	-
Total	**(17,169,000)**		**977.0**

Source: ECONorthwest, with original data and input from:
West Hayden Island Economic Foundation Study (Entrix, 2011)
Operational Efficiencies of Port/Terminal World-Wide (Worley Parsons, 2011- Draft)
Appendix B: Criteria for Evaluating Potential Sites for Marine Terminal (Maul, Foster & Alongi, 2012)
Portland and Vancouver Harbor Forecast Update" (BST Associates, 2012)
Conversations with officials from the Port of Portland

Exhibit C-14. Highest Scenario, Forecast land need for new public marine terminals, City of Vancouver, 2040

Cargo Type	Capacity Shortfall (Tons)	New Terminal Space Needed	Maximum Acres Needed
Automobiles	(240,000)	Yes	180.0
Containers	-	No	-
Breakbulk	(249,000)	Yes	50.0
Grain	(714,000)	Yes	100.0
Dry Bulk	(359,000)	Yes	100.0
Liquid Bulk	(355,000)	Yes	50.0
Total	**(1,917,000)**		**480.0**

Source: ECONorthwest, with original data and input from:
West Hayden Island Economic Foundation Study (Entrix, 2011)
Operational Efficiencies of Port/Terminal World-Wide (Worley Parsons, 2011- Draft)
Appendix B: Criteria for Evaluating Potential Sites for Marine Terminal (Maul, Foster & Alongi, 2012)
Portland and Vancouver Harbor Forecast Update" (BST Associates, 2012)
Conversations with officials from the Port of Portland

Exhibit C-15. Highest Scenario, Forecast land need for new public marine terminals, cities of Portland and Vancouver, 2040

Cargo Type	Capacity Shortfall (Tons)	New Terminal Space Needed	Maximum Acres Needed
Automobiles	(970,000)	Yes	757.0
Containers	(1,120,000)	Yes	100.0
Breakbulk	(249,000)	Yes	50.0
Grain	(5,084,000)	Yes	200.0
Dry Bulk	(11,308,000)	Yes	300.0
Liquid Bulk	(355,000)	Yes	50.0
Total	**(19,086,000)**		**1,457.0**

Source: ECONorthwest, with original data and input from:
West Hayden Island Economic Foundation Study (Entrix, 2011)
Operational Efficiencies of Port/Terminal World-Wide (Worley Parsons, 2011- Draft)
Appendix B: Criteria for Evaluating Potential Sites for Marine Terminal (Maul, Foster & Alongi, 2012)
Portland and Vancouver Harbor Forecast Update" (BST Associates, 2012)
Conversations with officials from the Port of Portland

The previous set of tables for the highest scenario show that up to 1,457 acres of land could be needed to accommodate the 19 million metric tons of cargo capacity shortfall. Given the assumptions about minimum and case study-supported terminal size shown in Exhibit C-9, a shortfall of this size would probably require on the order of 10 new terminals of average size.

Both the lowest and highest scenarios are possibilities, but unlikely.[2] These scenarios do help to show the extreme ends of the spectrum, but it is better to focus our attention on the medium scenario. For this scenario, we used the medium estimate of cargo capacity shortfall, and assumed all demand for each cargo type in each City could be accommodated by one terminal.

Exhibit C-16 shows our medium forecast of acres needed for public marine terminals in the City of Portland in 2040. It shows a total land need ranging from 170 to 470 acres, depending on the size and efficiency of new terminals, and the need for dedicated rail infrastructure.

[2] This is not to imply the underlying "high-scenario" cargo forecast from BST is unreasonable. In fact, the forecast demand for cargo in the high scenario averages 3.1% growth per year, which is less than the 4.1% per year that has been experienced on the Columbia River between 1962 and 2011. However, the compounding assumptions for capacity (existing facilities only operate at current levels, and accommodate none of the future growth), terminal size (rail loops for every terminal), and number of terminals (e.g., 3 new auto terminals to accommodate total demand of less than 1,000,000 tons per year), all combine to make this scenario unrealistic.

Exhibit C-16. Medium Scenario, Forecast land need for new public marine terminals, City of Portland, 2040

Cargo Type	Capacity Shortfall (Tons)	New Terminal Space Needed	Acres Needed		
			Minimum	Case Study Examples	w / rail
Automobiles	(410,000)	Yes	120.0	270.0	270.0
Containers	-	No	-	-	-
Breakbulk	-	No	-	-	-
Grain	(2,390,000)	Yes	30.0	50.0	100.0
Dry Bulk	(2,960,000)	Yes	20.0	70.0	100.0
Liquid Bulk	-	No	-	-	-
Total	**(5,760,000)**		**170.0**	**390.0**	**470.0**

Source: ECONorthwest, with original data and input from:
West Hayden Island Economic Foundation Study (Entrix, 2011)
Operational Efficiencies of Port/Terminal World-Wide (Worley Parsons, 2011- Draft)
Appendix B: Criteria for Evaluating Potential Sites for Marine Terminal (Maul, Foster & Alongi, 2012)
Portland and Vancouver Harbor Forecast Update" (BST Associates, 2012)
Conversations with officials from the Port of Portland

Exhibit C-17 shows our medium forecast of acres needed for public marine terminals in the City of Vancouver in 2040. It shows a total land need ranging from 40 to 100 acres to accommodate 160,000 metric tons of automobiles.

Exhibit C-17. Medium Scenario, Forecast land need for new public marine terminals, City of Vancouver, 2040

Cargo Type	Capacity Shortfall (Tons)	New Terminal Space Needed	Acres Needed		
			Minimum	Case Study Examples	w / rail
Automobiles	(160,000)	Yes	40.0	100.0	100.0
Containers	-	No	-	-	-
Breakbulk	(90,000)	No	-	-	-
Grain	-	No	-	-	-
Dry Bulk	-	No	-	-	-
Liquid Bulk	-	No	-	-	-
Total	**(250,000)**		**40.0**	**100.0**	**100.0**

Source: ECONorthwest, with original data and input from:
West Hayden Island Economic Foundation Study (Entrix, 2011)
Operational Efficiencies of Port/Terminal World-Wide (Worley Parsons, 2011- Draft)
Appendix B: Criteria for Evaluating Potential Sites for Marine Terminal (Maul, Foster & Alongi, 2012)
Portland and Vancouver Harbor Forecast Update" (BST Associates, 2012)
Conversations with officials from the Port of Portland

The combination of demand for public marine terminals in the cities of Portland and Vancouver are shown in Exhibit C-18. It forecasts a need for 210 to 570 acres.

Exhibit C-18. Medium Scenario, Forecast land need for new public marine terminals, cities of Portland and Vancouver, 2040

Cargo Type	Capacity Shortfall (Tons)	New Terminal Space Needed	Acres Needed		
			Minimum	Case Study Examples	w / rail
Automobiles	(570,000)	Yes	160.0	370.0	370.0
Containers	-	No	-	-	-
Breakbulk	(90,000)	No	-	-	-
Grain	(2,390,000)	Yes	30.0	50.0	100.0
Dry Bulk	(2,960,000)	Yes	20.0	70.0	100.0
Liquid Bulk	-	No	-	-	-
Total	**(6,010,000)**		**210.0**	**490.0**	**570.0**

Source: ECONorthwest, with original data and input from:
West Hayden Island Economic Foundation Study (Entrix, 2011)
Operational Efficiencies of Port/Terminal World-Wide (Worley Parsons, 2011- Draft)
Appendix B: Criteria for Evaluating Potential Sites for Marine Terminal (Maul, Foster & Alongi, 2012)
Portland and Vancouver Harbor Forecast Update" (BST Associates, 2012)
Conversations with officials from the Port of Portland

In Exhibits C-10 through C-18 we purposely showed estimates of "acres needed" and not "number of terminals needed." Moving from cargo to land adds uncertainty; moving from acres to terminals adds even more. Exhibit C-9 is a basis for the conversion, but it shows a range of possible terminal sizes.[3] Moreover, terminals may not be used to capacity, technologies may change, and so on. That said, a rough application of estimates of terminal size supported by the case studies (in acres, Exhibit C-9) to estimates of needed acres under medium assumptions (Exhibit C-18), yields estimates of number of new terminals needed by 2040 as follows: automobiles, 1 – 4 terminals; grain, 1 – 3 terminals; dry bulk, 1 – 3 terminals.

[3] The ranges in Exhibit C-9 are based on all available data sources: existing terminal sizes at the Port of Portland and Vancouver, conversations with officials at both ports, and case studies included in the report on Operational Efficiencies of Port/Terminal World-Wide (Worley Parsons, 2011 Draft). Ultimately, however, these assumptions were a judgment call on the part of ECONorthwest, and represent our best guesses for a lowest, highest, and medium scenario.

C.7 IMPLICATIONS

The City of Portland identified the two sites in the Portland Harbor that are most likely to be suitable for development of a new public marine terminal: the Atofina site, and the Time Oil site. Of these two sites, development is technically possible on either, but there are major hurdles that would add significant costs. Both sites have some level of contamination, both sites would require negotiation and property acquisition from numerous property owners, and both sites are smaller than desirable, which precludes the possibility of an onsite rail loop. Depending on the specific parcels that would be acquired and aggregated to make development of these sites possible, each site could range in size from 50 to 100 acres, for total developable acreage of 100 to 200 acres.

When considering the potential cargo capacity shortfall, the two sites in the Portland Harbor could potentially accommodate the one dry bulk and one grain terminal that are anticipated to be needed. These terminals are expected to require between 20 and 200 acres, which matches fairly well with the capacity of the two potential sites. However, if these potential terminals require a dedicated rail loop, or if they are unable to overcome the barriers to redevelopment at each site, then the forecast capacity shortfall will need to be accommodated elsewhere in the region.

Assuming each new port terminal requires a dedicated rail loop, it would appear that the total acreage needed to accommodate regional cargo volumes in 2040 exceeds the current supply of 350 acres of vacant developable land at the Port of Vancouver planned for marine terminal development.[4] However, the Port of Vancouver has about 200 acres of vacant developable land that could technically accommodate marine terminal development, but is planned for other industrial uses. If these acres were included in the total supply, then it would appear that the Port of Vancouver would have about the right supply of land to accommodate regional cargo demand through 2040. While this is technically possible, that does not mean that it is politically feasible or consistent with adopted policies of the affected jurisdictions.

While it is possible that the Port of Vancouver could accommodate the regional demand for cargo through 2040, it is also possible that Vancouver's land supply could fall far short. Using the high-scenario demand forecasts, and assuming rail loop access for all terminals, the region could have a

[4] It is important to note that these projections are based on our medium scenario. The range of possible assumptions that could be used in this analysis is significant. When using our most conservative assumptions, our analysis showed a regional land need as low as 70 acres, and our most aggressive assumptions resulted in a land need of over 2,250 acres.

shortfall of up to 1,457 acres. If only 350 acres at the Port of Vancouver are available for marine terminal development, as is their current stated policy, then that would leave over 1,100 acres of unmet demand for public marine terminals in the region.

Our analysis finds that the Portland Harbor has very limited capacity to accommodate future demand for public marine terminals, but that the Port of Vancouver has capacity to accommodate some (but not necessarily all) forecast demand for cargo for both the cities of Portland and Vancouver through the year 2040 under our medium scenario.

Appendix D Mapping Analysis

As part of the background research for the Harbor Lands Contract, Bureau of Planning and Sustainability staff conducted a visual survey of aerial maps of the Portland Harbor to classify the lands in one of several categories. The first reason for undertaking this review was to provide the consultant for the Harbor Lands Analysis, ECONorthwest (ECO), with a visual representation of current Portland Harbor development so that they could analyze this and confirm potential sites to consider for assembly into larger parcels. The second reason for this effort was to help validate the initial acreage findings of the draft Economic Opportunities Analysis (EOA).

Lands were split into various development types, including buildings, other structures/tanks, exterior work/storage areas, loading & maneuvering areas, parking areas, rail yards, vacant land and a few residual categories (see chart below). Once these lands were categorized, they were compared with the lands that are considered environmentally constrained or brownfields. The intent was to specifically consider whether vacant lands predominantly had one of these constraints applied to them. While the visual survey and analysis was initially considered to cover the lands that staff wanted ECO to review along the harbor, it was also refined to incorporate the boundary of the EOA for the Portland Harbor sub-geography to determine whether the acreage was significantly different. The findings are provided in a table attached to this summary.

Within the Portland Harbor sub-geography, the visual survey identified a total of 590 acres of lands that were considered vacant. However, of this acreage, approximately 412 acres either contained medium or high level natural resources (174.4 acres), were existing brownfields (145.2 acres), or were brownfield sites with resources as well (92.6 acres). This left approximately 174 acres that were not constrained. This number exceeds the amount of unconstrained vacant land determined by Hovee (108 acres). This is partially due to the fact that the visual survey included vacant portions of otherwise developed parcels, and was not constrained by lot lines. Thus vacant portions of lots were included in the aerial survey that were not included in the EOA. Within the EOA update, Hovee had separated out the Harbor Access Lands from the larger Columbia Harbor subgeography. In either case, the unconstrained land represents a minority of the overall vacant land in the harbor.

For the ECO analysis, the maps helped illustrate the potential vacant sites that could be looked in greater detail in their report. This led to the consideration of the Time Oil and Atofina sites as possible areas for consideration of a marine terminal. The report includes the analysis on these sites.

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Category #	Category Description	**TOTAL Acres Harbor Lands Study Area**	(1)Acres in med/high NRI resources ONLY	(1) Acres both NRI & Brownfields	(1)Acres in vacant Brownfields ONLY (2009+11)	**TOTAL Acres PDX *Harbor Access Lands (2)**	**Acres in med/high NRI resources* ONLY (2)**	**Acres both NRI AND Brownfields (2)**	**Acres in vacant Brownfields ONLY(2009+11)* (2)**	Acres Port of Vancouver
1	building	**415.1**	0.6	0.1	5.2	**267.2**	0.4	0.1	4.8	65.7
2	other structures, tanks, utilities	**197.1**	2.6	0.0	1.5	**92.1**	2.2	0.0	1.5	72.6
3	exterior storage & work areas	**1,326.0**	26.9	1.1	20.7	**994.0**	23.9	1.0	10.3	435.7
4	loading/maneuvering	**295.0**	14.0	0.2	0.2	**181.9**	13.4	0.2	0.2	134.9
5	rail yards	**457.3**	38.4	0.3	3.3	**138.0**	5.2	0.3	0.0	72.1
6	employee/guest parking	**143.2**	6.7	0.1	1.1	**94.5**	1.5	0.0	1.1	12.0
7	vacant land	**1,739.4**	328.1	127.9	214.4	**586.0**	174.4	92.6	145.2	1,442.5
8	parks	**110.0**	103.2	0.8	0.4	**3.0**	1.0	0.0	0.0	0.0
9	taxloted water	**89.3**	88.9	0.0	0.0	**89.3**	88.9	0.0	**0.0**	101.8
10	misc right of way	**25.3**	6.8	0.0	0.0	**15.6**	4.1	0.0	0.0	0.0
	Total	**4,798**	**616**	**131**	**247**	**2,462**	**315**	**94**	**163**	**2,337**

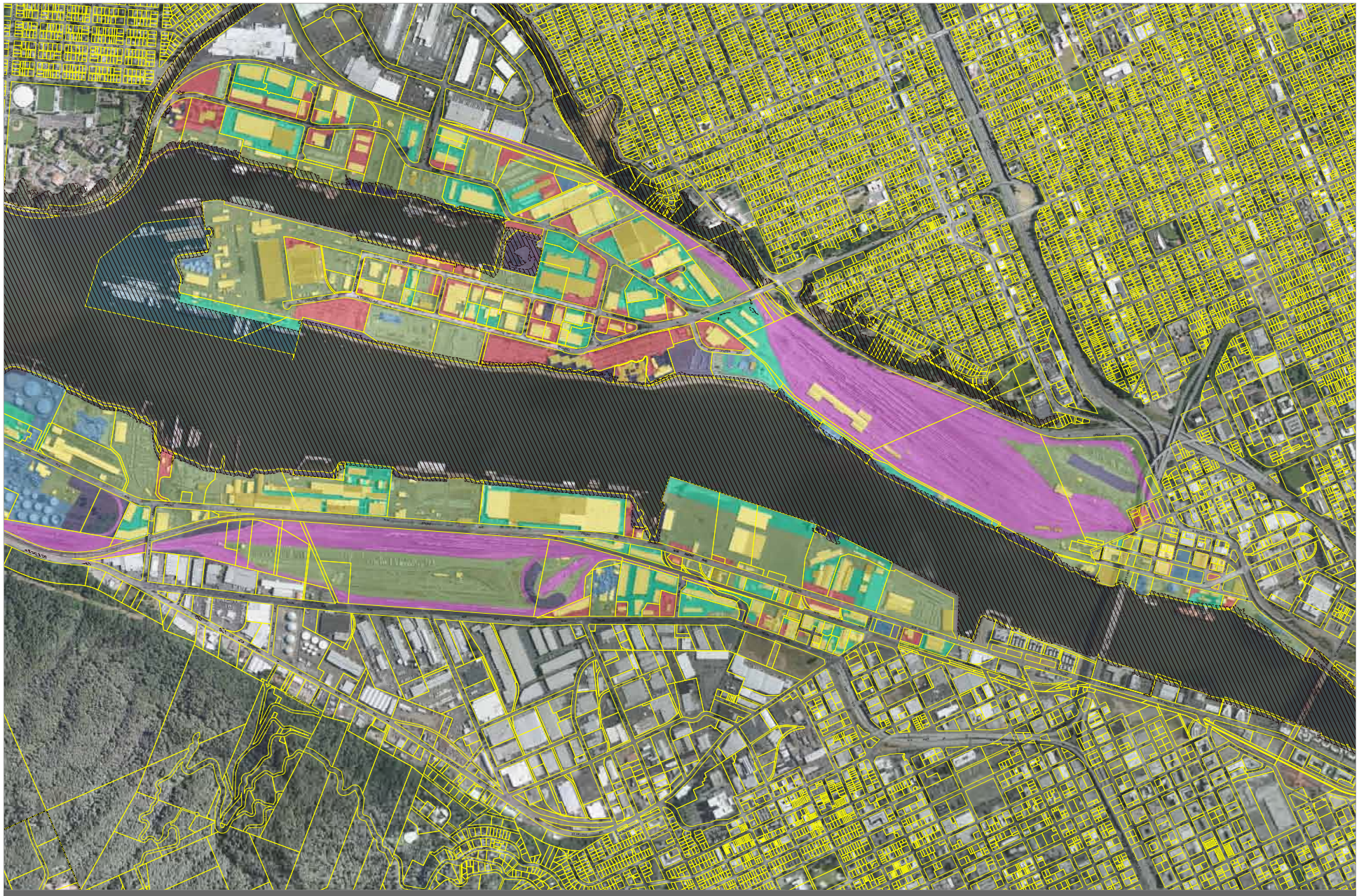
Revised 3/19/2012

*Harbor Access Lands dataset = river overlay zones created by Hovee

(1)Acres within the Harbor Lands Boundary

(2)Acres within *Harbor Access Lands dataset (hovee's river overlay zone shapefile)

NOTE: West Hayden Island NRI not included.


Harbor Lands Inventory - 2009 aerials - MAP 1
inventory categories
0 - no value/no data
1 - building
2 - other structures, tanks, utilities
3 - exterior storage adn work areas
4 - loading/maneuvering
5 - rail yards/lines
6 - employee/guest parking
7 - vacant land
8 - parks
9 - water (taxloted)
10 - misc right of way
ranked natural resources
NORTH
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Harbor Lands Inventory - 2009 aerials - MAP 2
inventory categories
0 - no value/no data
1 - building
2 - other structures, tanks, utilities
3 - exterior storage adn work areas
4 - loading/maneuvering
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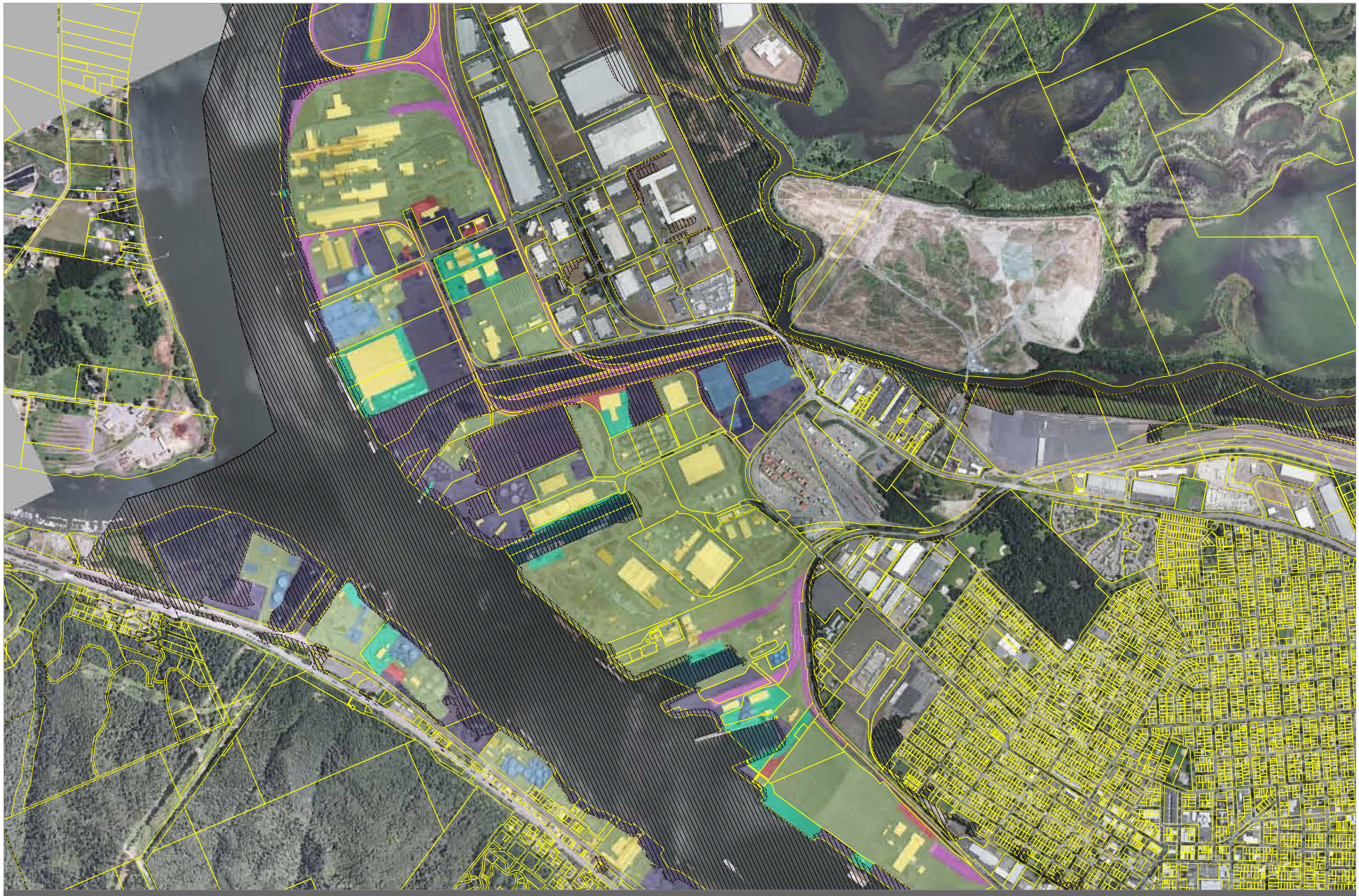
Harbor Lands Inventory - 2009 aerials - MAP 3
inventory categories
0 - no value/no data
1 - building
2 - other structures, tanks, utilities
3 - exterior storage adn work areas
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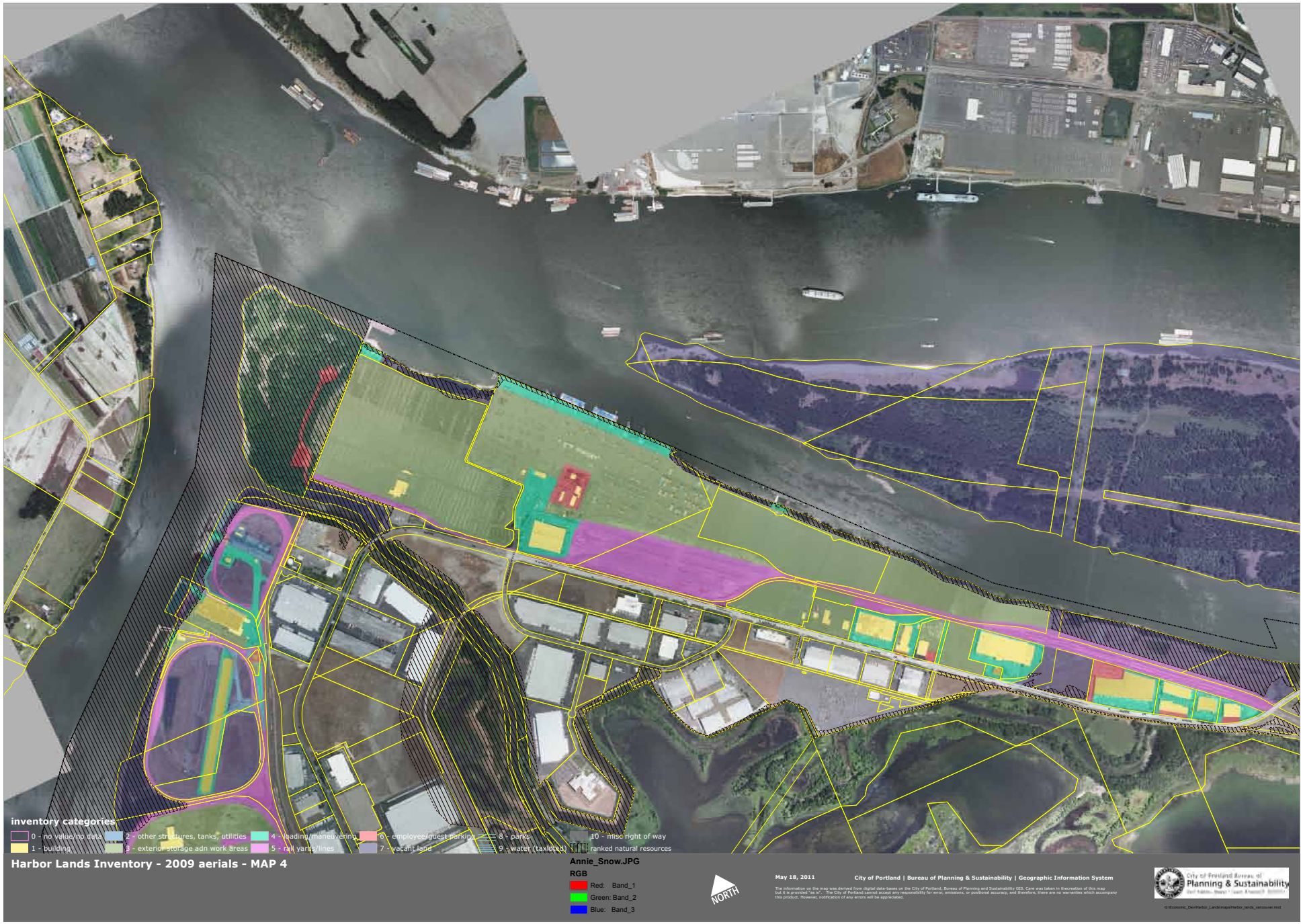
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ranked natural resources
Harbor Lands Inventory - 2009 aerials - MAP 4
Annie_Snow.JPG
RGB
Red: Band_1
Green: Band_2
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Harbor Lands Inventory - 2009 aerials - MAP 5
inventory categories
0 - no value/no data
1 - building
2 - other structures, tanks, utilities
3 - exterior storage adn work areas
4 - loading/maneuvering
5 - rail yards/lines
6 - employee/guest parking
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Harbor Lands Inventory - 2007 aerials - Vancouver

- 1 - building
- 2 - other structures, tanks, utilities, concrete plant
- 3 - exterior storage and work areas
- 4 - loading/maneuvering
- 5 - rail yards/lines
- 6 - employee/guest parking
- 7 - vacant land
- 9 - water (part of lot)
- Not Port owned

NORTH

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Portland Harbor
Industrial Land Supply Analysis
Background Mapping
Summary of Analysis

As part of the background research for the Harbor Lands Contract, Bureau of Planning and Sustainability staff conducted a visual survey of aerial maps of the Portland Harbor to classify the lands in one of several categories. The first reason for undertaking this review was to provide the consultant for the Harbor Lands Analysis, ECONorthwest (ECONW) with a visual representation of current Portland Harbor development so that they could analyze this and confirm potential sites to consider for assembly into larger parcels. The second reason for this effort was to help validate the initial acreage findings of the draft Economic Opportunities Analysis (EOA).

Lands were split into the following development types, including buildings, other structures/tanks, exterior work/storage areas, loading & maneuvering areas, parking areas, rail yards, vacant land and a few residual categories (see chart below). Once these lands were categorized, they were compared with the lands that are considered environmentally constrained or brownfields. The intent was to specifically consider whether vacant lands predominantly had one of these constraints applied to them. While the visual survey and analysis was initially considered to cover the lands that staff wanted ECONW to review along the harbor, it was also refined to incorporate the boundary of the EOA for the Portland Harbor sub-geography to determine whether the acreage was significantly different. The findings are provided in a table attached to this summary.

Within the Portland Harbor sub-geography, the visual survey identified a total of 590 acres of lands that were considered vacant. However, of this acreage, approximately 500 acres either contained medium or high level natural resources (271.3 acres) or were existing brownfields (229 acres). This left approximately 90 acres that were not constrained. This number compared favorably with some of the initial findings of the update of the EOA done in mid-2011. Within this update, Hovee had separated out the Harbor Access Lands from the larger Columbia Harbor subgeography. The draft of this report also compared the city's more recent BLI methodology. This comparison further reinforced the perception that a large majority of the vacant industrial lands in the harbor have environmental constraints or contamination issues. It should be noted that this analysis was based upon the draft findings of the EOA update in 2011, which may be different from the report issued in early 2012.

Category #	Category Description	Acres Harbor Lands Portland	(1)Acres in med/high NRI resources	(1)Acres in vacant Brownfields (2009+11)	**Acres PDX *Harbor Access Lands**	**(2)Acres in med/high NRI resources***	**(2)Acres in vacant Brownfields (2009+11)***	Acres Vancouver
1	building	415	0.6	5.3	**267**	**0.5**	**4.9**	66
2	other structures, tanks, utilities	197	2.6	1.5	**92**	**2.2**	**1.5**	73
3	exterior storage & work areas	1326	27.9	21.7	**1010**	**25.1**	**11.4**	436
4	loading/maneuvering	295	14.2	0.4	**182**	**13.6**	**0.3**	135
5	rail yards	457	38.6	3.6	**127**	**2.1**	**0.3**	72
6	employee/guest parking	143	6.8	1.2	**95**	**1.5**	**1.0**	12
7	vacant land	1739	454.5	342.3	**590**	**271.3**	**229.0**	1443
8	parks	200	193.4	1.2	**3**	**0.9**	**0.0**	0
9	taxloted water	89	88.9	0.0	**89**	**88.9**	**0.0**	102
10	misc right of way	25	6.8	0.0	**16**	**4.1**	**0.0**	0
*Harbor Access Lands dataset = river overlay zones created by Hovee								
(1)Acres within the Harbor Lands Boundary								
(2)Acres within *Harbor Access Lands dataset (hovee's river overlay zone shapefile)								

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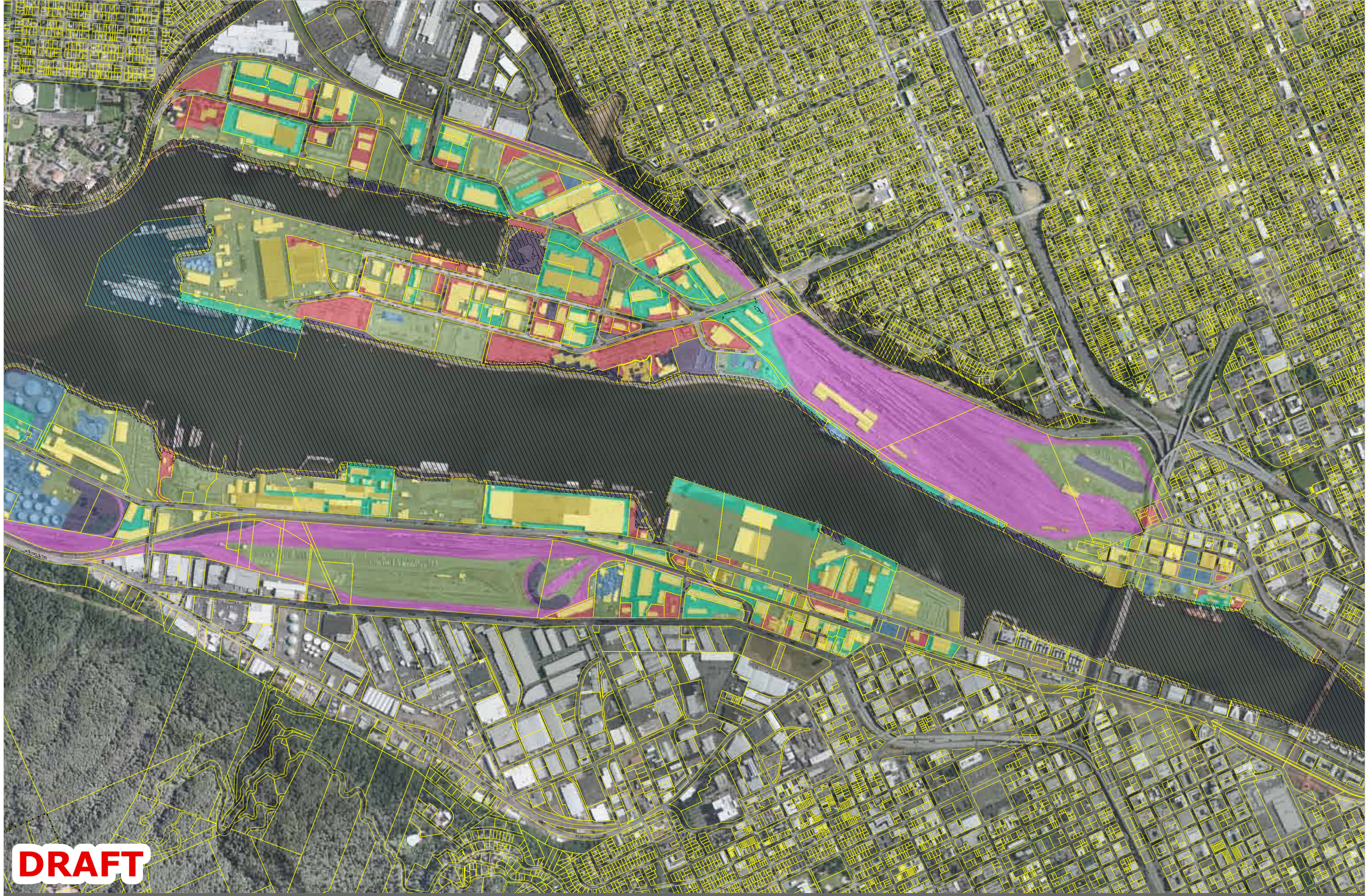

Harbor Lands Inventory - 2009 aerials - MAP 1

inventory categories

0 - no value/no data
1 - building
2 - other structures, tanks, utilities
3 - exterior storage adn work areas
4 - loading/maneuvering
5 - rail yards/lines
6 - employee/guest parking
7 - vacant land
8 - parks
9 - water (taxloted)
10 - misc right of way
ranked natural resources

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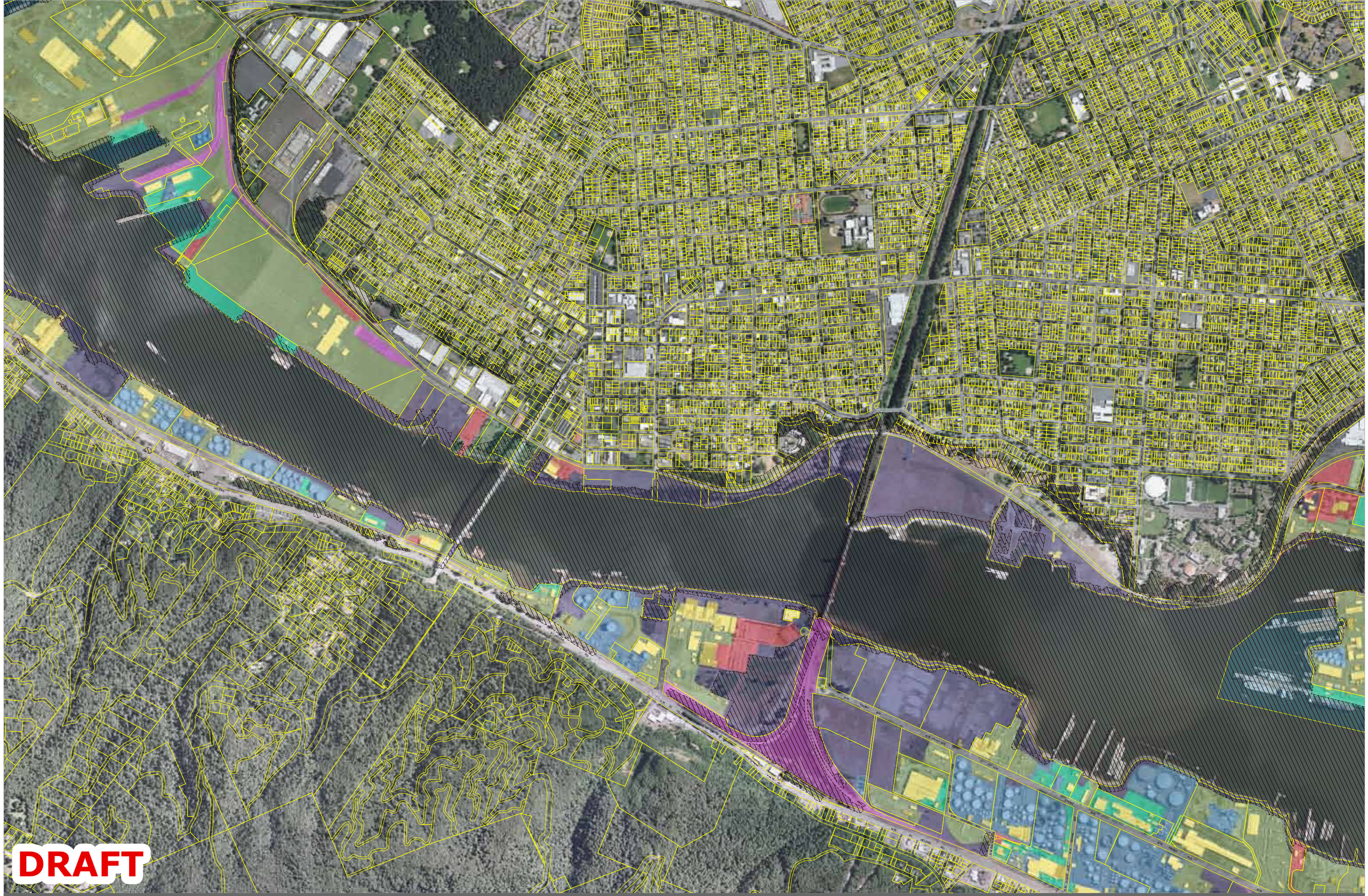

Harbor Lands Inventory - 2009 aerials - MAP 2

inventory categories

0 - no value/no data
1 - building
2 - other structures, tanks, utilities
3 - exterior storage adn work areas
4 - loading/maneuvering
5 - rail yards/lines
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Harbor Lands Inventory - 2009 aerials - MAP 3

inventory categories

0 - no value/no data
1 - building
2 - other structures, tanks, utilities
3 - exterior storage adn work areas
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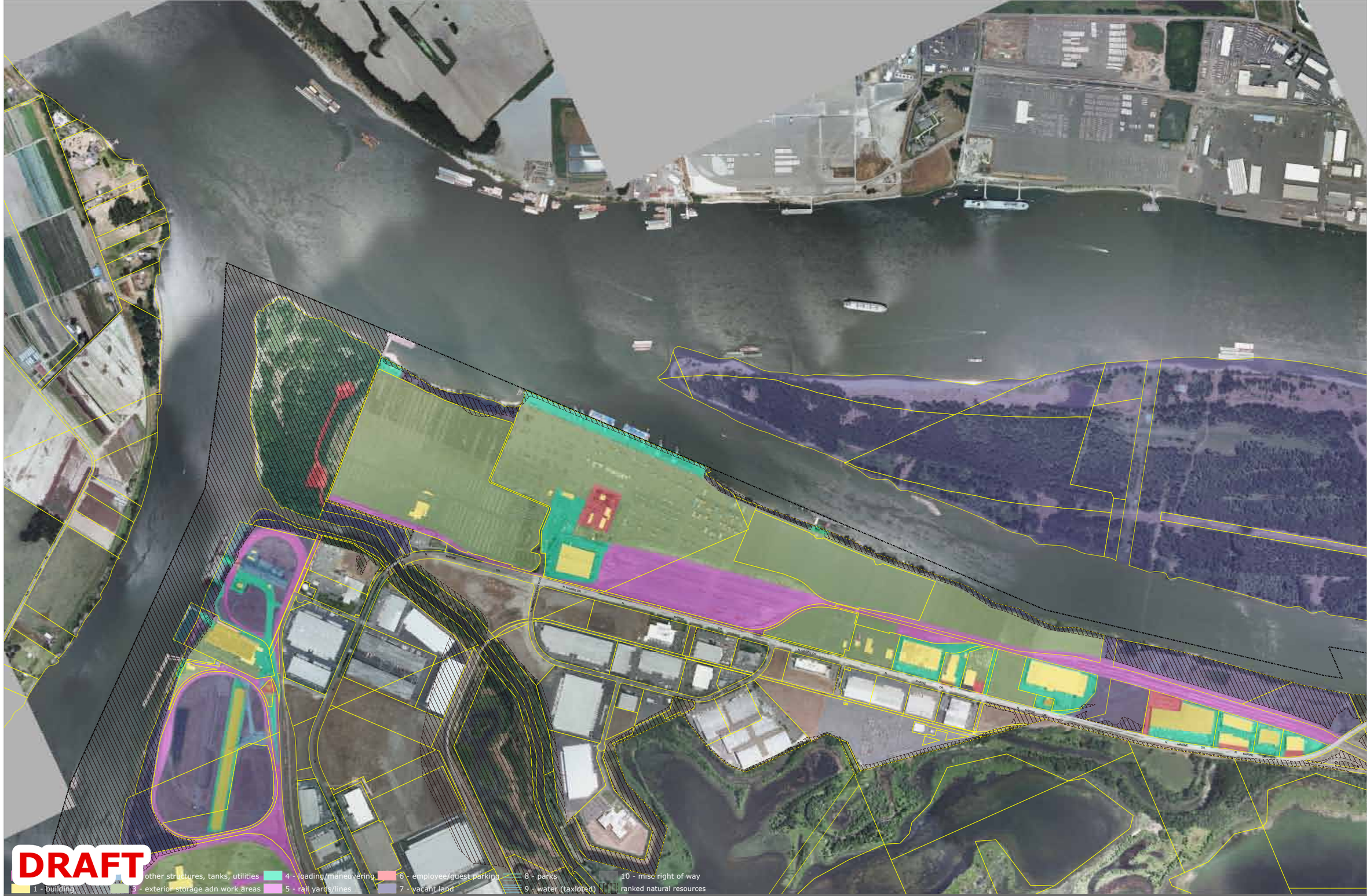

Harbor Lands Inventory - 2009 aerials - MAP 4

Annie_Snow.JPG
RGB
Red: Band_1
Green: Band_2
Blue: Band_3

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DRAFT

Harbor Lands Inventory - 2009 aerials - MAP 5

inventory categories

- 0 - no value/no data
- 1 - building
- 2 - other structures, tanks, utilities
- 3 - exterior storage adn work areas
- 4 - loading/maneuvering
- 5 - rail yards/lines
- 6 - employee/guest parking
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- ranked natural resources

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Terminal 5

Terminal 4

Terminal 3

Terminal 2

Grain Elevator

DRAFT

Harbor Lands Inventory - 2007 aerials - Vancouver

- 1 - building
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- 3 - exterior storage and work areas
- 4 - loading/maneuvering
- 5 - rail yards/lines
- 6 - employee/guest parking
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City of Portland Bureau of Planning & Sustainability
Sam Adams, Mayor | Susan Anderson, Director

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Portland**

County **Multnomah**

Note: Approximated by TAZ boundaries. Also includes Maywood Park.

Household Forecast

Year	SF	MF	Total	%APR
2010	143,801	104,915	248,716	
2025	163,609	163,566	327,175	1.8%
2035	165,636	204,068	369,704	1.2%
2040	167,243	222,584	389,827	1.1%

Households Change from 2010

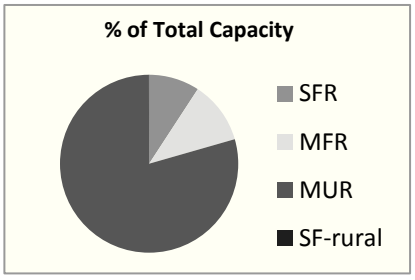
Year	SF	MF	Total
2025	19,808	58,651	78,459
2035	21,835	99,153	120,988
2040	23,442	117,669	141,111

2010-2045 Capacity Used

Year	SF	MF	Total
2025	100%	33%	40%
2035	100%	55%	61%
2040	100%	65%	71%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	18,235	22,491	157,289	78	18,313	179,780	198,093
% of Total	9%	11%	79%	0%	9%	91%	100%



SFR = Single Family Residential
MFR = Multi-Family Residential
MUR = Multi-Family, Mixed Use
SF-rural = Rural Single Family

SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	65,150	139,116	170,076	374,342
2025	71,495	187,172	200,106	458,773
2035	76,134	218,147	214,199	508,482
2040	78,590	230,211	222,390	531,194

2010-2045 Employment Cap.

	IND	COM
Acres	1,608	983
% of Total	62%	38%

DISCLAIMER: These data are for research purposes only, and do not reflect policy decisions by any jurisdictional authority.

BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF ADOPTING THE DISTRIBUTION OF THE POPULATION AND EMPLOYMENT GROWTH TO YEAR 2035 TO TRAFFIC ANALYSIS ZONES IN THE REGION CONSISTENT WITH THE FORECAST ADOPTED BY ORDINANCE NO. 11-1264B IN FULFILLMENT OF METRO'S POPULATION COORDINATION RESPONSIBILITY UNDER ORS 195.036	)	Ordinance No. 12-1292A Introduced by Councilor Kathryn Harrington

WHEREAS, ORS 195.025 designates Metro as the local government responsible for coordination of planning activities within the Metro district; and

WHEREAS, ORS 195.036 requires the designated local government responsible for coordination of planning activities in a region to establish and maintain a population forecast for the area within its boundary and to coordinate the forecast with the other local governments within the boundary; and

WHEREAS, the Metro Council adopted a population and employment forecast for the region by Ordinance No. 11-1264B ("For the Purpose of Expanding the Urban Growth Boundary to Provide Capacity for Housing and Employment to the year 2030 and Amending the Metro Code to Conform") on October 20, 2011; and

WHEREAS, the distribution to specific zones within the region of forecasted population and employment adopted by this ordinance reflects prior policy decisions made by the Metro Council to: (1) use land inside the UGB more efficiently in Ordinance No. 10-1244B, and (2) add land to the UGB in Ordinance No. 11-1264B; and

WHEREAS, Metro began the process of distribution of the forecasted population and employment in October 2010, by coordinating the distribution with the 25 cities and three counties portions of which lie within the Metro district; in the course of 24 months, Metro held 15 coordination meetings with local governments, by county; more than 25 meetings with individual cities and counties; and four meetings with the city of Vancouver and Clark County to share the results of preliminary distributions and to seek comments and suggestions to improve the accuracy of the distributions; and

WHEREAS, Metro staff made presentations to its advisory committees (MPAC, MTAC, TPAC and JPACT) regarding the distribution and coordination with local governments; and

WHEREAS, Metro incorporated many of the comments and suggestions to refine the distribution and published a final distribution on November 15, 2012; and

WHEREAS, the regional forecast described on the attached Exhibit A is expressed in terms of households, which is the basis for Metro's capacity analysis, and those household figures are converted to population in Attachments 2 and 3 to the Staff Report dated November 15, 2012; and

WHEREAS, The Metro Council will work with MPAC and JPACT to develop, fund, and implement a research agenda in conjunction with the next Urban Growth Report, which will identify key policy and technical issues and a process, timeline, budget and resources to address key research topics that may include future housing preference, redevelopment assumptions, housing and transportation costs, which work would be prioritized with other needs and resource availability; now, therefore,

THE METRO COUNCIL ORDAINS AS FOLLOWS:

1. The distribution made to traffic analysis zones, described in Exhibits A and B to this Ordinance and in the Staff Report dated November 15, 2012, of the regional population and employment forecast adopted by the Council in Ordinance No. 11-1264B, is accepted and adopted as fulfillment of Metro's responsibilities regarding coordination of population forecasts under ORS 195.025 and 195.036 and is endorsed for use by the 25 cities and three counties as their own population and employment forecasts for their planning activities.

2. The Chief Operating Officer shall make the distribution of population and employment available to each city and county in the district.

3. The Metro Council adopts the Findings of Fact and Conclusions of Law set forth in Exhibit C to this Ordinance regarding compliance with relevant Statewide Planning Goals.

ADOPTED by the Metro Council this 29 day of November, 2012.

Approved Одобренный Совет Метро Metro Council COUNCIL

Tom Hughes, Council President

Approved as to form:

Alison Kean Campbell, Metro Attorney

EXHIBIT A (Ordinance No. 1292A)

2035 Reviewed Household Forecast Distribution by Jurisdiction
MetroScope "Gamma" TAZ Forecast

Revised Draft 11/15/2012 *(source: Scen #1221)*

Note: Jurisdiction geographies are approximate, and based on TAZs.
Urban Reserves are considered outside the UGB.

	2010 Reviewed HH			2035 Reviewed HH			2010-2035 Change		
Inside UGB:	**SF**	**MF**	**Total**	**SF**	**MF**	**Total**	**SF**	**MF**	**Total**
Beaverton	18,128	21,953	40,081	20,038	30,479	50,517	1,910	8,526	10,436
Cornelius	2,467	1,051	3,518	3,428	2,085	5,513	961	1,034	1,995
Damascus	3,322	205	3,527	11,700	217	11,916	8,378	12	8,389
Durham	350	8	358	410	26	436	60	18	78
Fairview	1,677	1,954	3,631	1,927	2,076	4,003	250	122	372
Forest Grove	4,775	2,717	7,492	6,999	3,380	10,379	2,224	663	2,887
Gladstone	2,831	1,356	4,187	3,097	1,779	4,876	266	423	689
Gresham	19,781	18,243	38,024	25,394	25,656	51,051	5,613	7,413	13,027
Happy Valley	4,162	273	4,435	9,898	512	10,410	5,736	239	5,975
Hillsboro	18,575	14,251	32,826	21,762	23,211	44,973	3,187	8,960	12,147
Johnson City	268	0	268	268	0	268	0	0	0
King City	572	383	955	590	379	969	18	-4	14
Lake Oswego	10,887	5,180	16,067	12,307	6,984	19,291	1,420	1,804	3,224
Maywood Park	282	18	300	288	18	306	6	0	6
Milwaukie	5,934	2,307	8,241	7,166	2,574	9,740	1,232	267	1,499
Oregon City	8,463	3,511	11,974	12,186	4,861	17,047	3,723	1,350	5,073
Portland	143,519	104,897	248,416	165,348	204,050	369,398	21,829	99,153	120,982
Rivergrove	123	0	123	124	0	124	1	0	1
Sherwood	4,971	1,505	6,476	5,553	1,716	7,269	582	211	793
Tigard	12,035	6,632	18,667	15,120	10,877	25,997	3,085	4,245	7,330
Troutdale	3,981	1,806	5,787	4,506	2,126	6,632	525	320	845
Tualatin	5,391	4,847	10,238	5,980	5,190	11,170	589	343	932
West Linn	7,670	2,582	10,252	9,237	2,751	11,988	1,567	169	1,736
Wilsonville	3,471	4,509	7,980	5,625	5,883	11,508	2,154	1,374	3,528
Wood Village	458	1,081	1,539	488	1,121	1,609	30	40	70
Uninc. Clackamas Co.	21,106	13,559	34,665	28,424	16,650	45,074	7,318	3,091	10,409
Uninc. Multnomah Co.	1,715	314	2,029	3,260	847	4,107	1,545	533	2,078
Uninc. Washington Co.	50,176	21,204	71,380	71,698	28,778	100,476	21,522	7,574	29,096
Inside UGB Total	357,090	236,346	593,436	452,823	384,225	837,048	95,733	147,879	243,612
Outside UGB:									
Clackamas County	40,749	4,202	44,951	60,792	5,600	66,392	20,043	1,398	21,441
Multnomah County	3,776	97	3,873	4,243	122	4,365	467	25	492
Washington County	11,259	101	11,360	27,369	5,401	32,770	16,110	5,300	21,410
Clark County	114,638	43,472	158,110	164,207	64,185	228,392	49,569	20,713	70,282
Outside UGB Total	170,422	47,872	218,294	256,610	75,309	331,919	86,188	27,437	113,625
Tri-County Total	412,874	240,746	653,620	545,226	395,348	940,575	132,352	154,602	286,955
Four-County Total	527,512	284,218	811,730	709,433	459,534	1,168,967	181,921	175,316	357,237

EXHIBIT B (Ordinance No. 12-1292A)
2035 Reviewed Employment Forecast Distribution by Jurisdiction
MetroScope Gamma TAZ Forecast

Final Draft 9/19/2012

Notes: Jurisdiction geographies are approximate, and based on TAZs. Urban Reserves are considered to be outside the UGB.

	2010 Employment Geocode				2035 Jurisdiction Review				2010 - 2035 Change			
Inside UGB:	Retail	Service	Other	Total	Retail	Service	Other	Total	Retail	Service	Other	Total
Beaverton	11,041	19,261	21,539	51,841	14,254	33,282	27,822	75,358	3,213	14,021	6,283	23,517
Cornelius	693	711	1,680	3,084	1,611	1,880	4,440	7,931	918	1,169	2,760	4,847
Damascus	260	357	908	1,525	902	1,613	1,894	4,409	642	1,256	986	2,884
Durham	1	213	318	532	1	307	458	766	0	94	140	234
Fairview	236	497	1,878	2,611	558	3,293	3,724	7,575	322	2,796	1,846	4,964
Forest Grove	882	2,018	2,617	5,517	1,747	3,455	5,343	10,545	865	1,437	2,726	5,028
Gladstone	702	546	883	2,131	903	1,040	1,092	3,035	201	494	209	904
Gresham	7,353	8,871	16,408	32,632	12,334	20,154	26,079	58,567	4,981	11,283	9,671	25,935
Happy Valley	241	256	621	1,118	789	1,842	1,616	4,247	548	1,586	995	3,129
Hillsboro	9,584	14,449	34,227	58,260	12,152	25,518	55,733	93,403	2,568	11,069	21,506	35,143
King City	137	269	64	470	173	511	137	821	36	242	73	351
Lake Oswego	2,553	7,024	8,670	18,247	2,323	11,584	8,879	22,786	-230	4,560	209	4,539
Milwaukie	1,403	3,527	6,658	11,588	1,944	5,751	7,712	15,407	541	2,224	1,054	3,819
Oregon City	3,081	3,727	7,580	14,388	5,418	6,990	10,077	22,485	2,337	3,263	2,497	8,097
Portland	65,150	139,116	170,076	374,342	76,134	218,147	214,199	508,482	10,984	79,031	44,123	134,140
Sherwood	1,103	1,206	1,907	4,216	1,643	2,604	5,005	9,252	540	1,398	3,098	5,036
Tigard	9,072	11,901	16,196	37,169	10,764	23,818	19,650	54,232	1,692	11,917	3,454	17,063
Troutdale	1,272	493	2,361	4,126	2,039	2,357	5,615	10,011	767	1,864	3,254	5,885
Tualatin	4,372	6,140	12,460	22,972	5,066	8,868	21,305	35,239	694	2,728	8,845	12,267
West Linn	966	1,593	1,693	4,252	1,517	2,683	2,331	6,531	551	1,090	638	2,279
Wilsonville	2,480	4,839	9,754	17,073	3,536	9,733	14,150	27,419	1,056	4,894	4,396	10,346
Wood Village	1,261	242	531	2,034	1,783	1,158	1,489	4,430	522	916	958	2,396
Uninc. Clackamas Co.	11,506	13,302	20,344	45,152	15,519	26,628	25,775	67,922	4,013	13,326	5,431	22,770
Uninc. Multnomah Co.	109	377	396	882	749	1,658	2,367	4,774	640	1,281	1,971	3,892
Uninc. Washington Co.	5,929	13,844	17,097	36,870	8,659	23,012	31,142	62,813	2,730	9,168	14,045	25,943
Inside UGB Total	141,387	254,779	356,866	753,032	182,518	437,886	498,034	1,118,440	41,131	183,107	141,168	365,408
Outside UGB:												
Clackamas County	4,803	5,218	15,348	25,369	8,182	11,295	22,359	41,836	3,379	6,077	7,011	16,467
Multnomah County	361	479	1,513	2,353	384	876	1,945	3,205	23	397	432	852
Washington County	854	1,640	5,881	8,375	2,363	6,659	18,084	27,106	1,509	5,019	12,203	18,731
Clark County	25,375	42,061	59,831	127,267	40,864	80,963	100,193	222,020	15,489	38,902	40,362	94,753
Outside UGB Total	31,393	49,398	82,573	163,364	51,793	99,793	142,581	294,167	20,400	50,395	60,008	130,803
Four-County Total	172,780	304,177	439,439	916,396	234,311	537,679	640,615	1,412,607	61,531	233,502	201,176	496,211

Exhibit C to Ordinance No. 12-1292A
Findings of Fact and Conclusions of Law
Regarding Compliance With Statewide Planning Goals

Ordinance No. 12-1292A adopts the distribution of forecasted population and employment growth to year 2035 to specific zones within the Metro district, consistent with Metro's obligations under ORS 195.036 to coordinate the region-wide forecast with other local governments within the Metro district boundary.

A detailed explanation of the background regarding Metro's extensive coordination with local governments and the process associated with the generation of the population forecast figures is provided in the staff report to the Metro Council dated November 15, 2012, which is hereby adopted and incorporated by reference into these findings.

These findings address compliance with the following potentially applicable Statewide Planning Goals:

Goal 1 (Citizen Involvement): Metro followed the provisions in its charter for adoption of ordinances and coordinated extensively with affected local governments. The Council concludes that adoption of Ordinance No. 12-1292A complies with Goal 1.

Goal 2 (Adequate Factual Base): The Metro Council concludes that the Staff Report and the information upon which the forecast is based provide an adequate factual base for these findings. Metro coordinated the adoption of these forecasts with all cities and counties in the region. The Council concludes that adoption of Ordinance No. 12-1292A complies with Goal 2.

Goal 10 (Housing): The Metro Council adopted a population and employment forecast for the entire Metro region on October 20, 2011 as part of its decision in Ordinance No. 11-1264B to expand the urban growth boundary in order to accommodate the need for housing through the year 2030. The current ordinance merely distributes the forecast figures adopted in 2011 to individual traffic analysis zones and corresponding local governments in order to fulfill Metro's forecast coordination obligations under ORS 195.036. The Metro Council concludes that this distribution decision implements Goal 10 and related statutory requirements, and is consistent with Goal 10.

Goal 14 (Urbanization): Goal 14 directs local governments to accommodate urban population and employment inside urban growth boundaries, ensure the efficient use of land, and provide for livable communities. The adoption of Ordinance No. 12-1292A is consistent with Goal 14 because it enables local governments within the Metro region to undertake their planning responsibilities based on a coordinated region-wide population and employment forecast that provides information that is necessary to plan for future urban growth and to meet the objectives of Goal 14. The Metro Council concludes that the distribution of regional population and employment forecast figures to local governments complies with the requirements of state law and the objectives of Goal 14.

STAFF REPORT (Revised)

IN CONSIDERATION OF ORDINANCE NO. 12-1292A, FOR THE PURPOSE OF ADOPTING THE DISTRIBUTION OF THE POPULATION AND EMPLOYMENT GROWTH TO YEAR 2035 TO TRAFFIC ANALYSIS ZONES IN THE REGION CONSISTENT WITH THE FORECAST ADOPTED BY ORDINANCE NO. 11-1264B IN FULFILLMENT OF METRO'S POPULATION COORDINATION RESPONSIBILITY UNDER ORS 195.036

Date: November 15, 2012 Prepared by: Gerry Uba, x1737

BACKGROUND

Oregon land use law (ORS 195.036; 195.025) requires Metro to coordinate its regional population forecasts with local governments inside the urban growth boundary for use in updating their comprehensive plans, land use regulations and other related policies. In 2009, Metro created a population and employment growth forecast for the seven-county region[1] for the next 50 years. One of the ways Metro coordinates the population and employment forecast is to conduct a localized distribution of the 2009 forecast after an urban growth boundary decision cycle is completed.

Metro has been preparing localized-level analyses every five years for over 20 years. The current distribution is the most advanced analysis yet. The experience gained from previous distributions has helped Metro and local governments to improve the methodology and the information that is produced. To accommodate various local and regional planning needs, the localized growth forecast distribution was produced for the years 2025, 2035 and 2040. Local government staff expressed interest in the 2035 distributions as more relevant for their 20-year growth planning.

The distribution information is essential for local and regional planning, such as updating local comprehensive plans (through periodic review), local transportation system plans, and the Regional Transportation Plan. The information is also used for corridor planning and special districts planning. Many cities in the region currently undergoing periodic review are coordinating their forecast with Metro as they are updating their comprehensive plans. Although there is no legal requirement for school districts and special districts to coordinate their forecast with Metro, the distribution information will be useful to school districts for enrolment forecasting and facility planning, and to special districts in the region, such as water, sewer and fire districts, in updating their facility plans and emergency preparedness plans. The information is also helpful to TriMet in forecasting future ridership and mapping travel patterns, enabling the agency to better plan for frequency of MAX and bus service and future routes.

Methodology of the growth forecast distribution

The growth forecast distribution is based on policy and investment decisions and assumptions that local elected leaders and the Metro Council have already adopted, including the seven-county forecast,

[1] Clark, Clackamas, Columbia, Multnomah, Skamania, Washington, and Yamhill counties

existing zoning, adopted plans, the most recently adopted Regional Transportation Plan, and urban and rural reserves. The regional coordination of the forecast distribution is a two stage process.

The first stage of the coordination process involves Metro and local government staff working together to refine the buildable land inventory (BLI) methodology to ensure the accuracy of zoning and growth capacity assumptions. Attachment 1 contains names of local jurisdiction staff involved in the population and employment coordination. The methodology takes into account land that cannot be built on due to environmental constraints and right of way, as well as capacity from vacant buildable lands, new urban areas[2], prospective urban growth boundary expansions into designated urban reserves, redevelopment and infill. As a result of this exercise, the region now has an updated 30-year capacity estimate that reflects the input and review from local government staff. This coordinated buildable land inventory reflects the increasing importance of redevelopment as a key part of the land supply in this region.

The geography used for this analysis is the Traffic Analysis Zone (TAZ). To provide more detail than the previous growth distribution, the number of TAZs used was increased from 2,013 to 2,162. The TAZ is the geographic unit that serves as the building block of Metro's primary forecasting tools (the travel demand model and MetroScope). By dividing the region into 2,162 TAZs, the accuracy of the travel demand model as well as all other aspects of transportation planning are improved. The TAZ-level data also assist land use planners in updating comprehensive plans and zoning, and conducting other types of land use analysis, including neighborhood level analysis.

In the second stage of the distribution coordination process, land use and transportation models are used to match demand (the seven-county forecast) with supply (the BLI). After extensive review of Metro's initial distributions with local governments' staff, the final product is the 2025, 2035 and 2040 distributions of forecast households and jobs to TAZs, cities and unincorporated areas in the region.

Further analyses of the distribution data reveal future trends that regional and local planners should bring to the attention of their decision makers.

Regional Planning Directors Involvement

The coordination of population and employment forecast was kicked off with a meeting of the Regional Planning Directors in October 2010, endorsing roles and responsibilities of local governments and Metro. The directors met again in July 2011 to review, discuss and reach agreement on the outcome of the first stage of the process – the BLI methodology, urban reserve urbanization assumptions, redevelopment assumptions, and the capacity of residential and employment land. At the July meeting, Washington County and the City of Beaverton emphasized the need for a better understanding of residential housing demand and preferences and redevelopment. In response, Metro staff has identified future research on: a) residential choice study enhanced with market segmentation; b) redevelopment supply assumption refinement, depending on funding availability. This research could inform the next Urban Growth Report and forecast distribution.

The last meeting of directors was in September 2012 to review and comment specifically on the 2035 distribution of households and employment. The 2035 household and employment distribution by local jurisdiction are shown in Exhibits A and B of the ordinance. Attachments 2 and 3 contain the 2035

[2] Areas added to the urban growth boundary that does not yet have urban zoning.

forecast distribution by local jurisdiction. Other related information that has been produced are the 2010 population by local jurisdiction in Attachment 2, the 2035 population forecast by local jurisdiction in Attachment 3, and the forecast distribution profiles by city and county in Attachment 4.

Metro advisory committee involvement

The outcome of the first stage of the process (BLI methodology, urban reserve urbanization assumptions, redevelopment assumptions, and capacity of residential and employment land) was presented to the Metro Technical Advisory Committee (MTAC), and Transportation Policy Alternatives Committee (TPAC) in January 2012, and to the Metro Policy Advisory Committee (MPAC) in February 2012 for discussion and comment. The 2035 distribution of households and employment was presented to TPAC in September 2012, and to MTAC, MPAC and the Joint Policy Advisory Committee on Transportation in October 2012.

Additional outreach and information

Staff updated the Oregon Land Conservation and Development Commission in June 2011 on how Metro is coordinating its regional forecast with the forecasts of local governments in the region, including other ways Metro coordinates with local governments -- urban growth report, capacity ordinance, and growth management decisions.

An Executive summary describing the extent of the distribution between Metro and local governments is included as Attachment 5. The description of the project methodology, tools, assumptions for estimating land supply and matching the demand (households and employment forecast) with the land supply is in Attachment 6. The coordination meeting agendas and comments of local governments on the mid-term (2025) and long-term (2035/2040) forecast distribution are in Attachment 7.

ANALYSIS/INFORMATION

1. **Known Opposition**

   Washington County and the City of Beaverton provided written comments emphasizing the need for a better understanding of residential housing demand and preferences and redevelopment. In response, Metro staff has identified additional research possibilities. Depending on funding availability, this research could inform the next Urban Growth Report and forecast distribution.

2. **Legal Antecedents**

   The distribution of the growth forecast satisfies Metro's coordination obligations under ORS 195.025 and 195.036. As requested by DLCD, staff is proposing that the Metro Council adopt the forecast distribution by an ordinance that will be acknowledged by DLCD as part of Metro's planning documents in order to support future planning decisions by local governments that rely upon the population forecasts. State law requires cities and counties to adopt coordinated forecasts as part of their comprehensive plans.

3. **Anticipated Effects**

   Adoption of the distribution of population and employment forecast at a localized-level will encourage local governments to use distribution information to conform their land use and transportation plans to recent regional policies adopted by the Metro Council. The TAZ-level

distributions would also inform the next Regional Transportation Plan. Delay of the adoption would delay some local government activities that would be accomplished with the forecast distribution information.

4. **Budget Impacts**

   The FY 2010/2011 and FY 2011/2012 budgets included resources for staff in the Research Center and the Planning and Development Department to work on this project. In the current FY 2012/2013 budget there are sufficient funds to package and post the forecast distribution in electronic platforms that will make the data accessible to local governments and school and special districts in the region.

RECOMMENDED ACTION

Staff recommends that the Metro Council accept and adopt the distribution of the 2009 population and employment forecast as fulfillment of Metro's responsibilities on population coordination with local governments in the region

ATTACHMENTS

1. Forecast Distribution Process Local Government and Agency Staff
2. 201035 ~~Reviewed Household Forecast Distribution~~ Population by Jurisdiction
3. 2035 ~~Reviewed Employment~~ Population Forecast ~~Distribution~~ by Jurisdiction
4. Metro Gamma Forecast Distribution Profiles by City and County – 2025/2035/2040
5. Regional 2035 Forecast Distribution: Executive Summary
6. Technical Documentation; ~~of the Project (i.e., The Technical Report)~~ Regional Forecast Distribution Methodology and Assumptions; Population and Employment
7. ~~Local Governments' Comments on the 2025 and 2035 Forecast Distributions and Metro Response.~~ Metro Regional Forecast Distribution Coordination Meetings and Discussions

ATTACHMENT 1 (Staff Report to Ordinance No. 1292A)
2035 FORECAST DISTRIBUTION PROCESS: LOCAL GOVERNMENT AND AGENCY STAFF

Cities	Staff
City of Beaverton	Laura Kelly, Robert McCracken, Jeff Salvon, Steven Sparks, Doug Taylor
City of Cornelius	Dick Reynolds
City of Damascus	Steve Gaschler, John Morgan, Erika Palmer, Bob Short
City of Durham	
City of Fairview	Lindsey Nesbitt
City of Forest Grove	Jon Holan, Dan Riordan
City of Gladstone	Larry Conrad
City of Gresham	Erin Aigner, Jonathan Harker, Brian Martin, Ann Pytynia
City of Happy Valley	Jason Tuck, Michael Walter
City of Hillsboro	Colin Cooper, Doug Miller, Don Odermott, Pat Ribellia, Alwin Turiel
City of Johnson City	
City of King City	Keith Liden
City of Lake Oswego	Denny Egner, Erica Rooney, Sarah Selden
City of Maywood Park	
City of Milwaukie	Li Alligood, Kenny Asher, Katie Mangle
City of Oregon City	Tony Konkol, Christina Roberts-Gardner, Laura Terway
City of Portland	Tom Armstrong
City of Rivergrove	
City of Sherwood	Julia Hajduk, Michelle Miller
City of Tigard	Darren Wyss
City of Troutdale	Rich Faith, Elizabeth McCallum
City of Tualatin	Colin Cortes, Cindy Hahn, Aquilla Hurd-Ravich, Alice Rouyer
City of West Linn	Sara Javronok, Chris Kerr, John Sonnen
City of Wilsonville	Chris Neamtzu, Stephan Lashbrook, Daniel Pauly, Dan Stark
City of Wood Village	Bill Peterson
Counties	**Staff**
Clackamas County	Sarah Abbott, Larry Conrad, Martha Fritzie, Shari Gilevich, Clay Glasgow, Cindy Hagen, Scott Hoelscher, Diedre Landon, Mike McAllister, Simone Rede, Michael D. Walden
Multnomah County	Chuck Beasley
Washington County	Andy Back, Steve D. Kelley
Agencies	**Staff**
Oregon Employment Dept.	Lynn Wallis
Dept. of Land Conservation & Development	Anne Debbaut, Jennifer Donnelly, Darren Nichols, Lynn Wallis
Oregon Dept. of Transportation	Mai Chi, Kirsten Pennington, Lidwien Rahman, Lainie Smith
Port of Portland	John Boren, Tom Bouillion
Metro	Roger Alfred, Sonny Conder, Jim Cser, Chris Deffebach, Mike Hoglund, Robin McArthur, Cindy Pederson, Ted Reid, Maribeth Todd, Gerry Uba, John Williams, Dennis Yee
Neighboring Cities[1]	
Canby	Bryan Brown, Matilda Deas
Sandy	Tracy Brown

[1] Consultation / information exchange with SW Washington Regional Transportation Council, City of Vancouver and Clark County, Washington.

ATTACHMENT 2 (Staff Report to Ordinance No. 1292A)
2010 Census of Population by City and County

(source: U.S. Census, 2010 Demographic Profiles)

Note: Jurisdiction geographies are based on the city limits from Census definitions

Inside UGB:	CENSUS 2010 Population	CENSUS 2010 Households	(Estimate) Persons Per Household	CENSUS 2010 Dwelling Units	CENSUS 2010 Vacancy %
Beaverton	89,803	37,213	2.41	39,500	5.8%
Cornelius	11,869	3,339	3.55	3,499	4.6%
Damascus	10,539	3,621	2.91	3,769	3.9%
Durham	1,351	545	2.48	561	2.9%
Fairview	8,920	3,544	2.52	3,786	6.4%
Forest Grove	21,083	7,385	2.85	7,845	5.9%
Gladstone	11,497	4,540	2.53	4,779	5.0%
Gresham	105,594	38,704	2.73	41,015	5.6%
Happy Valley	13,903	4,408	3.15	4,708	6.4%
Hillsboro	91,611	33,289	2.75	35,487	6.2%
Johnson City	566	268	2.11	278	3.6%
King City	3,111	1,735	1.79	1,920	9.6%
Lake Oswego	36,619	15,893	2.30	16,995	6.5%
Maywood Park	752	300	2.51	312	3.8%
Milwaukie	20,291	8,667	2.34	9,138	5.2%
Oregon City	31,859	11,973	2.66	12,900	7.2%
Portland	583,776	248,546	2.35	265,439	6.4%
Rivergrove	289	123	2.35	133	7.5%
Sherwood	18,194	6,316	2.88	6,569	3.9%
Tigard	48,035	19,157	2.51	20,068	4.5%
Troutdale	15,962	5,671	2.81	5,907	4.0%
Tualatin	26,054	10,000	2.61	10,528	5.0%
West Linn	25,109	9,523	2.64	10,035	5.1%
Wilsonville	19,509	7,859	2.48	8,487	7.4%
Wood Village	3,878	1,226	3.16	1,289	4.9%
Uninc. Clackamas Co.*	89,611	34,360	2.61	37,324	7.9%
Uninc. Multnomah Co.*	5,656	2,251	2.51	2,435	7.6%
Uninc. Washington Co.*	188,586	70,703	2.67	74,600	5.2%
Inside UGB Total	1,484,026	591,159	2.51	629,307	6.1%
Outside UGB:					
Clackamas County	116,200	44,555	2.61	48,399	7.9%
Multnomah County	10,796	4,298	2.51	4,649	7.6%
Washington County	30,013	11,252	2.67	11,873	5.2%
Clark County	425,363	158,099	2.69	167,413	5.6%
Outside UGB Total	582,373	218,204	2.67	232,333	6.1%
Tri-County Total	1,641,036	651,264	2.52	694,227	6.2%
Four-County Total	2,066,399	809,363	2.55	861,640	6.1%

(* Note: derived as proportional estimate from the total county unincorporated)

ATTACHMENT 3 (Staff Report to Ordinance No. 1292A)
2035 MetroScope "Gamma" Population Forecast

Revised Draft 11/15/2012 *(source: Scen #1221)*

Note: Jurisdiction geographies are approximate, and based on TAZs.

Jurisdiction	(TAZ-based) 2035 Population	(TAZ-based) 2035 Households	2035 Persons Per Household	Population Growth 2010 to 2035 APR %	% change	change
Beaverton	113,174	50,517	2.24	0.9%	26%	23,371
Cornelius	18,193	5,513	3.30	1.7%	53%	6,324
Damascus	35,654	11,916	2.99	5.0%	238%	25,115
Durham	1,003	436	2.30	-1.2%	-26%	-348
Fairview	9,196	4,003	2.30	0.1%	3%	276
Forest Grove	27,507	10,379	2.65	1.1%	30%	6,424
Gladstone	12,694	4,876	2.60	0.4%	10%	1,197
Gresham	127,124	51,051	2.49	0.7%	20%	21,530
Happy Valley	33,753	10,410	3.24	3.6%	143%	19,850
Hillsboro	114,898	44,973	2.55	0.9%	25%	23,287
Johnson City	566	268	2.11	0.0%	0%	0
King City	1,613	969	1.66	-2.6%	-48%	-1,498
Lake Oswego	45,693	19,291	2.37	0.9%	25%	9,074
Maywood Park	767	306	2.51	0.1%	2%	15
Milwaukie	23,441	9,740	2.41	0.6%	16%	3,150
Oregon City	46,630	17,047	2.74	1.5%	46%	14,771
Portland	791,908	369,398	2.14	1.2%	36%	208,132
Rivergrove	291	124	2.35	0.0%	1%	2
Sherwood	19,439	7,269	2.67	0.3%	7%	1,245
Tigard	60,515	25,997	2.33	0.9%	26%	12,480
Troutdale	17,038	6,632	2.57	0.3%	7%	1,076
Tualatin	27,017	11,170	2.42	0.1%	4%	963
West Linn	32,493	11,988	2.71	1.0%	29%	7,384
Wilsonville	29,367	11,508	2.55	1.6%	51%	9,858
Wood Village	4,645	1,609	2.89	0.7%	20%	767
Uninc. Clackamas Co.*	120,846	45,074	2.68	1.2%	35%	31,235
Uninc. Multnomah Co.*	9,417	4,107	2.29	2.1%	66%	3,761
Uninc. Washington Co.*	248,799	100,476	2.48	1.1%	32%	60,213
Inside UGB Total	1,973,681	837,048	2.36	1.1%	33%	489,655
Outside UGB:						
Clackamas County **	177,998	66,392	2.68	1.7%	53%	61,798
Multnomah County	10,008	4,365	2.29	-0.3%	-7%	-788
Washington County **	81,145	32,770	2.48	4.1%	170%	51,131
Clark County	612,027	228,392	2.68	1.5%	44%	186,664
Outside UGB Total	881,179	331,919	2.65	1.7%	51%	298,806
Tri-County Total	2,242,833	940,575	2.38	1.3%	37%	601,797
Four-County Total	2,854,860	1,168,967	2.44	1.3%	38%	788,461

Population estimates derived from the "2035 Reviewed TAZ Forecast Distribution" (MetroScope GAMMA HH Forecas

(* Note: derived as proportional estimate from the total county unincorporated)

(** Note: urban reserves are tabulated outside the UGB)

Attachment 4 (Staff Report to Ordinance No. 12-1292A)

METRO 'GAMMA' FORECAST DISTRIBUTION PROFILES BY CITY AND COUNTY 2025 / 2035 / 2040

JURISDICTION REVIEWED HOUSEHOLDS AND EMPLOYMENT

Published 11/15/2012 Metro Economic and Land Use Forecasting

Metro

METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

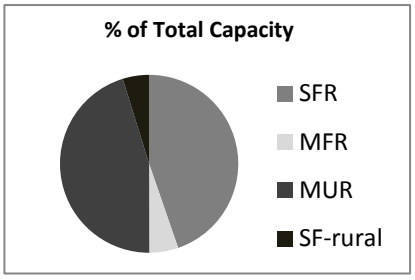
County Summary for **Clackamas**

Household Forecast				
Year	SF	MF	Total	%APR
2010	109,231	37,093	146,324	
2025	146,808	41,341	188,149	1.7%
2035	161,217	47,220	208,437	1.0%
2040	167,598	51,814	219,412	1.0%

Households Change from 2010			
Year	SF	MF	Total
2025	37,577	4,248	41,825
2035	51,986	10,127	62,113
2040	58,367	14,721	73,088

2010-2045 Capacity Used			
Year	SF	MF	Total
2025	49%	5%	27%
2035	68%	13%	40%
2040	76%	19%	47%

2010-2045 Household Capacity by Type							
	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	69,435	8,172	70,254	7,446	76,881	78,426	155,307
% of Total	45%	5%	45%	5%	50%	50%	100%



SFR = Single Family Residential
MFR = Multi-Family Residential
MUR = Multi-Family, Mixed Use
SF-rural = Rural Single Family

SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast				
Year	Retail	Service	Other	Total
2010	27,114	40,035	70,797	137,946
2025	34,770	62,517	85,943	183,230
2035	39,943	77,957	92,544	210,444
2040	43,177	85,402	98,874	227,453

2010-2045 Employment Cap.		
	IND	COM
Acres	3,819	2,255
% of Total	63%	37%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

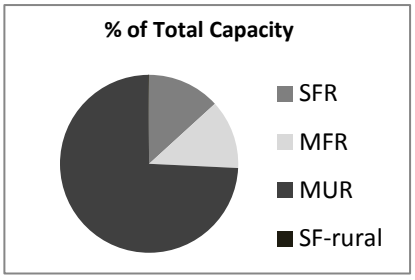
County Summary for **Multnomah**

Household Forecast				
Year	SF	MF	Total	%APR
2010	175,690	128,959	304,649	
2025	203,261	191,394	394,655	1.7%
2035	205,977	236,569	442,546	1.2%
2040	210,367	257,474	467,841	1.1%

Households Change from 2010			
Year	SF	MF	Total
2025	27,571	62,435	90,006
2035	30,287	107,610	137,897
2040	34,677	128,515	163,192

2010-2045 Capacity Used			
Year	SF	MF	Total
2025	87%	30%	38%
2035	96%	53%	58%
2040	100%	63%	69%

2010-2045 Household Capacity by Type							
	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	31,279	29,606	175,105	390	31,669	204,711	236,380
% of Total	13%	13%	74%	0%	13%	87%	100%



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MUR = Multi-Family, Mixed Use
SF-rural = Rural Single Family

SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast				
Year	Retail	Service	Other	Total
2010	75,771	150,159	193,234	419,164
2025	87,169	210,137	236,512	533,818
2035	94,007	247,772	255,550	597,331
2040	97,733	262,650	266,346	626,733

2010-2045 Employment Cap.		
	IND	COM
Acres	3,662	1,605
% of Total	70%	30%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

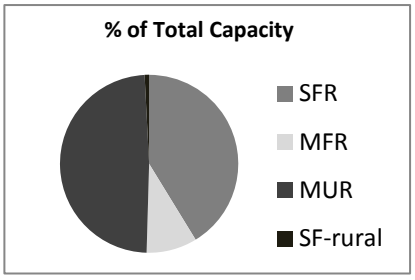
County Summary for **Washington**

Household Forecast				
Year	SF	MF	Total	%APR
2010	127,953	74,694	202,647	
2025	163,533	90,317	253,850	1.5%
2035	178,033	111,560	289,592	1.3%
2040	181,557	123,434	304,991	1.0%

Households Change from 2010			
Year	SF	MF	Total
2025	35,580	15,623	51,203
2035	50,080	36,866	86,945
2040	53,604	48,740	102,344

2010-2045 Capacity Used			
Year	SF	MF	Total
2025	51%	16%	31%
2035	72%	38%	53%
2040	77%	51%	62%

2010-2045 Household Capacity by Type							
	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	68,258	15,236	80,647	1,344	69,601	95,883	165,485
% of Total	41%	9%	49%	1%	42%	58%	100%



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MUR = Multi-Family, Mixed Use
SF-rural = Rural Single Family

SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast				
Year	Retail	Service	Other	Total
2010	44,520	71,922	115,577	232,019
2025	54,561	105,717	165,064	325,342
2035	59,497	130,987	192,328	382,812
2040	62,747	143,327	210,762	416,836

2010-2045 Employment Cap.		
	IND	COM
Acres	6,748	2,159
% of Total	76%	24%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Banks**

County **Washington**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	1,320	0	1,320	
2025	2,251	11	2,262	3.7%
2035	2,955	6	2,961	2.7%
2040	2,964	6	2,970	0.1%

Households Change from 2010

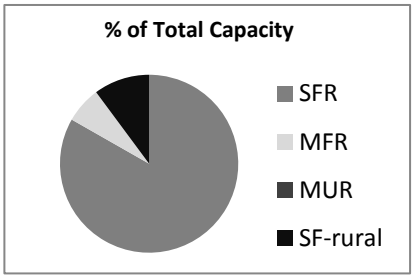
Year	SF	MF	Total
2025	931	11	942
2035	1,635	6	1,641
2040	1,644	6	1,650

2010-2045 Capacity Used

Year	SF	MF	Total
2025	66%	11%	62%
2035	100%	6%	100%
2040	100%	6%	100%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	1,261	100	0	154	1,415	100	1,515
% of Total	83%	7%	0%	10%	93%	7%	100%



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MUR = Multi-Family, Mixed Use
SF-rural = Rural Single Family

SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	159	92	484	735
2025	199	128	691	1,018
2035	225	150	808	1,183
2040	252	165	918	1,335

2010-2045 Employment Cap.

	IND	COM
Acres	0	0
% of Total	0%	0%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Beaverton**

County **Washington**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	18,128	21,953	40,081	
2025	19,733	26,667	46,400	1.0%
2035	20,038	30,479	50,517	0.9%
2040	20,158	31,428	51,587	0.4%

Households Change from 2010

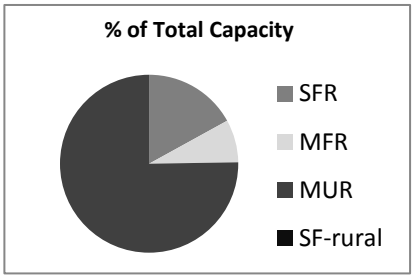
Year	SF	MF	Total
2025	1,605	4,714	6,319
2035	1,910	8,526	10,436
2040	2,030	9,475	11,506

2010-2045 Capacity Used

Year	SF	MF	Total
2025	74%	45%	50%
2035	88%	81%	82%
2040	94%	89%	90%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	2,166	990	9,598	0	2,166	10,589	12,755
% of Total	17%	8%	75%	0%	17%	83%	100%



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SF-rural = Rural Single Family

SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	11,041	19,261	21,539	51,841
2025	13,463	27,150	27,108	67,721
2035	14,254	33,282	27,822	75,358
2040	14,640	36,377	28,634	79,651

2010-2045 Employment Cap.

	IND	COM
Acres	103	450
% of Total	19%	81%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Canby**

County **Clackamas**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	5,115	1,513	6,628	
2025	9,069	1,593	10,662	3.2%
2035	9,796	1,783	11,579	0.8%
2040	9,816	1,895	11,712	0.2%

Households Change from 2010

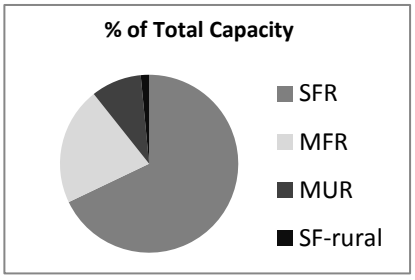
Year	SF	MF	Total
2025	3,954	80	4,034
2035	4,681	270	4,951
2040	4,701	382	5,084

2010-2045 Capacity Used

Year	SF	MF	Total
2025	87%	4%	62%
2035	100%	14%	76%
2040	100%	19%	78%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	4,442	1,400	600	99	4,541	2,000	6,541
% of Total	68%	21%	9%	2%	69%	31%	100%



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SF-rural = Rural Single Family

SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	1,127	1,012	3,453	5,592
2025	1,227	1,356	3,560	6,143
2035	1,929	2,110	5,043	9,082
2040	2,218	2,461	5,519	10,198

2010-2045 Employment Cap.

	IND	COM
Acres	200	104
% of Total	66%	34%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Cornelius**

County **Washington**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	2,467	1,051	3,518	
2025	3,918	1,451	5,369	2.9%
2035	3,428	2,085	5,513	0.3%
2040	3,489	2,316	5,805	1.0%

Households Change from 2010

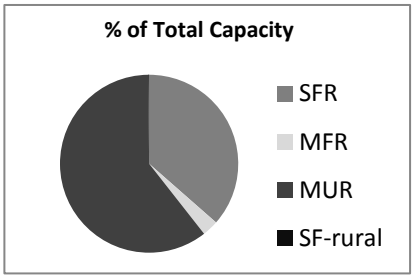
Year	SF	MF	Total
2025	1,451	400	1,851
2035	961	1,034	1,995
2040	1,022	1,265	2,287

2010-2045 Capacity Used

Year	SF	MF	Total
2025	100%	16%	47%
2035	67%	41%	51%
2040	71%	51%	58%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	1,437	116	2,381	6	1,443	2,497	3,940
% of Total	36%	3%	60%	0%	37%	63%	100%



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SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	693	711	1,680	3,084
2025	1,287	1,397	3,377	6,061
2035	1,611	1,880	4,440	7,931
2040	1,767	2,086	4,958	8,811

2010-2045 Employment Cap.

	IND	COM
Acres	117	95
% of Total	55%	45%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Damascus**

County **Clackamas**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	3,322	205	3,527	
2025	9,087	164	9,251	6.6%
2035	11,700	217	11,916	2.6%
2040	12,969	280	13,249	2.1%

Households Change from 2010

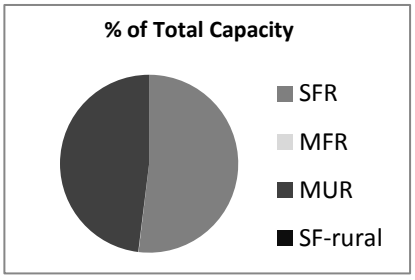
Year	SF	MF	Total
2025	5,765	-41	5,724
2035	8,378	12	8,389
2040	9,647	75	9,722

2010-2045 Capacity Used

Year	SF	MF	Total
2025	52%	0%	27%
2035	75%	0%	39%
2040	86%	1%	45%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	11,185	12	10,351	1	11,187	10,363	21,550
% of Total	52%	0%	48%	0%	52%	48%	100%



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SF-rural = Rural Single Family

SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	260	357	908	1,525
2025	510	822	1,418	2,750
2035	902	1,613	1,894	4,409
2040	1,378	2,252	3,107	6,737

2010-2045 Employment Cap.

	IND	COM
Acres	597	366
% of Total	62%	38%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Durham**

County **Washington**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	350	8	358	
2025	389	15	404	0.8%
2035	410	26	436	0.8%
2040	412	28	440	0.2%

Households Change from 2010

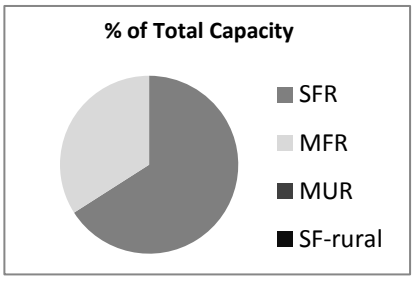
Year	SF	MF	Total
2025	39	7	46
2035	60	18	78
2040	62	20	82

2010-2045 Capacity Used

Year	SF	MF	Total
2025	97%	34%	75%
2035	100%	84%	100%
2040	100%	95%	100%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	40	21	0	0	40	21	61
% of Total	66%	34%	0%	0%	66%	34%	100%



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SF-rural = Rural Single Family

SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	1	213	318	532
2025	1	269	413	683
2035	1	307	458	766
2040	1	327	484	812

2010-2045 Employment Cap.

	IND	COM
Acres	0	0
% of Total	0%	0%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Estacada**

County **Clackamas**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	1,343	315	1,658	
2025	1,832	330	2,162	1.8%
2035	2,258	324	2,582	1.8%
2040	2,350	350	2,700	0.9%

Households Change from 2010

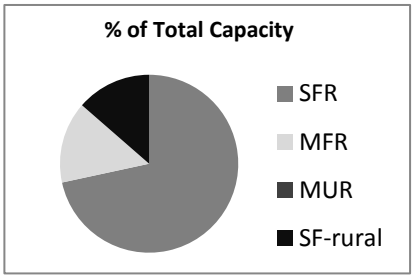
Year	SF	MF	Total
2025	489	15	504
2035	915	9	924
2040	1,007	35	1,042

2010-2045 Capacity Used

Year	SF	MF	Total
2025	42%	8%	37%
2035	79%	4%	68%
2040	87%	18%	77%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	968	200	0	184	1,152	200	1,352
% of Total	72%	15%	0%	14%	85%	15%	100%



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SF-rural = Rural Single Family

SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	290	284	853	1,427
2025	541	664	1,365	2,570
2035	696	901	1,514	3,111
2040	772	1,008	1,574	3,354

2010-2045 Employment Cap.

	IND	COM
Acres	25	89
% of Total	22%	78%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Fairview**

County **Multnomah**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	1,677	1,954	3,631	
2025	1,968	1,998	3,966	0.6%
2035	1,927	2,076	4,003	0.1%
2040	1,932	2,099	4,031	0.1%

Households Change from 2010

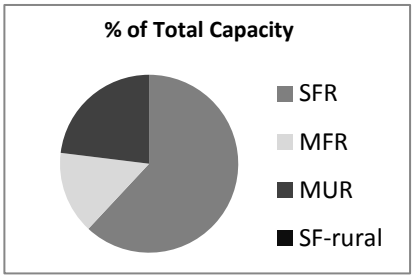
Year	SF	MF	Total
2025	291	44	335
2035	250	122	372
2040	255	145	400

2010-2045 Capacity Used

Year	SF	MF	Total
2025	95%	23%	68%
2035	81%	65%	75%
2040	83%	77%	81%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	307	74	114	0	307	189	496
% of Total	62%	15%	23%	0%	62%	38%	100%



SFR = Single Family Residential
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MUR = Multi-Family, Mixed Use
SF-rural = Rural Single Family

SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	236	497	1,878	2,611
2025	437	2,317	3,074	5,828
2035	558	3,293	3,724	7,575
2040	613	3,655	4,045	8,313

2010-2045 Employment Cap.

	IND	COM
Acres	222	81
% of Total	73%	27%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Forest Grove**

County **Washington**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	4,775	2,717	7,492	
2025	6,949	2,864	9,813	1.8%
2035	6,999	3,380	10,379	0.6%
2040	7,221	3,849	11,070	1.3%

Households Change from 2010

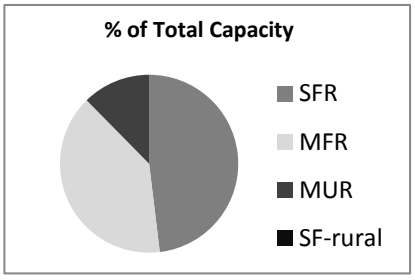
Year	SF	MF	Total
2025	2,174	147	2,321
2035	2,224	663	2,887
2040	2,446	1,132	3,578

2010-2045 Capacity Used

Year	SF	MF	Total
2025	93%	6%	48%
2035	95%	26%	60%
2040	100%	45%	74%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	2,332	1,918	601	0	2,332	2,518	4,850
% of Total	48%	40%	12%	0%	48%	52%	100%



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MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	882	2,018	2,617	5,517
2025	1,444	2,851	4,316	8,611
2035	1,747	3,455	5,343	10,545
2040	1,900	3,729	5,823	11,452

2010-2045 Employment Cap.

	IND	COM
Acres	228	54
% of Total	81%	19%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Gladstone**

County **Clackamas**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	2,831	1,356	4,187	
2025	3,094	1,469	4,563	0.6%
2035	3,097	1,779	4,876	0.7%
2040	3,100	1,930	5,030	0.6%

Households Change from 2010

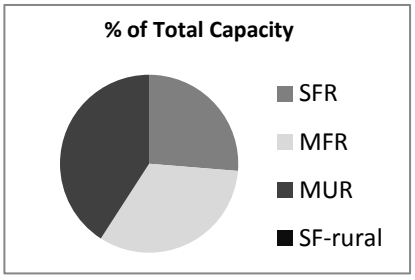
Year	SF	MF	Total
2025	263	113	376
2035	266	423	689
2040	269	574	843

2010-2045 Capacity Used

Year	SF	MF	Total
2025	95%	15%	36%
2035	96%	55%	65%
2040	97%	74%	80%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	277	346	430	0	277	776	1,052
% of Total	26%	33%	41%	0%	26%	74%	100%



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Employment Forecast

Year	Retail	Service	Other	Total
2010	702	546	883	2,131
2025	835	854	1,032	2,721
2035	903	1,040	1,092	3,035
2040	927	1,119	1,134	3,180

2010-2045 Employment Cap.

	IND	COM
Acres	3	20
% of Total	15%	85%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Gresham**

County **Multnomah**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	19,781	18,243	38,024	
2025	24,879	21,694	46,573	1.4%
2035	25,394	25,656	51,051	0.9%
2040	25,995	27,429	53,424	0.9%

Households Change from 2010

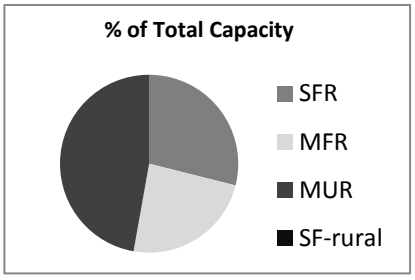
Year	SF	MF	Total
2025	5,098	3,451	8,549
2035	5,613	7,413	13,027
2040	6,214	9,186	15,400

2010-2045 Capacity Used

Year	SF	MF	Total
2025	85%	23%	41%
2035	94%	50%	63%
2040	100%	62%	74%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	6,001	4,960	9,797	0	6,001	14,757	20,758
% of Total	29%	24%	47%	0%	29%	71%	100%



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Employment Forecast

Year	Retail	Service	Other	Total
2010	7,353	8,871	16,408	32,632
2025	10,877	16,132	23,602	50,611
2035	12,334	20,154	26,079	58,567
2040	13,134	21,737	27,331	62,202

2010-2045 Employment Cap.

	IND	COM
Acres	885	335
% of Total	73%	27%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Happy Valley**

County **Clackamas**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	4,162	273	4,435	
2025	9,498	400	9,898	5.5%
2035	9,898	512	10,410	0.5%
2040	9,894	583	10,477	0.1%

Households Change from 2010

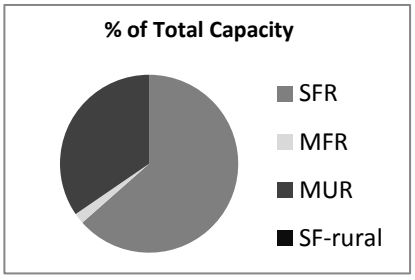
Year	SF	MF	Total
2025	5,336	127	5,463
2035	5,736	239	5,975
2040	5,732	310	6,042

2010-2045 Capacity Used

Year	SF	MF	Total
2025	100%	4%	68%
2035	100%	8%	74%
2040	100%	11%	75%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	5,120	156	2,787	0	5,120	2,944	8,064
% of Total	63%	2%	35%	0%	63%	37%	100%



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MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	241	256	621	1,118
2025	614	1,266	1,351	3,231
2035	789	1,842	1,616	4,247
2040	918	2,164	1,982	5,064

2010-2045 Employment Cap.

	IND	COM
Acres	228	132
% of Total	63%	37%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Hillsboro**

County **Washington**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	18,575	14,251	32,826	
2025	21,240	19,427	40,667	1.4%
2035	21,762	23,211	44,973	1.0%
2040	21,849	25,301	47,150	0.9%

Households Change from 2010

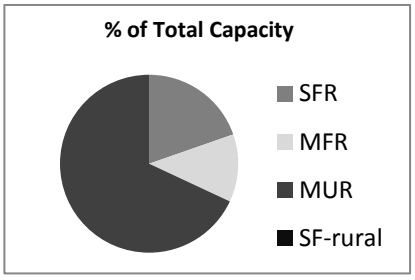
Year	SF	MF	Total
2025	2,665	5,176	7,841
2035	3,187	8,960	12,147
2040	3,274	11,050	14,324

2010-2045 Capacity Used

Year	SF	MF	Total
2025	83%	39%	48%
2035	99%	68%	74%
2040	100%	84%	87%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	3,223	2,014	11,151	0	3,223	13,165	16,387
% of Total	20%	12%	68%	0%	20%	80%	100%



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SF-rural = Rural Single Family

SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	9,584	14,449	34,227	58,260
2025	11,186	21,367	50,748	83,301
2035	12,152	25,518	55,733	93,403
2040	12,725	27,459	59,452	99,636

2010-2045 Employment Cap.

	IND	COM
Acres	1,194	365
% of Total	77%	23%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **King City**

County **Washington**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	572	383	955	
2025	582	373	955	0.0%
2035	590	379	969	0.1%
2040	590	381	970	0.0%

Households Change from 2010

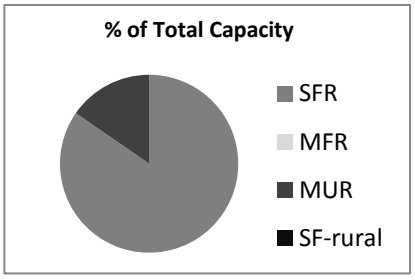
Year	SF	MF	Total
2025	10	-10	0
2035	18	-4	14
2040	18	-2	15

2010-2045 Capacity Used

Year	SF	MF	Total
2025	36%	-196%	0%
2035	62%	-69%	42%
2040	63%	-46%	46%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	28	0	5	0	28	5	33
% of Total	85%	0%	15%	0%	85%	15%	100%



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SF-rural = Rural Single Family

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MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	137	269	64	470
2025	160	417	113	690
2035	173	511	137	821
2040	175	555	152	882

2010-2045 Employment Cap.

	IND	COM
Acres	0	7
% of Total	0%	100%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Lake Oswego**

County **Clackamas**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	10,887	5,180	16,067	
2025	12,215	6,117	18,332	0.9%
2035	12,307	6,984	19,291	0.5%
2040	12,888	7,586	20,474	1.2%

Households Change from 2010

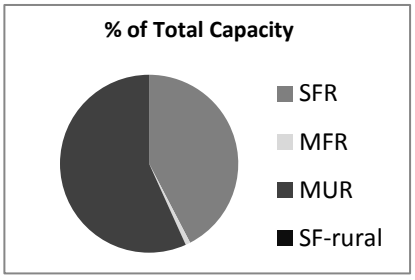
Year	SF	MF	Total
2025	1,328	937	2,265
2035	1,420	1,804	3,224
2040	2,001	2,406	4,407

2010-2045 Capacity Used

Year	SF	MF	Total
2025	74%	39%	54%
2035	80%	74%	77%
2040	100%	99%	100%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	1,785	37	2,391	0	1,785	2,428	4,213
% of Total	42%	1%	57%	0%	42%	58%	100%



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SF-rural = Rural Single Family

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MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	2,553	7,024	8,670	18,247
2025	2,285	11,188	8,822	22,295
2035	2,323	11,584	8,879	22,786
2040	2,260	12,388	9,191	23,839

2010-2045 Employment Cap.

	IND	COM
Acres	19	198
% of Total	9%	91%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Milwaukie**

County **Clackamas**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	5,934	2,307	8,241	
2025	6,934	2,426	9,360	0.9%
2035	7,166	2,574	9,740	0.4%
2040	7,178	2,624	9,802	0.1%

Households Change from 2010

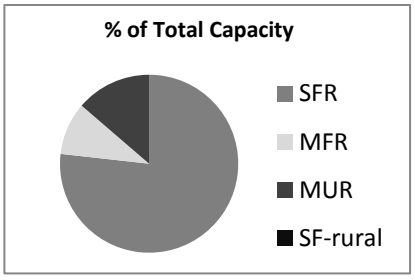
Year	SF	MF	Total
2025	1,000	119	1,119
2035	1,232	267	1,499
2040	1,244	317	1,561

2010-2045 Capacity Used

Year	SF	MF	Total
2025	76%	30%	65%
2035	93%	67%	87%
2040	94%	79%	91%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	1,320	164	235	0	1,320	399	1,719
% of Total	77%	10%	14%	0%	77%	23%	100%



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MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	1,403	3,527	6,658	11,588
2025	1,737	4,860	7,538	14,135
2035	1,944	5,751	7,712	15,407
2040	2,031	6,096	7,728	15,855

2010-2045 Employment Cap.

	IND	COM
Acres	44	26
% of Total	63%	37%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Molalla**

County **Clackamas**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	3,539	204	3,743	
2025	4,145	238	4,383	1.1%
2035	5,020	239	5,259	1.8%
2040	5,236	242	5,477	0.8%

Households Change from 2010

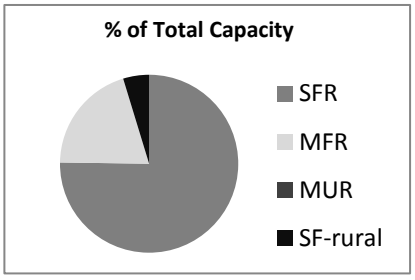
Year	SF	MF	Total
2025	606	34	640
2035	1,481	35	1,516
2040	1,697	38	1,734

2010-2045 Capacity Used

Year	SF	MF	Total
2025	30%	7%	26%
2035	74%	7%	61%
2040	85%	8%	70%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	1,875	500	0	118	1,992	500	2,492
% of Total	75%	20%	0%	5%	80%	20%	100%



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MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	639	416	1,628	2,683
2025	926	891	2,253	4,070
2035	1,118	1,216	2,515	4,849
2040	1,234	1,413	2,734	5,381

2010-2045 Employment Cap.

	IND	COM
Acres	25	90
% of Total	22%	78%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **North Plains**

County **Washington**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	776	0	776	
2025	1,045	47	1,092	2.3%
2035	1,032	198	1,230	1.2%
2040	1,202	470	1,672	6.3%

Households Change from 2010

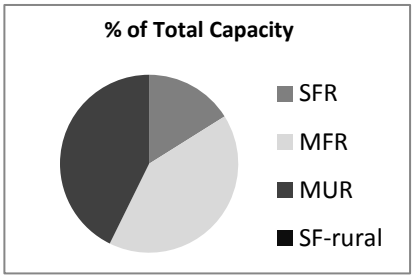
Year	SF	MF	Total
2025	269	47	316
2035	256	198	454
2040	426	470	896

2010-2045 Capacity Used

Year	SF	MF	Total
2025	48%	2%	9%
2035	45%	7%	13%
2040	76%	16%	26%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	563	1,442	1,495	0	563	2,937	3,500
% of Total	16%	41%	43%	0%	16%	84%	100%



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SF-rural = Rural Single Family

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MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	84	125	643	852
2025	184	461	1,510	2,155
2035	244	662	1,919	2,825
2040	305	806	2,458	3,569

2010-2045 Employment Cap.

	IND	COM
Acres	224	66
% of Total	77%	23%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Oregon City**

County **Clackamas**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	8,463	3,511	11,974	
2025	11,378	4,136	15,514	1.7%
2035	12,186	4,861	17,047	0.9%
2040	12,192	5,340	17,533	0.6%

Households Change from 2010

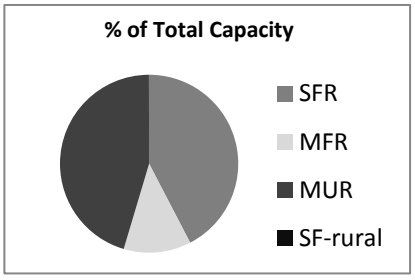
Year	SF	MF	Total
2025	2,915	625	3,540
2035	3,723	1,350	5,073
2040	3,729	1,829	5,559

2010-2045 Capacity Used

Year	SF	MF	Total
2025	91%	14%	47%
2035	100%	31%	67%
2040	100%	42%	74%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	3,187	921	3,410	4	3,191	4,331	7,522
% of Total	42%	12%	45%	0%	42%	58%	100%



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MUR = Multi-Family, Mixed Use
SF-rural = Rural Single Family

SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	3,081	3,727	7,580	14,388
2025	4,584	5,657	9,246	19,487
2035	5,418	6,990	10,077	22,485
2040	5,754	7,481	10,429	23,664

2010-2045 Employment Cap.

	IND	COM
Acres	86	189
% of Total	31%	69%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Portland**

County **Multnomah**

Note: Approximated by TAZ boundaries. Also includes Maywood Park.

Household Forecast

Year	SF	MF	Total	%APR
2010	143,801	104,915	248,716	
2025	163,609	163,566	327,175	1.8%
2035	165,636	204,068	369,704	1.2%
2040	167,243	222,584	389,827	1.1%

Households Change from 2010

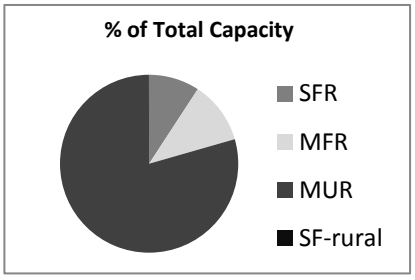
Year	SF	MF	Total
2025	19,808	58,651	78,459
2035	21,835	99,153	120,988
2040	23,442	117,669	141,111

2010-2045 Capacity Used

Year	SF	MF	Total
2025	100%	33%	40%
2035	100%	55%	61%
2040	100%	65%	71%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	18,235	22,491	157,289	78	18,313	179,780	198,093
% of Total	9%	11%	79%	0%	9%	91%	100%



SFR = Single Family Residential
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MUR = Multi-Family, Mixed Use
SF-rural = Rural Single Family

SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	65,150	139,116	170,076	374,342
2025	71,495	187,172	200,106	458,773
2035	76,134	218,147	214,199	508,482
2040	78,590	230,211	222,390	531,194

2010-2045 Employment Cap.

	IND	COM
Acres	1,608	983
% of Total	62%	38%

DISCLAIMER: These data are for research purposes only, and do not reflect policy decisions by any jurisdictional authority.

METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Sandy**

County **Clackamas**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	3,809	516	4,325	
2025	5,138	553	5,691	1.8%
2035	6,954	681	7,635	3.0%
2040	8,748	746	9,494	4.5%

Households Change from 2010

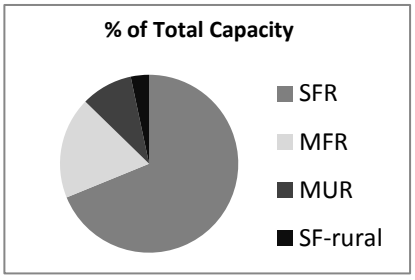
Year	SF	MF	Total
2025	1,329	37	1,366
2035	3,145	165	3,310
2040	4,939	230	5,169

2010-2045 Capacity Used

Year	SF	MF	Total
2025	29%	2%	21%
2035	68%	9%	52%
2040	100%	13%	81%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	4,399	1,180	600	213	4,612	1,780	6,392
% of Total	69%	18%	9%	3%	72%	28%	100%



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MUR = Multi-Family, Mixed Use
SF-rural = Rural Single Family

SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	1,195	684	1,302	3,181
2025	1,846	1,438	2,210	5,494
2035	2,194	1,907	2,530	6,631
2040	2,631	2,348	3,175	8,154

2010-2045 Employment Cap.

	IND	COM
Acres	83	285
% of Total	23%	77%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Sherwood**

County **Washington**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	4,971	1,505	6,476	
2025	5,396	1,658	7,054	0.6%
2035	5,553	1,716	7,269	0.3%
2040	5,532	1,789	7,321	0.1%

Households Change from 2010

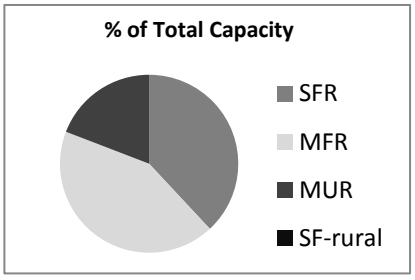
Year	SF	MF	Total
2025	425	153	578
2035	582	211	793
2040	561	284	845

2010-2045 Capacity Used

Year	SF	MF	Total
2025	84%	19%	43%
2035	100%	26%	59%
2040	100%	34%	63%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	507	571	255	0	507	826	1,333
% of Total	38%	43%	19%	0%	38%	62%	100%



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MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	1,103	1,206	1,907	4,216
2025	1,405	2,073	4,027	7,505
2035	1,643	2,604	5,005	9,252
2040	1,864	2,896	5,547	10,307

2010-2045 Employment Cap.

	IND	COM
Acres	322	70
% of Total	82%	18%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Tigard**

County **Washington**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	12,035	6,632	18,667	
2025	14,290	8,630	22,920	1.4%
2035	15,120	10,877	25,997	1.3%
2040	15,307	11,809	27,116	0.8%

Households Change from 2010

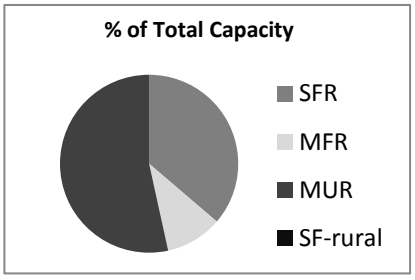
Year	SF	MF	Total
2025	2,255	1,998	4,253
2035	3,085	4,245	7,330
2040	3,272	5,177	8,449

2010-2045 Capacity Used

Year	SF	MF	Total
2025	69%	35%	47%
2035	94%	74%	81%
2040	100%	90%	94%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	3,266	928	4,814	0	3,266	5,742	9,008
% of Total	36%	10%	53%	0%	36%	64%	100%



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Employment Forecast

Year	Retail	Service	Other	Total
2010	9,072	11,901	16,196	37,169
2025	10,580	18,646	19,254	48,480
2035	10,764	23,818	19,650	54,232
2040	10,910	25,929	20,115	56,954

2010-2045 Employment Cap.

	IND	COM
Acres	94	304
% of Total	24%	76%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Troutdale**

County **Multnomah**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	3,981	1,806	5,787	
2025	4,430	1,954	6,384	0.7%
2035	4,506	2,126	6,632	0.4%
2040	4,585	2,211	6,796	0.5%

Households Change from 2010

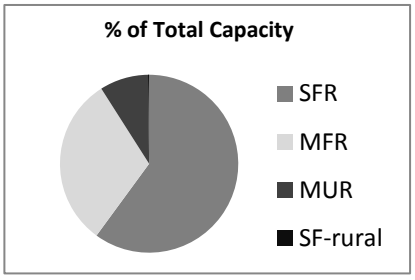
Year	SF	MF	Total
2025	449	148	597
2035	525	320	845
2040	604	405	1,009

2010-2045 Capacity Used

Year	SF	MF	Total
2025	59%	30%	47%
2035	69%	64%	67%
2040	80%	81%	80%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	755	389	111	3	758	500	1,257
% of Total	60%	31%	9%	0%	60%	40%	100%



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MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	1,272	493	2,361	4,126
2025	1,803	1,670	4,511	7,984
2035	2,039	2,357	5,615	10,011
2040	2,161	2,643	6,179	10,983

2010-2045 Employment Cap.

	IND	COM
Acres	494	79
% of Total	86%	14%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Tualatin**

County **Washington**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	5,391	4,847	10,238	
2025	5,919	5,100	11,019	0.5%
2035	5,980	5,190	11,170	0.1%
2040	6,078	5,215	11,293	0.2%

Households Change from 2010

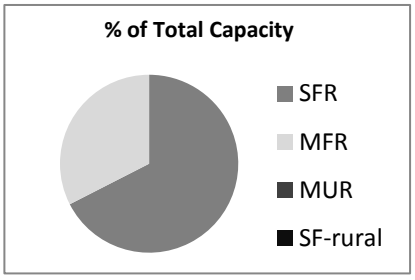
Year	SF	MF	Total
2025	528	253	781
2035	589	343	932
2040	687	368	1,055

2010-2045 Capacity Used

Year	SF	MF	Total
2025	94%	94%	94%
2035	100%	100%	100%
2040	100%	100%	100%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	559	269	0	0	559	269	828
% of Total	67%	33%	0%	0%	67%	33%	100%



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MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	4,372	6,140	12,460	22,972
2025	4,773	7,879	18,449	31,101
2035	5,066	8,868	21,305	35,239
2040	5,405	9,412	22,777	37,594

2010-2045 Employment Cap.

	IND	COM
Acres	434	26
% of Total	94%	6%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Unincorporated Clackamas County**

County **Clackamas**

Note: Approximated by TAZ boundaries. Also includes Johnson City and Rivergrove.

Household Forecast

Year	SF	MF	Total	%APR
2010	48,440	15,213	63,653	
2025	59,480	16,364	75,844	1.2%
2035	65,580	19,224	84,803	1.1%
2040	67,498	21,884	89,382	1.1%

Households Change from 2010

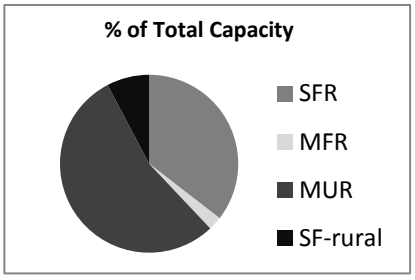
Year	SF	MF	Total
2025	11,040	1,151	12,191
2035	17,140	4,011	21,150
2040	19,058	6,671	25,729

2010-2045 Capacity Used

Year	SF	MF	Total
2025	29%	2%	14%
2035	45%	8%	24%
2040	50%	13%	29%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	31,357	2,187	48,018	6,828	38,184	50,205	88,389
% of Total	35%	2%	54%	8%	43%	57%	100%



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MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	13,058	16,124	28,456	57,638
2025	16,094	24,302	34,840	75,236
2035	17,764	31,789	36,532	86,085
2040	18,759	34,573	38,566	91,898

2010-2045 Employment Cap.

	IND	COM
Acres	2,258	558
% of Total	80%	20%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Unincorporated Multnomah County**

County **Multnomah**

Note: Approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	5,491	411	5,902	
2025	7,363	542	7,905	2.0%
2035	7,504	968	8,472	0.7%
2040	9,580	1,385	10,965	5.3%

Households Change from 2010

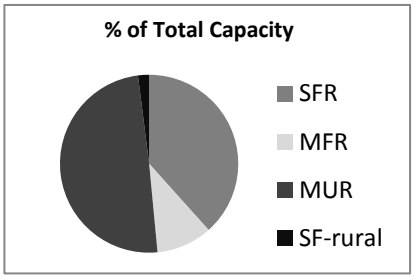
Year	SF	MF	Total
2025	1,872	131	2,003
2035	2,013	557	2,570
2040	4,089	974	5,063

2010-2045 Capacity Used

Year	SF	MF	Total
2025	30%	1%	13%
2035	32%	6%	17%
2040	66%	11%	33%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	5,922	1,565	7,642	310	6,232	9,207	15,439
% of Total	38%	10%	49%	2%	40%	60%	100%



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MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	470	856	1,909	3,235
2025	921	1,883	3,847	6,651
2035	1,133	2,534	4,312	7,979
2040	1,339	2,933	4,650	8,922

2010-2045 Employment Cap.

	IND	COM
Acres	430	83
% of Total	84%	16%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Unincorporated Washington County**

County **Washington**

Note: Approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	59,339	21,305	80,644	
2025	82,733	24,032	106,765	1.9%
2035	95,079	33,976	129,055	1.9%
2040	97,581	40,832	138,414	1.4%

Households Change from 2010

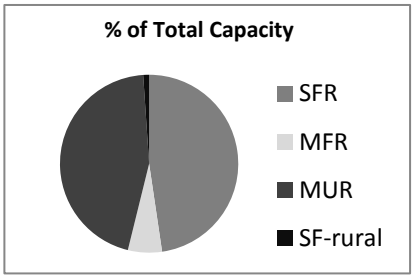
Year	SF	MF	Total
2025	23,394	2,727	26,121
2035	35,740	12,671	48,411
2040	38,242	19,527	57,770

2010-2045 Capacity Used

Year	SF	MF	Total
2025	43%	5%	24%
2035	66%	22%	44%
2040	71%	34%	52%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	52,925	6,868	50,059	1,184	54,108	56,927	111,035
% of Total	48%	6%	45%	1%	49%	51%	100%



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MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	6,540	15,267	21,851	43,658
2025	8,902	22,320	32,366	63,588
2035	10,553	28,859	46,499	85,911
2040	11,648	32,351	55,967	99,966

2010-2045 Employment Cap.

	IND	COM
Acres	3,956	708
% of Total	85%	15%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **West Linn**

County **Clackamas**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	7,670	2,582	10,252	
2025	9,030	2,717	11,747	0.9%
2035	9,237	2,751	11,988	0.2%
2040	9,738	2,882	12,620	1.0%

Households Change from 2010

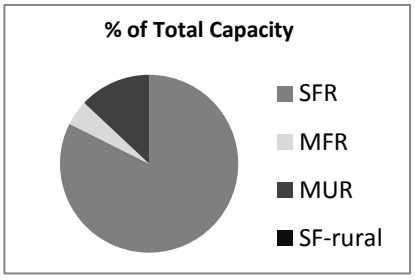
Year	SF	MF	Total
2025	1,360	135	1,495
2035	1,567	169	1,736
2040	2,068	300	2,368

2010-2045 Capacity Used

Year	SF	MF	Total
2025	80%	37%	72%
2035	92%	46%	84%
2040	100%	82%	100%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	1,709	95	270	0	1,709	365	2,074
% of Total	82%	5%	13%	0%	82%	18%	100%



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MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	966	1,593	1,693	4,252
2025	1,381	2,268	2,174	5,823
2035	1,517	2,683	2,331	6,531
2040	1,623	2,835	2,455	6,913

2010-2045 Employment Cap.

	IND	COM
Acres	9	43
% of Total	17%	83%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Wilsonville**

County **Clackamas**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	3,471	4,509	7,980	
2025	5,516	5,428	10,944	2.1%
2035	5,625	5,883	11,508	0.5%
2040	5,708	6,058	11,765	0.4%

Households Change from 2010

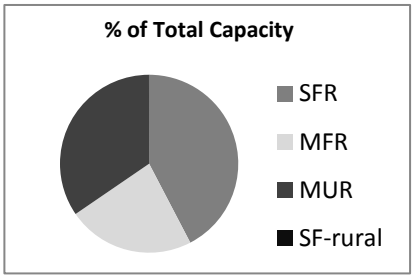
Year	SF	MF	Total
2025	2,045	919	2,964
2035	2,154	1,374	3,528
2040	2,237	1,549	3,785

2010-2045 Capacity Used

Year	SF	MF	Total
2025	100%	38%	70%
2035	100%	57%	84%
2040	100%	64%	90%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	1,783	973	1,454	1	1,785	2,427	4,212
% of Total	42%	23%	35%	0%	42%	58%	100%



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SF-rural = Rural Single Family

SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	2,480	4,839	9,754	17,073
2025	3,194	7,845	12,939	23,978
2035	3,536	9,733	14,150	27,419
2040	3,853	10,673	14,901	29,427

2010-2045 Employment Cap.

	IND	COM
Acres	316	172
% of Total	65%	35%

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METRO TAZ 'GAMMA' FORECAST -- JURISDICTION PROFILES

Published 11/15/2012 Metro Economic and Land Use Forecasting

City **Wood Village**

County **Multnomah**

Note: City geographies are approximated by TAZ boundaries.

Household Forecast

Year	SF	MF	Total	%APR
2010	458	1,081	1,539	
2025	492	1,088	1,580	0.2%
2035	488	1,121	1,609	0.2%
2040	489	1,192	1,680	0.9%

Households Change from 2010

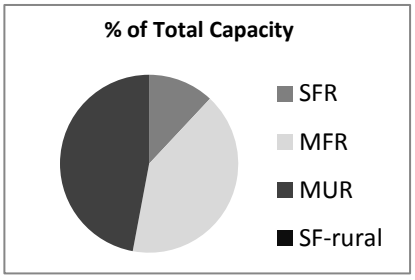
Year	SF	MF	Total
2025	34	7	41
2035	30	40	70
2040	31	111	141

2010-2045 Capacity Used

Year	SF	MF	Total
2025	91%	3%	13%
2035	81%	15%	22%
2040	82%	40%	45%

2010-2045 Household Capacity by Type

	SFR	MFR	MUR	SF-rural	All SF	All MF	Total
Capacity	37	128	146	0	37	274	311
% of Total	12%	41%	47%	0%	12%	88%	100%



SFR = Single Family Residential
MFR = Multi-Family Residential
MUR = Multi-Family, Mixed Use
SF-rural = Rural Single Family

SF = SFR + SF-rural
MF = MFR + MUR

Employment Forecast

Year	Retail	Service	Other	Total
2010	1,261	242	531	2,034
2025	1,609	828	1,259	3,696
2035	1,783	1,158	1,489	4,430
2040	1,870	1,298	1,607	4,775

2010-2045 Employment Cap.

	IND	COM
Acres	24	41
% of Total	37%	63%

DISCLAIMER: These data are for research purposes only, and do not reflect policy decisions by any jurisdictional authority.

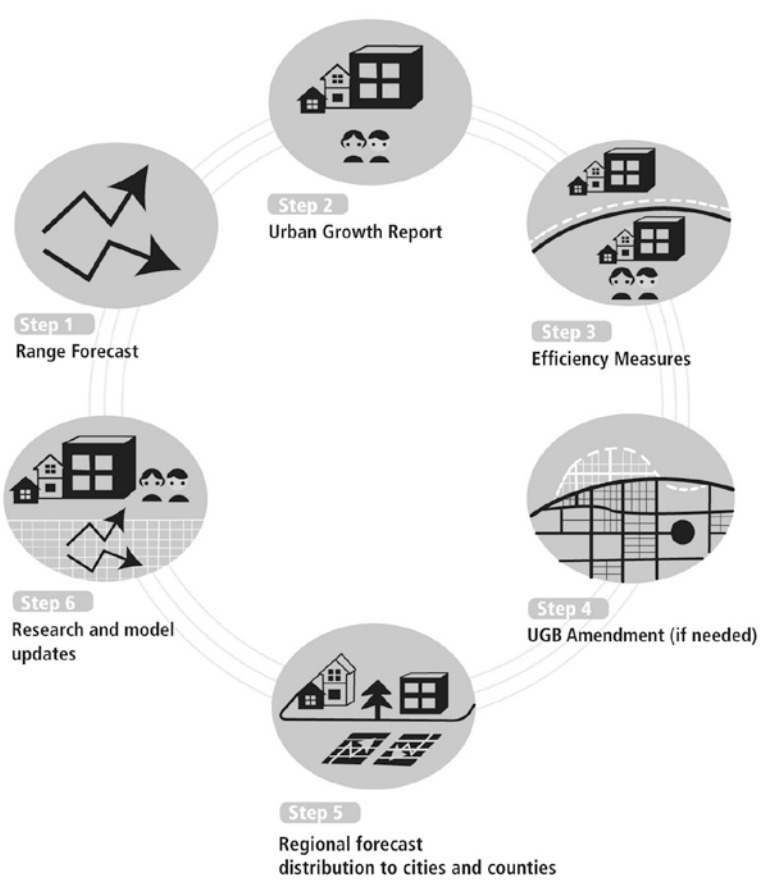
REGIONAL 2035 FORECAST DISTRIBUTION: EXECUTIVE SUMMARY

Purpose of this report

This Regional Growth Distribution report explains how Metro and local governments collaborated to forecast where population and employment forecast will be accommodated over the in 2035 based on current policies in zoning and adopted transportation plans, environmental regulations and development incentives. Planning for expected growth in population and jobs enable the region and local communities to make decisions that support good jobs, safe neighborhoods, protect farmland, and invest in public structures and services that enhance our quality of life.

Metro is required by Oregon law to forecast the population and employment growth that is expected for this region over the next 20 years. In 2009 Metro initiated its growth management decision process depicted in Figure 1. The first task in the process was the 2009 forecast of a range of 1.2 to 1.3 million households and 1.3 to 1.7 million jobs in the seven-county region (Clackamas, Clark, Columbia, Multnomah, Skamania, Yamhill, Washington) by 2030. Within the seven county total, Metro forecast the proportion expected to live and work within the Metro urban growth boundary (UGB).

Figure 1: Growth Management and Population and Employment Coordination Process



Step 1
Range Forecast
How many more household and jobs will we have in the 7 county area and what share of these will be in the UGB?

Step 2
Urban Growth Report
How much of the region's growth can we meet in the current UGB and what is the additional need, if any?

Step 3
Efficiency Measures
What actions can increase the capacity to meet anticipated growth in the UGB, if needed?

Step 4
UGB Amendment (if needed)
If a UGB expansion is needed, which areas are most suitable to include to meet the region's forecast need for jobs and housing?

Step 5
Regional forecast distribution to cities and counties
Where will the forecast growth locate within the region?

Step 6
Research and model updates
What policy questions do we anticipate for the next UGB review cycle and what analysis can support the decisions?

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In 2010, the Metro Council adopted the capacity analysis which accounted for Regional Transportation Plan (RTP) investments and other actions that are likely to shape development patterns, and determined that some UGB expansion would likely be necessary. In 2011, the Metro Council made the urban growth boundary (UGB) decision based on investment policies and a point on the forecast range it picked.

The next step after the UGB decision, required by law, is the distribution of the forecast at smaller geographies to guide local and regional planning efforts as explained in this report. Oregon law (ORS 195.025; 195.036) requires Metro to coordinate a population forecast with local governments for planning purposes inside the UGB. Local governments that are scheduled to review and update their land use plans are expected by the Oregon Department of Land Conservation and Development to rely on the population and employment distribution information for their analysis. In addition to the state law, the Federal Clean Air Act requires Metro to use its forecast distributed at smaller geographies called traffic analysis zones (TAZ)[1] as the basis for its federally-required air quality conformity determination. This federal law requires Metro to show that the region will continue to meet the federal and state air quality regulations if the projects included in the RTP are built.

Metro has collaborated with local governments in the past to distribute the region's population and employment forecasts at the TAZ level. The last distribution, coordinated with local governments, was completed in 2006. The TAZ and city and county level distributions reflect adopted policies.

Metro Council adopted the household and employment forecast distributions by jurisdiction in November 2012 (Ordinance No. 12-1292) after the distributions were reviewed by Metro advisory committees – Metro Policy Advisory Committee, Joint Policy Advisory Committee on Transportation, Metro Technical Advisory Committee, Transportation Policy Alternatives Committee.

[1] The TAZ is the standard unit containing data representing the building blocks of Metro's key forecasting tools

How growth distribution information is used

Local governments and Metro rely on the population and employment forecast distribution to help build the future they want in the region and ensure that as jobs and population grow, they will be able to make wise investments that support economic development, safe neighborhoods and strong and vibrant communities, and minimize the burdens of growth.

The growth distribution information is useful for various entities:
Cities and Counties rely on the information to support their:

- Comprehensive plan update processes and address requirements for their periodic review of their land use plans
- Coordination of planning in areas outside Metro's jurisdictional boundary but within county boundaries.
- Planning of where to extend and upgrade pipes, roads and other essential public structures
- Identify needs necessary to update Transportation System Plan for consistency with the Regional Transportation Functional Plan and State Transportation Rule.

Schools and Special Districts can use the population and employment distribution for:

- Facility and financial planning
- Financial planning for facilities
- Parks planning
- Water and sewer system planning
- Sewer system planning
- Public school enrollment forecasting

Metro relies on the information to support:

- Updates to the Regional Transportation Plan
- Analysis of planning scenarios for the Climate Smart Communities Scenarios Project
- Transportation investments through the analysis of potential benefits of proposed projects within a half-mile radius of those projects

- Corridor planning such as the East Metro Connections Plan (EMCP) and Southwest Corridor Plan.

How Metro and local governments coordinated on growth distribution

There are two key steps in the actual forecast distribution coordinated by Metro and local governments:

- Estimating regional land supply -- existing housing and employment capacity, including undeveloped land that is available for development, based on existing zoning)
- Distributing the regional household and employment growth forecast to the available land supply

Land supply: Current approach of calculating residential land supply across the region is the buildable land inventory (BLI). The calculation method varies from one local government to another. Metro and local planners coordinated to refine the regional BLI method. The BLI method relies on local zoning to estimate the capacity of residential and employment land (how many residential units and acres of employment land can be accommodated in any area). However, not all zoned capacity will get used everywhere. The capacity estimation takes into account environmental constraints, rights of way, and future UGB expansion into urban reserves.

Additional capacity is realized from the decisions and policies made by some cities to encourage redevelopment in certain areas through incentive programs, such as urban renewal, tax abatement, streetscape and infrastructure improvements, and other policies. The additional capacity is added on top of the capacity that is based on residential and employment land zoning.

Distribution of the forecast: At this step in the process, the goal is to match the demand (forecast population and employment) with the supply (capacity of residential and employment land). The demand of forecast population was based on household size, income brackets, and age of households. Factors used to match the demand with the supply include built space by zone, location of household and employment, tenure choice (own or rent), type of building, estimate of development density, prices and cost of land, travel activity levels by mode and road segment, travel times between TAZs by time of day, and cost perceived by travelers in getting from any TAZ t another.

Summary of results

Figure 2 show the growth in households, displayed in housing units, captured inside the Metro UGB and the number of housing units captured by communities outside the Metro UGB. The forecast distribution indicates 4% decrease in the total number of single-family units captured by local governments inside the UGB (from 68% in 2010 to 64% in 2035), and slight (1%) increase in the number of multi-family units captured by local governments inside the UGB (from 83% in 2010 to 84% in 2035).

Figure 2: Housing Units (for Household) Forecast

Area	2010		2035		2010-2035 change	
	Single-Family	Multi-Family	Single-Family	Multi-Family	Single-Family	Multi-Family
Inside Metro UGB	357,090 (68%)	236,346 (83%)	452,823 (64%)	384,225 (84%)	95,733 (53%)	147,879 (84%)
Outside Metro UGB	170,422 (32%)	47,872 (17%)	256,610 (36%)	75,309 (16%)	86,188 (47%)	27,437 (16%)
Seven county PMSA	527,512 (100%)	284,218 (100%)	709,433 (100%)	459,534 (100%)	181,921 (100%)	175,316 (100%)

Figure 3 show the growth in jobs captured inside the Metro UGB and the number captured by communities outside the Metro UGB. The forecast distribution indicates a decrease in the total number of jobs units captured by local governments inside the UGB (from 82% in 2010 to 79% in 2035).

Figure 3: Employment Forecast

Area	2010	2035	2010-2035 change
Inside Metro UGB	753,032 (82%)	1,118,440 (79%)	365,408 (74%)
Outside Metro UGB	163,364 (18%)	294,167 (21%)	130,803 (26%)
Seven county PMSA	916,396 (100%)	1,412,607 (100%)	496,211 (100%)

Further analysis of the forecast distribution data reveals the following takeaways:
The TAZ level forecast distribution reflects Metro 2040 program objectives

- 32% growth in Centers and 17% in Corridors (2010-2035)
- Strong redevelopment and infill
- Future residential density rises to 12.3 unit/acre
- Growth splits of 60% MF and 40% SF (2010-2035)

Monitoring Needs:

- Single-family housing prices – step rise from 2030 to 2035.
- Capture rate for single family residential
- Commute patterns: distribution "tails" for long distance commuters begin to rise

40% increase in UGB population and 10% land absorption (2010-2035)

Future improvement of land supply estimation approach

Comments from local governments during the estimation of regional land supply acknowledged improvements in the residential capacity methodology so as to match households and land supply correctly in the long-term. The comments emphasized areas where the methodology could be further improved, such as residential location choice, including quality-of-life factors that influences a person's preference for single- or multi-family housing, and generational shift. The comments also emphasized the need to consider the difference between housing preference and living preference. In response, Metro has identified future research on:

- Residential choice study enhanced with market segmentation
- Redevelopment supply assumption refinement

It is anticipated that the research would further refine the residential capacity assumptions and methodology, provide valuable insight into how people weigh transportation and housing costs when deciding where to live, and illustrate differentiation of the full range of housing needs in the region. Implementation of the research is dependent on funding availability.

Sharing the information

The forecast distribution data and other information can be found at the following FTP site.

ftp://ftp.oregonmetro.gov/dist/gm/TazAlloc2010/FINAL_2035-2040_TAZforecast/

Technical Documentation

Regional Forecast Distribution

Methodology & Assumptions

Population and Employment

2010-40 TAZ Forecast Distribution "gamma scenario"

Metro

Research Center and Planning and Development Department

November 2012

Technical Document:
2010-2040 TAZ Forecast Distribution

(This report highlights major assumptions assumed by the TAZ forecast distribution.)

Forecast Mandate

A coordinated population forecast is mandated under state law[1]. Oregon regulations require Metro, as the coordinating body for the Portland metropolitan area[2], to allocate population (and employment) forecasts to local area cities within the Metro urban growth boundary. A coordinated forecast is needed to facilitate periodic use planning. To carry out this role, Metro develops Traffic Analysis Zone[3] growth distributions for cities and counties in the region. The Traffic Analysis Zone (TAZ) is a joint forecast effort with cooperation of local governments[4] and serves the state requirement of having coordinated forecasts.

Metro also serves as the metropolitan planning organization[5] (MPO) designated under federal authority to plan for transportation needs for the Oregon portion of the Portland-Vancouver-Hillsboro, OR-WA urbanized area. Metro is required to conduct continuing, comprehensive and collaborative transportation planning that facilitates the efficient, economic movement of people and goods in the metropolitan area.[6] At minimum, the coordination of land use forecasting and transportation planning requires that the well-being of a region assess and evaluate the impact of land use decisions to access goods, services, resources and other opportunities. Coordinating (or integrating) land use and transportation is "smart growth"[7]. The Metro charter gives the agency the responsibility for regional

[1] ORS 195.036 (Area population forecast)
[2] ORS 195.025 (Regional coordination of planning activities)
[3] Traffic Analysis Zones (TAZ for short) are travel / commuter sheds that represent areas of concentration of resident locations or commuter work locations. A TAZ is the unit of geography commonly used in Metro's transportation planning models. Zone sizes vary and the number of zones is periodically updated to account for changes in development densities. The current Metro TAZ system has a total of 2162 zones in its urban, suburban and ex-urban setting. 2147 zones belong in the four-county metropolitan area and the remaining zones account for rural counties adjacent to the region. Typically ex-urban areas have larger zone sizes, while central business districts and densely populated residential areas have much smaller zones. Zones are created from census block information. Typically, these blocks provide the socio-economic data used in Metro's transportation demand models. They are generally the size of census block groups, but have boundaries not related to census tracts or block group delineations nor do they generally coincide with streets or city limits. Metro's TAZ boundaries are unique geographies designed around transportation "cut lines".
[4] ORS 195.020 (Special district planning responsibilities)
[5] Metropolitan Planning Organizations are responsible for planning, programming and coordination of federal highway and transit investments in urbanized areas.
http://www.bts.gov/external_links/government/metropolitan_planning_organizations.html
[6] http://www.fhwa.dot.gov/planning/processes/statewide/
[7] http://www.fhwa.dot.gov/planning/processes/land_use/

land use planning, and long-range transportation planning. The TAZ growth distribution forecast fulfills the call for an integrated land use and transportation planning effort required by federal regulations and Metro charter's land use planning provisions.

Metro's TAZ forecast process efficiently delivers a comprehensive and collaborative regional growth distribution that uses appropriate modeling and forecasting tools. Under MPO planning rules, Metro is required to maintain state of the art transportation and land use forecasting models and growth projections that are consistent with regulatory authorities. Metro operates a regional travel demand model based on a traditional 4-step model approach[8], and a land use model we call MetroScope[9]. These represent state of the art transportation and land use forecasting methods – operating at TAZ level population and employment estimates. Federal and state transportation authorities annually assess and review the efficacy of Metro's forecasting and modeling, data and statistical methods[10]. Metro's regional forecasts and growth distributions are prepared under scrutiny of federal requirements that meet high levels of forecasting integrity and accuracy. The models incorporate the latest set of policy assumptions available at the time of the forecast. The TAZ forecast distribution process broadly supports the goal of providing reasonably accurate and reliable small area growth projections for land use and transportation studies and planning goals. The regional forecast and growth distribution process is transparent and collaborative, frequently consulting with Metro area local governments and stakeholders.

How often are Metro forecasts and growth distributions updated?

About every 5 years, the Metro Research Center prepares employment and population forecast distributions by TAZ. The growth distribution update is the last step in Metro's periodic review process. The forecast distribution analyzes Metro's adopted regional forecast for population and employment and then geographically distributes the projected regional growth totals into smaller geographic subunits denoted by TAZ. The cycle of preparing a regional forecast occurs in concert with the state law requiring Metro to assess every 5-year its capacity to accommodate urban growth in the boundary[11]. A

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[8] Metro is in the middle of a development cycle to upgrade to a new activity-based transportation model (i.e., DASH) and dynamic traffic assignment models (i.e., Dynameq and DYNUST).

[9] MetroScope is an integrated land use-transportation modeling tool developed by Metro's Research Center. It is a very detailed representation of an urban land market, complete with methods to estimate supply, demand and equilibrium prices and to allocate development trends to specific locations throughout the greater Portland region. Both households and employment locations are allocated by the MetroScope model. The model is an economic simulation tool capable of assessing the economic well-being and potential policy impacts for various demographic groups and subareas of the region given alternative land use and transportation assumptions.

[10] A Unified Planning Work Program (UPWP) is developed annually by Metro. It is a federally-required document and includes a process known as self-certification to demonstrate that the Portland MPO (Metro) planning process is being conducted in accordance with all applicable federal planning requirements.

[11] ORS 197.296(3) and (1997) HB 2493 require Metro to complete 1) an inventory of the supply of buildable lands in the UGB; 2) performance measures including actual density and housing mix during the past 5 years; 3) an analysis of a 20-year housing need projection.

new TAZ forecast ensures that growth projections incorporate the latest policy assumptions endorsed by the Metro Council.

The regional forecast was the socio-economic basis for studies concerning land use and transportation, including this growth distribution. Recently, the regional forecast supported the 2010 Urban Reserves, 2010 Urban Growth Capacity decisions, and 2035 Regional Transportation Plan (RTP) update. Forecast-wise, the Metro Council selected a point inside the 2010-2060 regional range forecast for evaluating urban growth needs the last Urban Growth Report. Regional decision makers used forecast information to shape public policy and to plan for infrastructure investments the region needs in order to encourage economic vitality and to accommodate future land use and transportation needs of residents.

The precise role of the forecast was to project the level of economic and demographic growth expected of the region for the next 20 to 50 years. The regional forecast included a range and a baseline projection of how population and employment is expected to change over time. Growth distributions ensure that land management and transportation planning policies are incorporated into small area forecast distributions. In turn, the growth forecast distributions are completed in advance of so that the next 2040 Regional Transportation Plan (RTP) update integrates the latest growth management policy assumptions. The growth distributions then provide the socio-economic assumptions for travel demand planning. They also provide information that then informs the next cycle of regional forecasts, UGR and UGB decision. This cycle repeats itself beginning in 2014.

MetroScope - preparing a coordinated growth distribution

The TAZ forecast distribution extends from 2010 to 2040[12]. The growth distribution relies on information from:

- An adopted regional forecast
- Land supply estimates and capacity assumptions
- Enacted land use policy regulations, and
- Transportation policy assumptions.

The MetroScope land use model was used to simulate and assess the socio-economic growth trends emerging from these assumptions. MetroScope produces a consistent, complete and comprehensive analysis of regional growth impacts.

The TAZ distribution is a joint forecast produced by Metro in cooperation with local government planning partners. The TAZ distribution is a forecast product derived for a 7-county region[13]. The

[12] The forecast distribution can optionally be extended an additional 5 years to the year 2045. This extension has not been completed at this time.

[13] The Metro regional forecast is developed from a regional macro-econometric model. Projections from this model include population by age, householders by age, employment by industry (NAICS), wages and income. The regional forecast is an aggregate trend projection for the Portland-Vancouver-Hillsboro, OR-WA metropolitan

regional forecast gets spatially disaggregated to transportation analysis zones using Metro's integrated land use and transportation demand model – MetroScope. The preliminary MetroScope TAZ forecast distribution is reviewed and fine tuned by local government land use experts before Metro Council accepts the growth distributions. Local governments may then adopt the growth distributions for their city, for example, as they update their own comprehensive plans or transportation system plans (TSP).

What is MetroScope?

MetroScope is a land use allocation model. It is capable of forecasting over time the spatial distribution of employment and population. MetroScope is an urban econometric model based on applied real estate and mainstream economic theories. This means that it is a mathematical model patterned after behavior seen in real-world real estate markets; it has a supply, a demand and finds an equilibrium price that matches the two. The real estate supply market includes vacant buildable land, market-rate redevelopment and infill, and incentivized redevelopment capacity for the greater Portland area. Demand is characterized by household attributes and industry-detailed employment composition. MetroScope provides a complete and consistent assessment of regional real estate trends.

Demand for residential real estate depends on location factors, demographic characteristics of households, and economic trend projections. Construction costs and prices that businesses are willing to pay for commercial and industrial real estate are also factored into location choices. MetroScope is an equilibrium model, meaning it estimates prices for the cost of real estate construction and the price households are willing to pay for housing. It finds where people and businesses are willing to live and work at a stable equilibrium price in which supply and demand exactly match.

MetroScope projects where residents will want to live, at what density and by housing type. The model is capable of projecting residential and employment growth in centers, corridors and other locations. The result is an expectation of where in the region and what type of business and residential locations are most attractive given that there is a regional forecast, transportation and land use regulatory factors that shape future growth trends. MetroScope also capably allocates population and employment at market clearing prices for different development forms in different locations throughout the region according to given policy assumptions.

Census and other economic data from state and federal statistical sources provide base year land use, demographic and economic information that can influence the spatial growth trends in future years. Historical trend data are factors that add into future growth patterns. The amount of household (or employment) spatial change is formulated as behavioral expressions and as such respond to expected changes in:

- land use regulations (e.g., zoning, urban reserves, concept plans etc.),

statistical area (MSA). The MSA includes 5 Oregon counties (Clackamas, Columbia, Multnomah, Washington and Yamhill) and 2 Washington counties (Clark and Skamania). The MetroScope model is later used to spatially disaggregate regionwide growth estimates to TAZ level estimates.

- development incentives (e.g., urban renewal)
- transportation policies (e.g., regional access to opportunities)
- demography (e.g., population growth, aging population, income, and migration)
- employment trends (e.g., less manufacturing and more services).

Spatial preferences need not be fixed. Sub-regional growth rates are expected to vary because the growth distributions will respond to regional growth projections that include anticipated shifts in the economic make up of the region (e.g., proportionally less manufacturing growth expected) and shifts in demographic structure (e.g., aging populations, migration and income bracket shifts). As these elements are accounted for in the forecast, we should see faster (or slower) growth across some residential areas depending upon how well capacity fits the innate residential housing demand.

The region is expected to add between 40 to 50% more residents by the year 2040. The median population age is expected to grow older. The composition of the population should grow more diverse, with a proportionally higher concentration of Latino and Asian residents. Economic disparity among residents is expected to be more unequal as the ranks of the middle class become proportionally thinner.

As the composition of the economy changes, industries will rise and fall. The emergence of new competitors and technological improvements will drive industrial change. High-technology industries are expected to gain ground while resource based industries such as forest products and metals are likely to diminish. The non-manufacturing sector will grow proportionally faster in the region, with health and business services ringing up robust growth.

MetroScope is also capable of assessing the economic impact of public policies. The region's land use and transportation policy developments leave very little slack capacity in the economy. Some of these policy assumptions provide ceilings for how much growth can be accommodated (e.g., zoning and growth concept plans). With residential capacity expected to be fairly tight, spatial growth distributions will pattern themselves based on wherever supplies permit. Other policies try to influence the market clearing prices (e.g., urban renewal assumptions) for residential development in centers and corridors. Still others will impact access to opportunities (e.g., RTP) that will affect the location choices of business and residents.

In summary, the TAZ forecast distribution that comes out of MetroScope represents a consistent and complete evaluation tool of both economic growth potential and the possible economic impact of how public land use and transportation policies might affect regional growth trends and regional outcomes. Using an economic equilibrium assessment model as we have for the TAZ forecast, further economic assessment of housing need information can identify which demographic segments in the region benefit most from land use and transportation policies enacted today and which segments suffer the greatest disutility from these same public policies. MetroScope can inform more than simple population coordination information. It can provide an assessment of economic outcomes of public policy actions.

Regional Forecast Overview

Economy in Review

Three years after the announced end of the Great Recession, economic growth remains torpid and choppy. The Great Recession slammed into the U.S. in December 2007 and curtailed U.S. economic activity, according to research published by the National Bureau of Economic Research[14]. During this period, nearly 8 million Americans became jobless. Economic growth stalled as it became apparent that financial strapped banking institutions could not meet financial obligations, thus causing a cascade of economic difficulties across all sectors of the U.S. economy. Especially hard hit were the construction, finance and real estate sectors. The contagion spread quickly and no part of the U.S. was immune. U.S. Gross Domestic Product – a measure of total economic growth and output – fell 6 straight quarters while trimming away in excess of $625 billion (inflation adjusted) of U.S. GDP (peak to trough). Slumping growth induced the U.S. unemployment rate to soar above 10% and it still remains stubbornly high (June 2012, 8.4%).

Regional employment began slowing at the onset of the U.S. recession, but didn't actually go negative until half a year later. The first industries in the region to hit the skids were finance and real estate firms, durable manufacturers and resource producers. The economic malaise eventually spread to the Portland region, carrying with it widespread workforce reductions and slower growth in every industry save health care. But even the health care industry has recently seen year-over-year job growth diminish to nearly zero. The region's overall unemployment rate topped 11 percent at its economic trough, but has been stuck near 8%, down from 9% a year ago. Tepid regional economic growth persists and employment growth remains mired well below full employment while cautious employers remain sidelined worried that economic conditions could quickly sour again.

2010 to 2040 Forecast Summary

The initial regional forecast was prepared in late 2007 – just before the onset of the Great Recession. The adopted regional forecast totals for population and employment are in the *20 and 50 Year Regional Population and Employment Range Forecasts*[15]." This included a medium growth baseline and a companion set of high and low growth scenarios. This growth band was developed as two standard deviation margin of error around the medium growth baseline. Subsequently, a one standard deviation interval was prepared for Metro Council deliberation – the so-called "middle-third" growth scenario

[14] National Bureau of Economic Research, http://www.nber.org/cycles.html, Founded in 1920, the National Bureau of Economic Research is a private, nonprofit, nonpartisan research organization dedicated to promoting a greater understanding of how the economy works. The NBER is committed to undertaking and disseminating unbiased economic research among public policymakers, business professionals, and the academic community. The Bureau concentrates on 4 types of empirical research: 1) developing new statistical measurements, 2) estimating quantitative models of economic behavior, 3) assessing the effects of public policies, and 4) projecting the effects of alternative policy proposals.

[15] Metro Ordinance No. 11-1264B

alternatives[16]. The Metro Council – realizing regional growth rates would be subdued – adopted a "lower middle-third" point in the forecast range.

However, more recent economic data suggests growth will be slower than previously anticipated. The adopted regional forecast is now almost 3 years old. Regional conditions have fallen short and in fact are worse than expected at this stage of the recovery. U.S. macro-economic conditions have yet to recover to pre-recession levels. This includes a much slower rebound in employment across all sectors, which has dampened population and employment prospects regionally. Monetary (i.e., lower interest rates and quantitative easing measures) and fiscal policies (e.g., industry bailouts and "cash for clunkers") have been largely ineffective in spurring a stronger economic rebound. The economy instead has been stuck in low gear since the end of the recession.

Consequently, a minor technical adjustment has been made to the adopted lower middle-third regional totals in order to reflect the sluggish recovery and a plodding recovery for the foreseeable near term. Regional growth totals have been revised down for employment and population. Details for each have been proportionally ratcheted down in keeping with the revised regional totals. This is merely a technical correction to realign the Metro Council adopted forecast decree with the best available information nowadays. Data for this correction were from the Census Bureau and Portland State University intercensal population estimates, and Bureau of Labor Statistics and Oregon employment department monthly employment estimates.

The Metro Council, in fact, only adopts regional control totals for employment and population. Forecast details, such as the:

- industry employment forecast (by NAICS)
- household demographics (including population age and household size)
- income brackets of households.

These are technical details left to Metro research center staff to determine[17]. A regional econometric model produces the forecast details needed for transportation and land use forecast model analysis. An HIA model disaggregates population data into a joint distribution of households differentiated by household size, income bracket and householder age. The regional forecast details are post-processed and proportionally rescaled to sum up to the adjusted "lower middle-third" forecast values. Rescaled model input details (i.e., HIA and industry employment forecasts) are available in the report Appendix 1. The rescaled values represent the regional forecast assumptions going into this growth distribution.

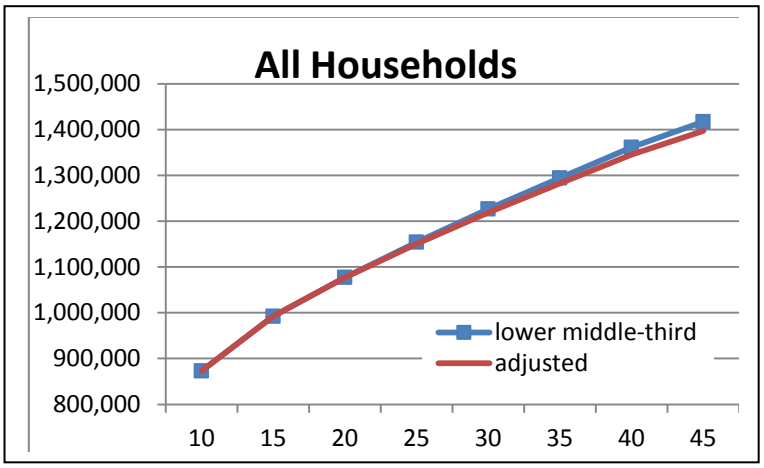
TAZ gamma growth distribution regional control totals

The adopted lower middle-third regional forecast totals are compared to the adjusted value, which reflect a downgrade in growth expectations in the long-run.

[16] The "lower middle-third" was designated at minus 1 standard deviation from the medium growth baseline, while the "upper middle-third" represented a plus 1 standard deviation from the baseline.
[17] Metro, "20 and 50 year Regional Population and Employment Range Forecast", http://www.oregonmetro.gov/index.cfm/go/by.web/id=29836, Oct. 4, 2012

Total Households: 2010 -2045 Regional Forecast (7-county MSA)

	Lower middle-third	adjusted
2010		873,052
2015	992,400	992,400
2020	1,077,500	1,077,500
2025	1,154,400	1,154,400
2030	1,226,900	1,221,900
2035	1,294,600	1,284,600
2040	1,361,600	1,346,600
2045	1,417,500	1,397,500



Total Employment: 2010 -2045 Regional Forecast (7-county MSA)

	Lower middle-third	adjusted
2010		968,800
2015	1,106,600	1,107,000
2020	1,205,400	1,205,400
2025	1,297,900	1,293,400
2030	1,396,000	1,386,900
2035	1,502,700	1,488,800
2040	1,611,900	1,593,000
2045	1,678,600	1,654,900

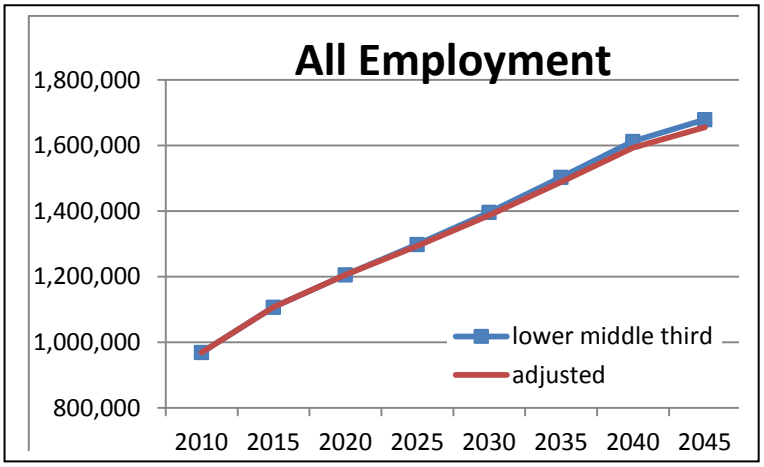


Figure 1: 2010-40 Regional Growth Distribution Forecast Totals (7-county MSA)

The adjusted regional forecast projects over 473,000 more households and growth of 686,100 jobs adding to the MSA region between 2010 and 2040.

Growth Distribution Overview

The regional forecast totals were first distributed to TAZ's using the MetroScope land use model. Second, local jurisdictions scrutinized and revised the TAZ household and employment forecasts. Third, Metro took the revisions and where necessary rebalanced the forecast to preserve the regional forecast totals. Each jurisdictions was given instructions during the review to be mindful of its given city forecast totals. They were to maintain the city totals if they wanted to revise the TAZ distributions. In the rare instance where cities wanted to reduce or increase the given city total (either for households or employment), the county and Metro stepped-in to broker re-allocation amounts between jurisdictions.

In the final analysis, local revisions sharpened the accuracy of TAZ growth forecasts and Metro and the counties were able to successfully coordinate population.

But before undertaking the forecast distribution, there needed to be general agreement concerning the assumptions making up the regional supply. The supply data or buildable land inventory for the region had to be reviewed, cleaned and accepted by local area planning directors.

Recapping Regionwide Supply / Capacity Assumptions

This section highlights the major supply assumptions and capacity declarations relating to the 2010-2040 TAZ "gamma" growth distribution forecast. Supply is divided into parts by major geographic divisions. Where and how much capacity exists in the region depended on actual counts, survey data, and statistical estimation techniques. Since the regional supply was partly derived from iffier assumptions, some parts were judged to be more accurate than other items in the supply data.[18] To improve the accuracy of the supply data, a lengthy review process cleaned up major estimation and counting errors. A margin of error for this is unknown, but the regional supply was finalized and a general consensus of its suitability was settled before any data was used for the forecast distribution.

The regional supply has been variously described to accommodate up to 50 years. This syncs up with planning studies that have a need for long-term forecasts up to 2040[19]. The supply information therefore has to have capacity up to 2060 (or 50 years). This is in keeping with realistically trying to model development trends with ORS 197.296(3) and (1997) HB 2493 requiring Metro to maintain a 20-year housing need by type. The purpose of the 20 year supply was to provide the urban land market with sufficient flexibility to accommodate market choices. State law has required periodic update of the Metro UGB inventory every 5 years. Hence, as a practical matter of forecasting, the supply data for the model maintains an estimate of residential inventory that accommodates growth up to 2060 for a 2040 forecast end year.

The details of the growth distribution rely on several essential ingredients related to a buildable land inventory that meets rules set forth by state law and growth management planning directives:

1. Land supply (or capacity) information[20]
    a. Current zoning, comprehensive plans or concept plans (with zoning trumping comp plans trumping concept plans or hypothetical zone designations depending data availability)

[18] Although a general consensus was achieved, there remained lingering doubts concerning the residential redevelopment assumptions and the parameter estimates for residential preferences. Suburban jurisdictions feared that redevelopment assumptions were too robust in urban areas and may thus skew residential location choices causing biased residential location choice in the distribution. A second concern focused on specified model parameters estimates that were said to fix future preferences on the past, perhaps implying the need for replacing parameters with ones based on stated preference data.

[19] An upcoming RTP update sets the forecast horizon to be2010 to 2040. The forecast distribution can optionally be extended an additional 5 years to the year 2045. This extension has not been completed at this time.

[20] To read more about Metro's capacity ordinance, see:
http://www.oregonmetro.gov/index.cfm/go/by.web/id=34527

    b. Buildable land inventory (including Metro UGB, Clark county, rural areas and neighbor cities and adjacent counties)
2. Growth management policy assumptions
    a. Transportation policies
    b. New urban areas (i.e., assign hypothetical zoning if still rurally zoned)
    c. Other economic development policies
    d. Urban reserves (i.e., assign hypothetical zoning to supersede rural zoning at time each is added as prospective UGB adds)
    e. Subsidized redevelopment (i.e., estimate economic impact of urban renewal district)

The growth allocation integrated land supply details that include capacity information for multiple geographies in the region. Capacity is calculated from current zoning or current comprehensive plan data (and sometimes concept plans when there isn't any urban zoning or comp plan in place). The buildable land inventory (i.e., the BLI includes vacant, infill and redevelopment expectations) for the Metro UGB and Clark and its cities are based on a 2008 vacant land survey data that was subsequently revised to represent 2010 capacity. Also added to the BLI analysis are rough capacity estimates for rural areas, neighboring counties and cities. Estimates of additional residential capacity from public development subsidies (e.g., urban renewal districts) were also tallied into the regional land supply. Supply data is very important in the modeling process as it provides information on regulatory densities and details on the whereabouts future development may be accommodated. Capacity data in the modeling process is not endogenous, but is fixed information that's needed for land development forecasting.

Growth management policy assumptions impact growth. As such, they too are integrated into the forecast distribution. Access to job opportunities and the locations of existing housing are variables considered in projecting residential and employment location. Transportation behaviors are factored into the forecast distribution. Economic development policies – in the form of urban renewal initiatives – are factored into the land supply / capacity assumptions. Land use policies – notably urban reserve designations – represent growth policy assumptions are also included in the distribution. There are other policy assumptions including regional and municipal land use concept plans, environmental measures for wildlife and water quality protection, and parks and open space provisions that put development off limits and thus impose development constraints that prohibit growth distributions applied to these places. Growth distributions are more accurate in places where land use details are more specifically detailed out. The modeling process factors in a host of growth management policies and weighs the potential impact on the distribution of employment and household growth across the region.

Key Steps of the Population and Forecast Coordination Effort:

1. Prepare a 7-county Regional Forecast with employment, economics and population details (medium growth scenario) – (2007)
2. Estimate a Range Forecast for total population / households and total employment – (2008)
3. Estimate a narrower Range Forecast – so called "middle third" – (2009)

4. Regional Forecast and "middle-third" forecast used in determining policy objectives in the Urban Growth Report – (2009)
5. Metro Council selects the "lower middle-third" of the range forecast as its "point forecast" in which land use and transportation policies will hinge on in subsequent policy decisions, including the UGB decision and RTP Forecast. – (2010)
    a. Subsequently regional forecast totals adjusted lower due to slower than expected regional recovery. – (2012)
6. Agree with local governments on growth distribution methodology – (2011-12)
    a. Prepare preliminary model inputs and assumptions for local review
    b. Review local zoning to regional zone class crosswalk
    c. Revise to TAZ 2162 system
    d. Review Buildable Land Inventory and verify assumptions with local governments
        i. Metro UGB vacant BLI capacity assumptions
        ii. Metro UGB redevelopment (and infill) BLI capacity assumptions
        iii. Subsidized redevelopment assumptions (i.e., urban renewal)
        iv. New urban area urbanization assumptions (i.e., post-1997 expansion areas)
        v. Urban reserve urbanization assumptions
        vi. Clark county BLI / capacity assumptions
        vii. Ex-urban area neighbor capacity assumptions (e.g., Banks, Canby and Sandy, Columbia, Marion and Yamhill counties)
        viii. Residential development from Measure-49 claims
        ix. Residential development capacity from rural unincorporated areas in the tri-county, but outside the Metro UGB
7. Run in 5-year increments MetroScope TAZ scenario with full transportation demand model – (2012)
8. Review TAZ forecast distributions for years 2025, 2035, 2040 with local governments – (2012)
9. Conduct detailed city and county engagement to amend TAZ distributions for total households and employment by retail, service and other (2012)
10. Finalize and Adopt TAZ growth forecast distribution (2012)
    a. mandated population coordination with local governments
    b. RTP and other corridor transportation projects

MetroScope Model update: none (deployed MetroScope Generation 3 version)

MetroScope Socio-economic Data updates:

- Base year population updated to 2010 Census[21] consistent with TAZ 2162 geographies
- Base year 2010 employment estimates from the Bureau of Labor Statistics (BLS) and the state Quarterly Census of Employment and Wages (QCEW) consistent with TAZ 2162
- Updated other economic and demographic forecast drivers and variables per Census, BLS, BEA (Bureau of Economic Analysis), various state data sources

[21] Demographic data updated to 2010 Census, but MetroScope zone system still at 2000 Census residential zones.

- 2010 calibration of model (i.e., real estate prices)
- Revised hedonic neighborhood scores as needed
- Transportation network updated to a 2010 base year consistent with new TAZ 2162

Local Review Regional Density Assumptions help to verify BLI capacity estimates.

Local jurisdictions fine tuned the following land supply assumptions:

- Regional zone classes (an updating of the crosswalk table that translates local zoning ordinances to standardized regional zone categories without materially changing allowed zone densities)
- TAZ 2162 (an updating of the traffic analysis zones to 2,162 polygons – 2,147 are inside the Metro UGB and Clark county)
- Buildable Land Inventory – vacant, part vacant, and redevelopment assumptions (a review and acceptance of both residential and employment supply assumptions – confirms residential acres and dwelling unit capacity in Metro UGB, employment supply acres by industrial and commercial districts)
- Clark County Buildable Land Inventory[22]
- Subsidized Residential Redevelopment Assumption[23]
- New Urban Area Assumption (post-1997 UGB amendments)
- Urban Reserve urbanization assumptions (i.e., buildable land inventory measures, timing of UGB expansions and urban density assumptions)
- Ex-urban residential and non-residential capacity assumptions

Over 600 local zoning districts exist in the region. However, zoning districts generally share common themes, permit only types of development and have common allowable development densities. These common zoning traits allow normalization and each one to be classified into 1 of 48 regional zone class designations. Residential zoning districts are matched up with an appropriate regional zone class designation based on the maximum dwelling unit density allowed and per zone district by the dominant single family, multi-family or mixed use residential entitlement. The commercial and industrial crosswalks were more simply based on the entitlement description for each zoning district. In all, zoning districts were cross-walked for all 25 cities and counties in the Metro UGB and including Clark county and ex-urban rural cities.

The Metro Research Center each quarter updates the data layer in its Regional Land Information System GIS database when new zone districts are created (or amended). Additionally, the entire RLIS zone class data layer went through a careful jurisdiction by jurisdiction review with each participating city and county in the region to verify the accurate crosswalk of local zoning districts to the proper RLIS regional zone class designation. Corrections from city planners were incorporated into the final supply dataset.

[22] Only Clark County and City of Vancouver participated in the review and subsequent revision of BLI capacity assumptions. The RTC participated but made no recommendations to change capacity assumptions.
[23] There is no comparable assumption for non-residential growth distributions. MetroScope modeling and forecasting does not assert any subsidies for employment lands.

To see the list of standardized regional zone classes, please see Appendix 2. Detailed zone class maps may be downloaded from Metro's FTP server:
ftp://ftp.oregonmetro.gov/dist/gm/TazAlloc2010/July22_meeting/

ZoningClackCo_map.pdf
ZoningMultCo_map.pdf
ZoningWashCo_map.pdf
ZoningRegional_map.pdf

Refining Transportation Analysis Zones: TAZ 2162 to meet new planning challenges.

At the same time that supply and capacity assumptions were being reviewed and refined, Metro's Transportation Research and Modeling staff (TRMS) underwent a parallel process of reviewing and splitting TAZ boundaries as needed to meet individual municipal transportation planning needs. This task was completed and what emerged is the new TAZ 2162 system. The system has 2,147 zones inside the four-county metropolitan region (the coverage includes the full geographic extent of Clackamas, Multnomah and Washington counties in Oregon and Clark County, WA). The remaining zones represent external (or halo) zones not usually associated with Metro's travel demand model. However, some transportation and land use applications may reserve the need to study the travel distance behaviors and economic impacts of long distance commuters into adjacent zones in Columbia, Marion and Yamhill.

For an illustration of the TAZ 2162, please see Appendix 3. A printable map can be downloaded from Metro's FTP server: ftp://ftp.oregonmetro.gov/dist/gm/TazAlloc2010/July22_meeting/

MetroScope_zones_taz2162.pdf.

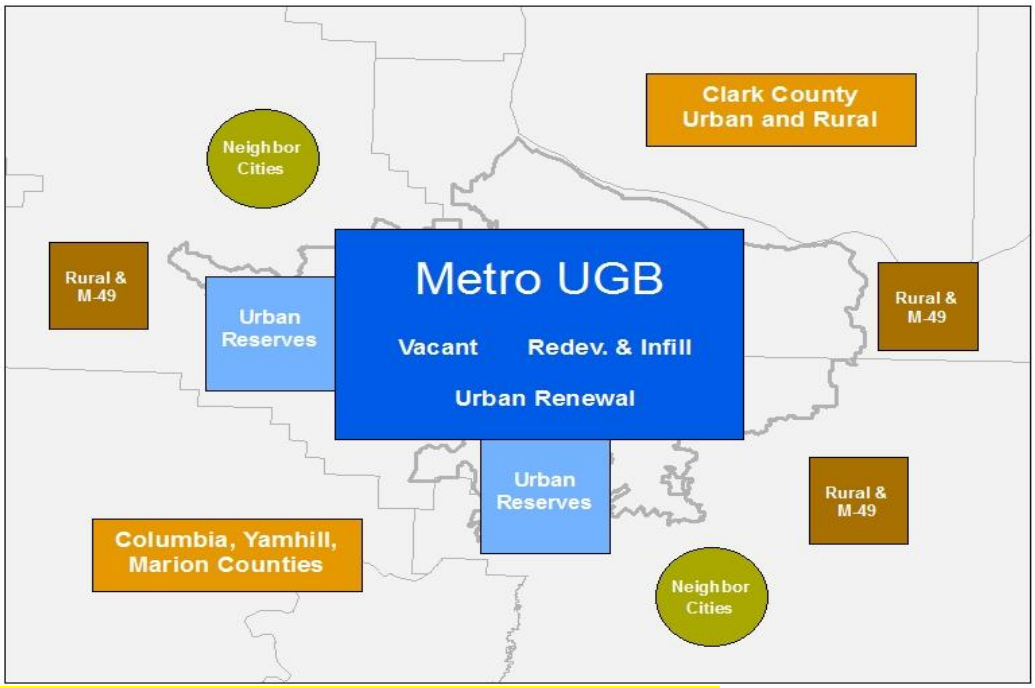


Figure 1: Supply Data – MetroScope Capacity Concept areas

Residential Capacity Estimates derive from many sources.

Regional supply assumptions stretch across multiple counties. This information is necessary to include in the modeling process because regional residents have the choice to reside anywhere in the greater metropolitan area. There are no borders that restrict where people can live, nor where businesses can set up shop. The opportunity to live or work outside the Metro UGB is a practical alternative for some population segments. MetroScope is capable of projecting residential location choice based on behavioral characteristics unique to household of varying life cycle and income bracket. In order to assess the rational economic choices of households, the analysis of where to live and where to work has to encompass the socio-economic influence area of the region as a whole. Clark county, rural unincorporated areas adjacent to the Metro UGB, rural cities and counties are included in the forecast distribution with that of the Metro UGB. The illustration in Figure 1 depicts the major sources of residential (and employment) capacity available for modeling and forecasting future development in the region.

	Dwelling Unit Capacity
SF Vacant - UGB	45,200
SF Infill - UGB	53,800
MF Vacant - UGB	53,500
MF Redev - UGB	219,200
Urban Reserves	155,600
Clark County	103,200
Rural TriCounty	33,800
Ex-urban Counties	57,200
Regional Total	721,500

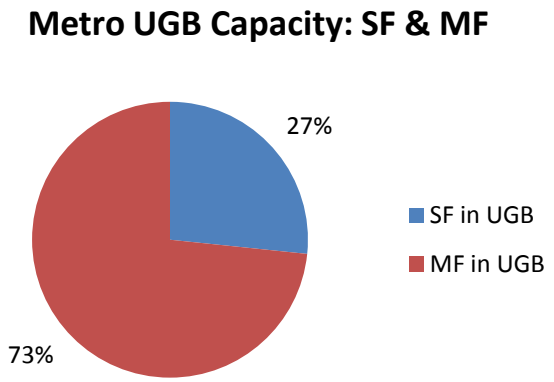


Table 1: Residential Dwelling Unit Capacity (Supply) – 7 county MSA

The overall regional capacity for the 7-county area summed to 721,500 units. Residential capacity – measured in dwelling units – in the Metro UGB totaled 371,700 units. Multifamily redevelopment represents the largest single source of potential development capacity during the forecast period. Urban Reserves accounts for over one-fifth of residential capacity going forward, but is subject to change when actual zoning densities and closer assessment of buildable land inventories are conducted. Current assumptions on urban reserve capacities are derived from a conjectural set of density assumptions centered on achieving 15 DU / net acre. These capacity estimates represent a best approximation of future development capacity through at least 2045 and up to year 2060 when urban reserves are folded into the total. The forecast distribution assigned future households to the residential capacity outlined in table 1.

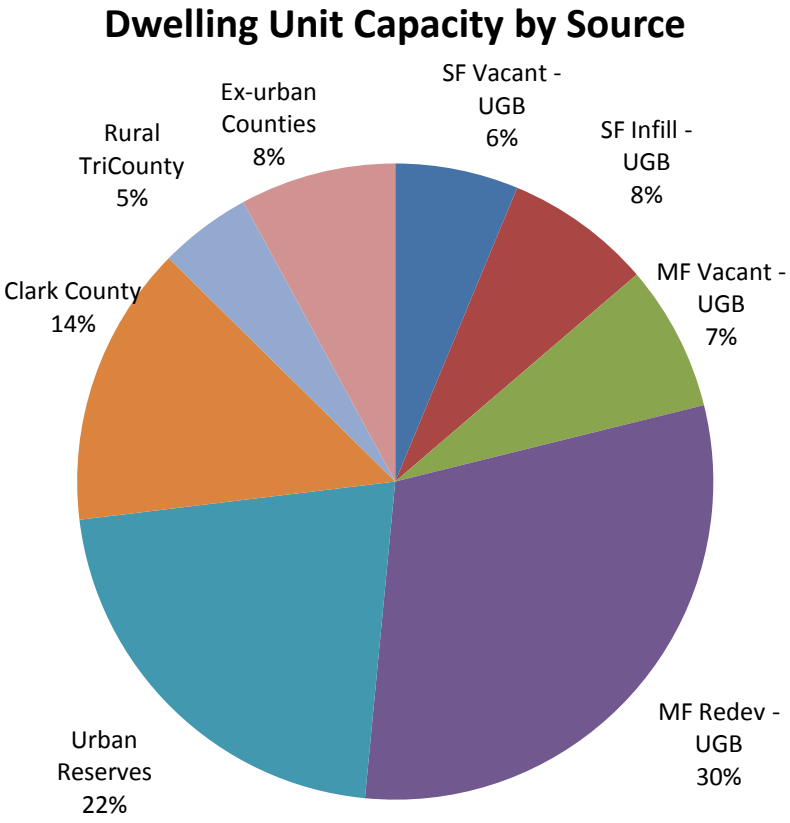


Figure 2: Supply Data – Residential Capacity all Sources (7 county MSA)

There was a major shift in the makeup of residential capacity. Future development trends are expected to conform to the shift. Capacity estimates going forward from today for the region indicate a regulatory mandated change in direction that reverses the post-World War II development trend. Specifically, the residential composition is changing by location, by development form and by vacant vs. redevelopment. The bulk of residential capacity is no longer in the suburbs but in close-in more urban settings. Allowable development forms (i.e., building type) is expected to flip-flop, going from mostly single family to apartments and development of multifamily products. In the post modern era, government incentives promoted single family housing development in suburbs at the rate of about 70% SF vs. 30% MF. More recently, the Metropolitan Housing Rule and Metro's 2040 Growth Concept Plan and Regional Framework have bolstered multifamily development. The ratio of development since 1995 has shifted to 60% SF and 40% MF – a trend consistent with the region's growth management edicts. Future ratio of SF and MF development is expected to reverse from historical patterns to where the ratio becomes 40% SF and 60% MF. At the very end of the forecast in 2040, the ratio becomes 10% SF and 90% MF, reflecting the eventual absorption of nearly all available SF capacity inside the Metro UGB.

Redevelopment will mark a major shift in residential capacity. Redevelopment is defined as the net increase in development density, meaning that an older dwelling unit is torn down and a newer structure replaces it with more housing units. Infill is the addition of more dwelling units to a site that already has an existing home or development. Infill capacity is measured from indentifying how many

over-sized tax lots (relative to minimum lot size regulations on current zoning) and how many additional unit(s) could physically fit on the undeveloped portion of the site. The capacity estimates going forward will rely heavily on demolishing older depreciated home sites and redeveloping them at higher densities.

Estimates of residential capacity for just the existing Metro UGB (excluding urban reserves which will be discussed in another section) show three-fourths of the real estate supply will derive from potential redevelopment and infill. The supply data indicate the shift in capacity favoring more multifamily, i.e., apartments, mixed use residential condos and for rent apartments, and higher density attached development forms generally greater than 20 units per net acre. The table below documents this marginal change expected in residential capacity.

Dwelling Unit Capacity in Metro UGB		
SF Vacant	45,200	12%
MF Vacant	14,800	4%
MUR Vacant	38,700	10%
SF Infill	53,800	14%
MF Redev	33,900	9%
MUR Redev	185,300	50%
Total in UGB	**371,700**	**100%**
Single Family	99,000	27%
Multifamily	272,700	73%
Total in UGB	**371,700**	**100%**
Vacant Capacity	98,700	27%
Redev + Infill Cap.	273,000	73%
Total in UGB	**371,700**	**100%**

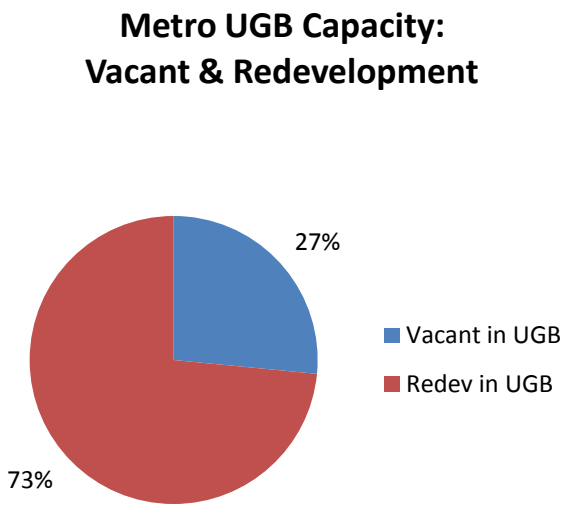


Table 2: Residential Dwelling Unit Capacity (Supply) – Metro UGB (no urban reserves

From a growth capacity standpoint, the growth distribution increases marginal (i.e., 2010 to 2040) development densities in keeping with growing up and not out. Roughly 40% more residents are accommodated in under 10% expansion of the UGB. Consistent with raising marginal densities, redevelopment rates reach almost 75%. This matches closely with the ratio of 27% vacant capacity and 73% redevelopment and infill.

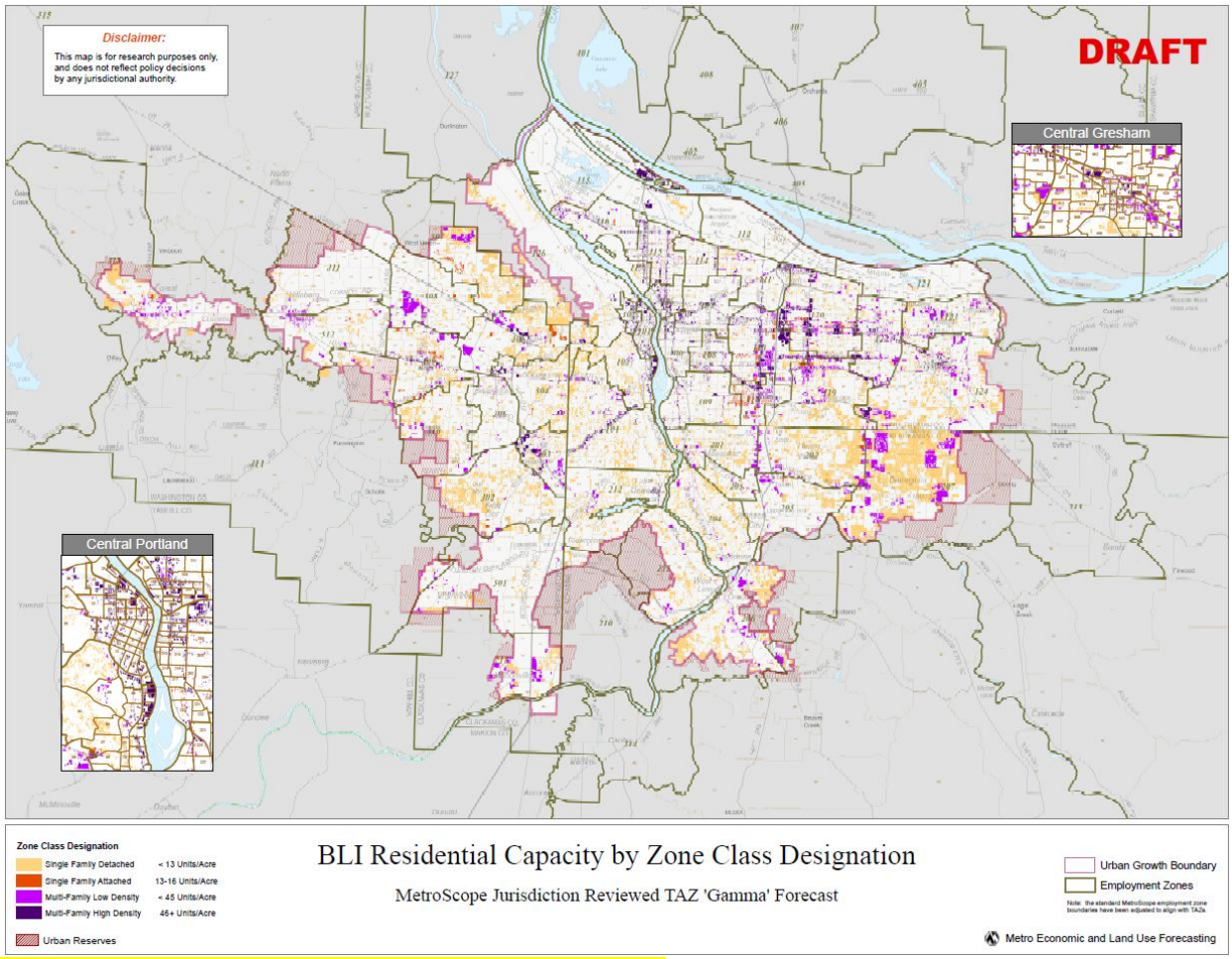
In summary, the supply data, independent of the forecast and growth distribution, indicate the Metro UGB capacity shifting sharply between SF and MF densities. The ratio between single and multifamily capacity for the entire MSA region is estimated to be 40% SF and 60% MF. In contrast, since World War II, development splits between SF and MF were about 70% / 30%. More recently, the Metro region has seen development splits closer to 60% / 40%. As a result, the region should see a significant shift in

regional development patterns. The growth pattern for this forecast distribution represents the most consistent treatment and outcome of the 2040 Growth Concept Plan.

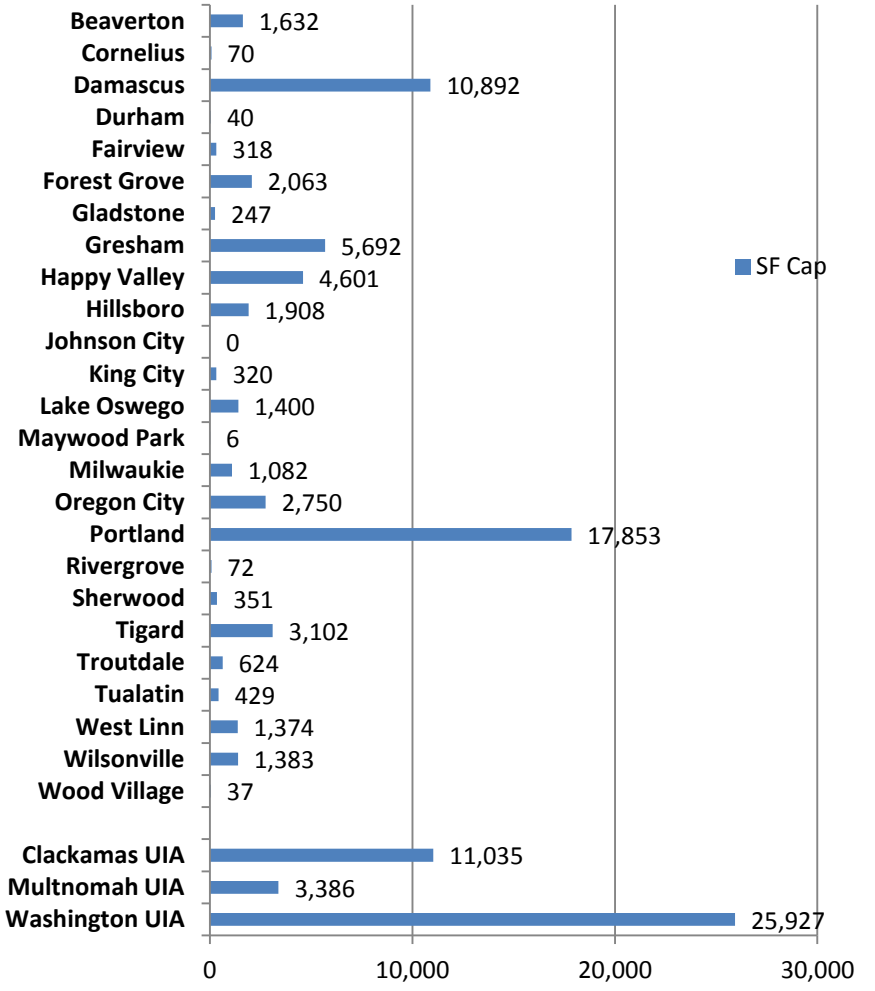
	Post WWII	1995 to present	2010 to 2040	2040
Single Family %	70%	60%	40%	10%
Mult-family %	30%	40%	60%	90%

Table 3: Illustration of Historical Development Trends and Future Capacity Estimates

From a subregional standpoint, the city of Portland represents the lion's share of residential capacity for the Metro UGB. The vast majority of the region's redevelopment capacity is expected to be delivered in the city of Portland. The city's estimated redevelopment capacity is about 137,000 units (7% SF infill and 93% MF redevelopment units – not including an additional 47,200 units from urban renewal). Portland capacity from all sources totals to about 199,000 dwelling units (with urban renewal). This capacity is largely located in the city's designated centers, corridors and main streets. Portland city redevelopment accounts for about two-thirds of the potential residential redevelopment supply estimated for the Metro UGB. Subsequent tables list out single family and multifamily residential capacity for each city inside the Metro UGB.



Map 1: Supply Data – Residential Capacity (Metro UGB)



	% of UGB SF Capacity
Beaverton	1.7%
Cornelius	0.1%
Damascus	11.0%
Durham	0.0%
Fairview	0.3%
Forest Grove	2.1%
Gladstone	0.3%
Gresham	5.8%
Happy Valley	4.7%
Hillsboro	1.9%
Johnson City	0.0%
King City	0.3%
Lake Oswego	1.4%
Maywood Park	0.0%
Milwaukie	1.1%
Oregon City	2.8%
Portland	18.1%
Rivergrove	0.1%
Sherwood	0.4%
Tigard	3.1%
Troutdale	0.6%
Tualatin	0.4%
West Linn	1.4%
Wilsonville	1.4%
Wood Village	0.0%
Clackamas UIA	11.2%
Multnomah UIA	3.4%
Washington UIA	26.3%
UGB Total	100.0%

Table 4: SF Residential Capacity in the Metro UGB (tabulated by city boundary – not TAZ)

Unincorporated Washington County represents the largest single jurisdiction for single family residential capacity in the Metro UGB, followed by city of Portland and unincorporated Clackamas County and the city Damascus. These SF and MF estimates are based on GIS data derived by tabulating up capacity for each local jurisdiction's city limits (no urban service areas used in calculating capacity totals) as of year 2010. In other tabulations, capacity estimates by city may differ due to an alternative accounting system based on summing together TAZ's that have been assigned to approximate the city or jurisdictional boundaries. Note TAZ delineations are unique and boundaries do not necessarily reflect recognized political boundaries, streets, or census geographies.

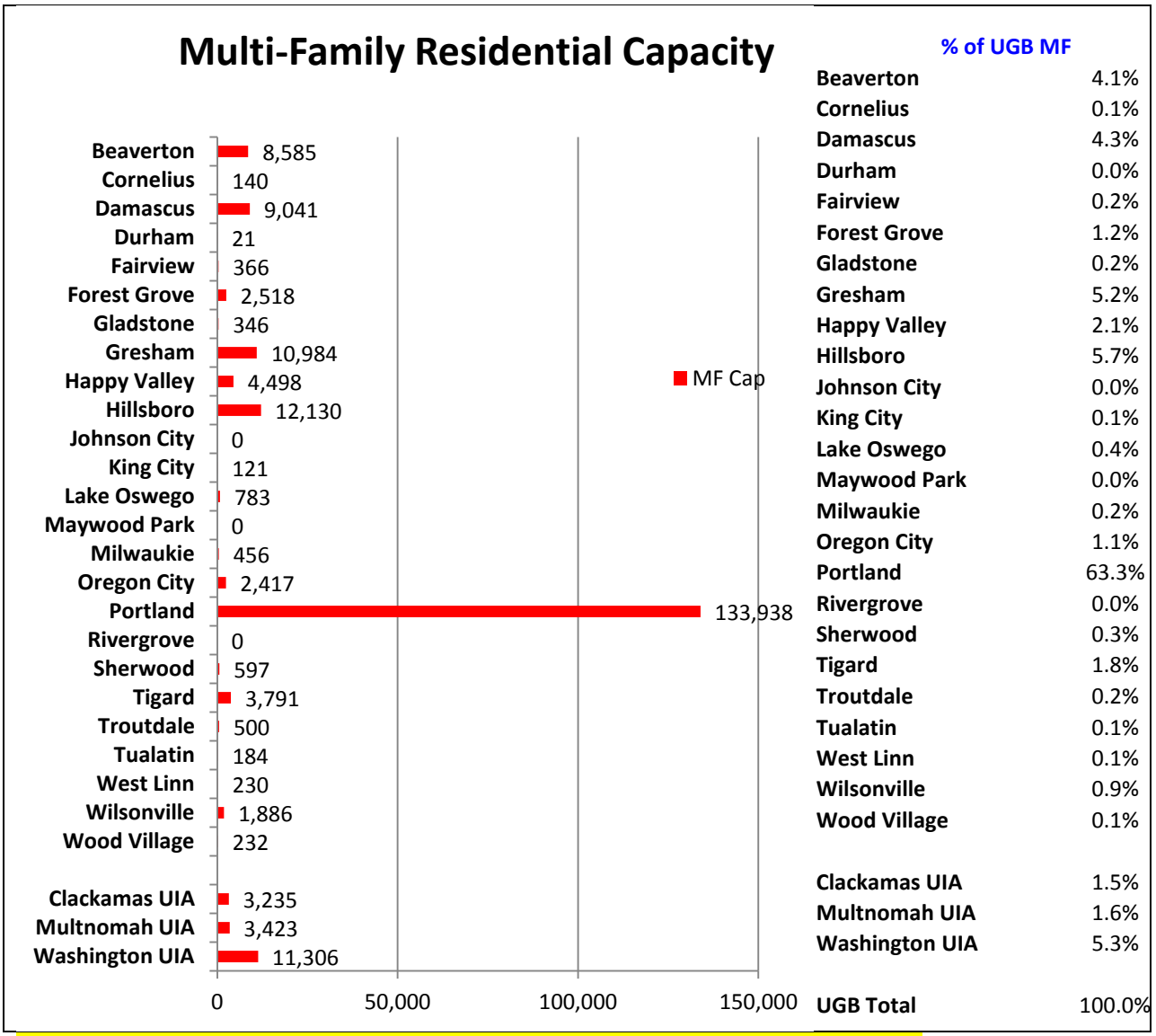


Table 5: MF (includes mixed use residential) Residential Capacity in the Metro UGB (tabulated by city boundary – not TAZ)

In the case of Damascus, capacity estimates are more subject to variance than other jurisdictions for the mere fact that the city has yet to adopt zoning or comprehensive plans for urbanization. Instead, the best available data on hand from a year ago was the city's proposed concept plan. Metro staff with help from city planning officials estimated the residential and employment capacity using the concept plan and Metro's own buildable land inventory of the city. A greater variance may exist for Damascus as the city strives to refine its own BLI estimate and adopts official urban zoning regulations.

It should be noted that during the capacity review phase of the distribution process, several jurisdictions raised these concerns:

1. The amount / proportion of residential redevelopment supply assumed for the forecast distribution

2. Equity concerns arising from housing affordability after 2025
3. Residential location preferences assumed in the model
4. Ability of the model to forecast shifting preferences for building types – vis-à-vis aging demographics for example
5. The significant proportional shift in overall SF and MF capacity for the region
6. Urban renewal subsidy amounts
7. Rural development capacity / density assumptions

These issues will be dealt with as research items going into the next UGR. Two principle research objectives have been identified by planning directors:

1. Review of the BLI for next UGR – in particular the redevelopment assumption
2. Undertake a stated preference residential location choice study.

The first research item will verify BLI data for the region, including redevelopment supplies in the UGB, residential subsidy assumptions, supply of single and multifamily units and rural density assumptions. The second item will depend largely on funding needed to properly carry out a scientifically valid survey and research.

For a more detailed discussion of the current BLI methods and capacity calculation approach for the Metro UGB single and multifamily capacity estimates, please reference Metro's "Methodology for Computing Res. & Empl. Capcity report".
ftp://ftp.oregonmetro.gov/dist/gm/TazAlloc2010/July22_meeting/

New Urban Areas…delaying the start of urban development until 2020.

Metro amended its UGB in 1997 to add Pleasant Valley and Bethany areas, and Damascus in 2002. It still remains unclear when urban development will actually begin, however. Governance of these areas has seemed to mostly been resolved. The city of Damascus was incorporated in 2004 to oversee planning for the new area with Happy Valley plans contributing to the west end. Gresham had taken the lead in planning with other adjacent municipalities to direct planning for Pleasant Valley. Beaverton and Washington County share in planning for Bethany. Still impeding urban development in Bethany and Pleasant Valley has been the lack of public funds to carry out infrastructure construction. Also large parts of the Pleasant Valley are still zoned rural residential and not ready for urbanization. Damascus has had setbacks that have stalled progress in enacting comprehensive plans. Urbanization plans for the new urban areas have been held up by planning disagreements and infrastructure funding questions.

It will only be a matter of time before these areas become ripe to receive urban densities. For modeling and forecasting purposes, we expect the new urban areas will eventually become urbanizable within the next 25 to 30 years, with build-out taking longer. As a matter of practical supposition, the forecast distribution anticipates urban development will be forestalled until 2020 – assuming a 10 year delay before these areas are able to overcome initial development barriers. At 2020, the assumption is to hypothetically up-zone rural new urban areas to 10 dwelling units per net buildable acre.

Industrial and Commercial Employment Capacity appears sufficient for the 2010 to 2040 horizon

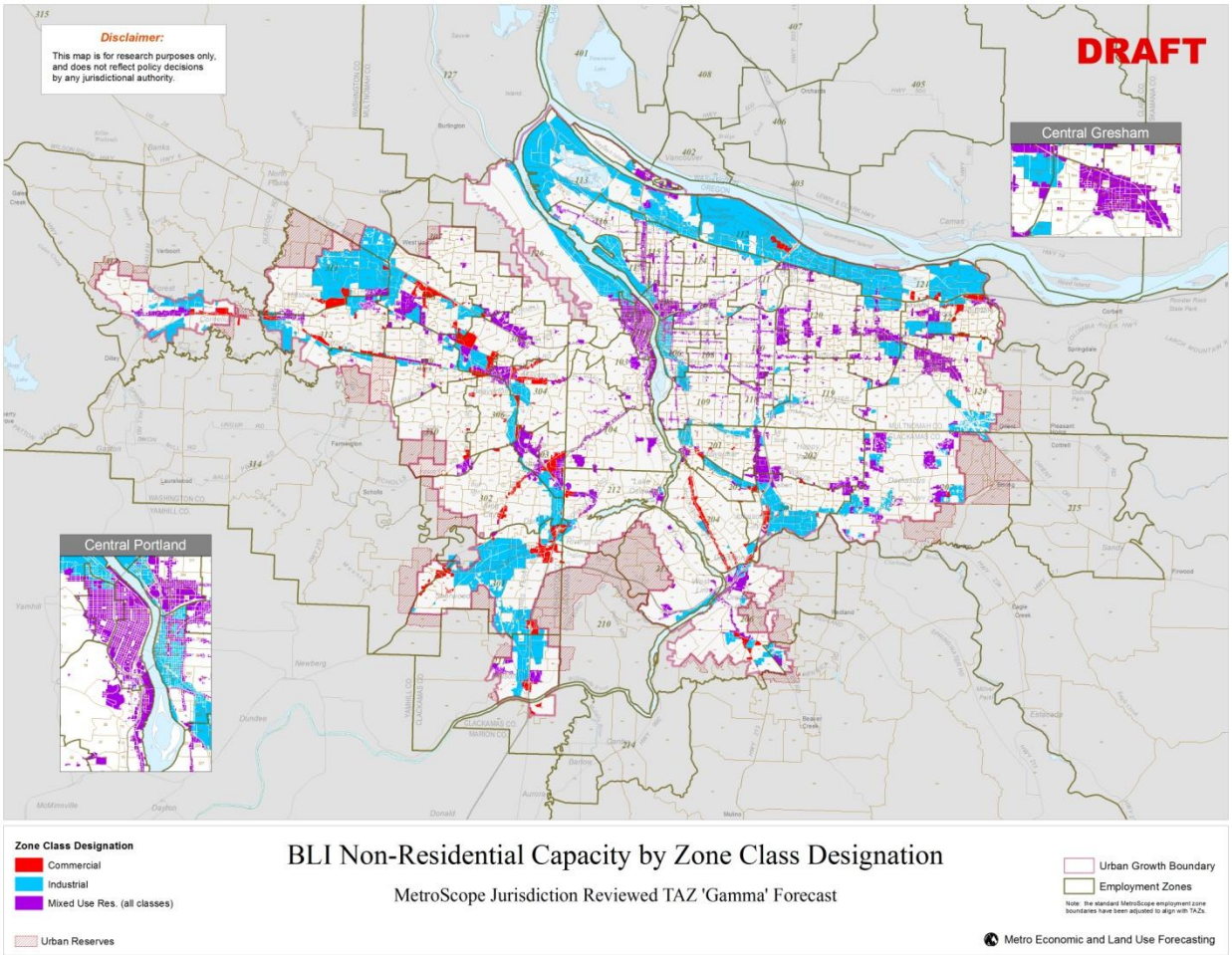
In aggregate, employment capacity includes vacant and redevelopment as shown in Table 5. Like the residential BLI, the non-residential supplies are represented in a GIS data base and stored as net buildable acres. Potentially redevelopable employment sites are tabulated with vacant buildable sites in the overall inventory. The redevelopment supplies also include brownfields, but it is uncertain that the brownfield estimates are 100% accurate. Unbuildable sites and areas such as resource lands, environmentally protected zones and public right of ways are excluded from buildable lands much in the same way as for residential supplies.

Statistical estimation methods were employed to estimate the amount of nonresidential redevelopment supply. As such there exists a margin of error on this redevelopment capacity that is unknown. Undoubtedly, the margin of error found in the redevelopment estimates is going to be larger than the vacant tabulations. Before the redevelopment (and vacant) capacity was accepted into the modeling and forecasting, all non-residential capacity underwent a review by local jurisdictions. The initial estimate for the redevelopment supply was determined from a set of redevelopment filters based on zoning, site size, value of the lot and improvement. The values were given by recent county assessment information and lot size by Metro's RLIS tax lot layer file.

	Industrial	Commercial
Clackamas	3,819	2,255
Multnomah	3,662	1,605
Washington	6,748	2,159
Clark	3,237	1,785
Total	17,466	7,804

Table 6: Supply Data –Employment Capacity (in net acres)

Additional information concerning employment capacity, the redevelopment filters, assumptions and other capacity assumptions are included in the report "Methodology for Computing Res. & Empl. Capcity report". ftp://ftp.oregonmetro.gov/dist/gm/TazAlloc2010/July22_meeting/.



Map 2: Supply Data – Employment Capacity (Metro UGB)

Subsidized Redevelopment (i.e., urban renewal assumptions) – a policy assumption adding to the Regional Residential Capacity.

The subsidized residential redevelopment capacity assumptions represent specific areas in which local governments are attempting to revitalize with urban renewal. These modeling and forecasting assumptions are an attempt to model the potential impact of implementing the Region 2040 framework plan and the resulting economic influences of local government interventions in the private real estate market. The subsidies are applied only to areas in the region defined with an operating urban renewal as of July 2011.

The nature of the subsidy for modeling and forecasting purposes is to make the units more affordable for development and homeowners (or renters). Many of the subsidized redevelopment areas are in the central city, regional centers, town centers, and corridors that carry higher residential price tags. The impact of the subsidy is such that prospective homeowners (or renters) are more likely to locate in the urban renewal area – other things being equal – because rents should be lower with the housing subsidy than otherwise.

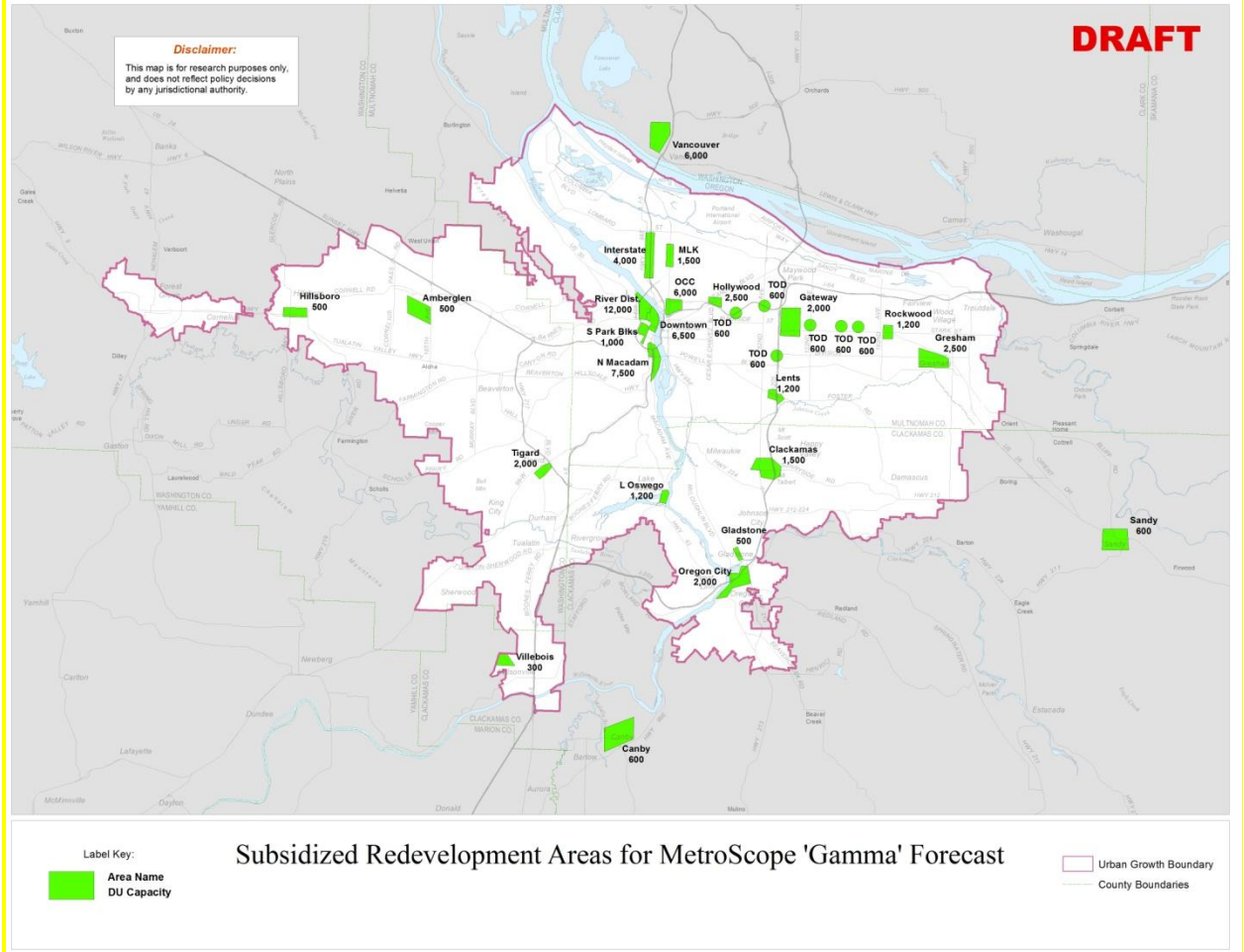
On the other hand, the forecast distribution anticipates that "other things are not equal" because neighborhood amenities from place to place are not the same. Differences in travel time/distance to work, recreation, shopping and entertainment opportunities will override subsidy preferences. Although residential subsidies tend give an advantage to these units, they still must compete with other residential real estate products. In many cases, the subsidies are still enough to tip the scales of development. Development factors in other areas (and outside the region too) still maintain an edge over the subsidized units. Sometimes the differences come down to price advantages, but many other times it's differences in amenities and the tradeoffs that households have to make in balancing work location, transit availability, proximity to parks, schools and stores that decide where residents choose to live.

The old adage in real estate sales "location, location, location" holds true in the modeling and forecasting of residential location choice. Location very much matters, so urban renewal areas compete against all other residential opportunities. Moreover, characteristics of one household to another vary and the number of households with willingness to pay for residential location in highly dense and urban locations is not unlimited. Residential preferences have to also respond to a household's actual income bracket, life-style and life-cycle. In many cases, the innate residential preferences will outweigh the attraction of subsidized units. Competitive forces will drive some households to locate in subsidized areas, but for a large segment of regional residents other residential locations are preferable. Therefore, given limited demand and many competing real estate markets, MetroScope predicts about 89% of subsidized residential capacity consumed during the next 25 to 30 years. This works out to roughly 50,000 households (from a total of 250,000) that is expected to find the subsidized residential units to be an attractive option.

- 25 subsidized locations (each area corresponds to an identified urban renewal area as confirmed by local jurisdictions as of July 2011)
- Number of subsidized units vary (number of units subsidized varies according to the size of the urban renewal and the designated 2040 area type; number of subsidized units does not exceed allowed zoning or comp plan densities)
- Density assumption of redevelopment units (for determining variable cost of construction) varys with downtown Portland locations set at MUR 9 (100 to 125 DU/ acre) densities and suburban locations set at MUR 4 (25 to 30 DU/ acre) densities
- Value of subsidy amount vary between $10,000 per dwelling unit up to $50,000 per unit (central city locations assume the higher amount while ex-urban and suburban locations assume the lower amount, a $25,000 amount is assumed mainly in regional centers and few town centers)
- Subsidy amounts are metered in between 2015 and 2045 in 5 year increments (the actual assumptions are listed in an appendix table) so as not to "flood the market" with unrealistic subsidies whose beneficial economic impacts are generally not felt immediately and do tend to be phased in over time

Exhibit 1: Urban Renewal Capacity Capacity Assumptions

The subsidies are applied to new development in 25 identified areas. The total amount of initial subsidized redevelopment capacity assumed in this forecast distribution calls for a total of 69,300 dwelling units (60,000 dwelling units are in places designated inside the Metro UGB) and a monetized value totaling $2.5 billion over 35 years. For a list of these areas and the detailed tabular forecast assumptions, please reference the subsidized redevelopment portion of the appendix in this report. A map nearby illustrates where these residential locations are assumed for modeling and forecasting purposes. The number adjacent to each site indicates the additional redevelopment capacity added to total residential capacity[24].



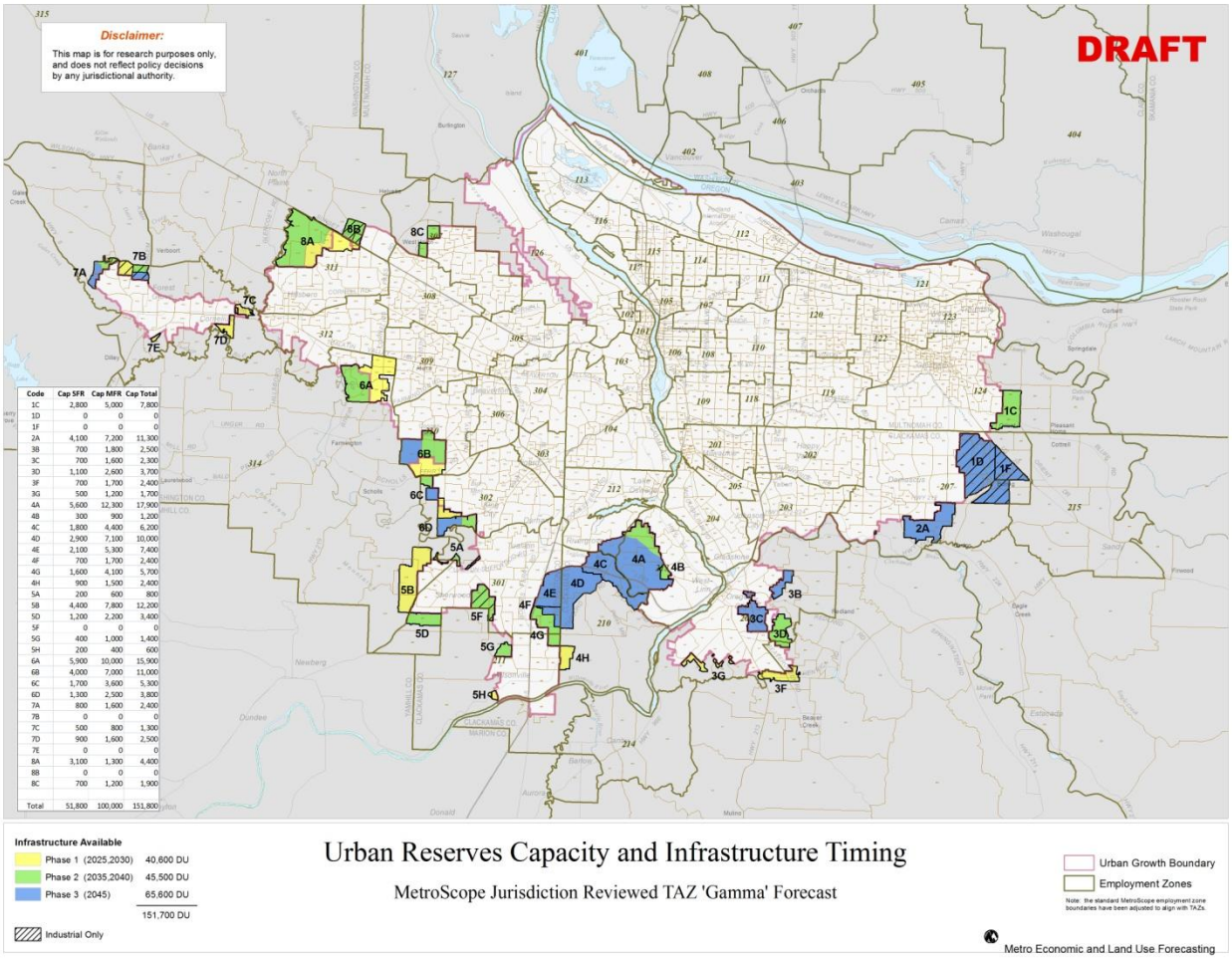
Map 2: Residential Urban Renewal Subsidy Assumption

Metro Urban Reserves Capacity – additional capacity to accommodate regional growth 20 or more years into the future

For modeling and forecasting purposes only – i.e., this assumption is not included in any Urban Growth Report of Metro Capacity Ordinance – the TAZ forecast distribution incorporates an assumption for

[24] The subsidy only applies to residential. There are no promotional development subsidies assumed for employment. There are a number of economic development initiatives underway in the region, but MetroScope is at this time unable to characterize the locational subsidies that would incentivize development.

residential capacity that implements local government efforts to promote 2040 Growth Concept development forms in centers, corridors and light rail station areas.



Map 3: Metro Urban Reserves and Capacity Assumptions

The forecast incorporates prospective Metro UGB expansions into the growth distribution. The reason for this is to reduce the projected growth distortions to internal TAZ's and designated centers that are adjacent to an urban reserve site. Over time, we would expect reserves to be added to the UGB. It is our thought that a rolling 5-year forecast with periodic UGB adds would be more accurate in the long-run for the region as a whole. Otherwise, without future adds, the internal TAZ's would not be adequately represented in the growth distributions. Since there are no policy mandates from the Metro Council as a guide for when urban reserves will be added to the Metro UGB, the forecast assumption is strictly a technical assumption left to forecasters.

Maximizing the information on hand, the forecast knows these as givens:

- Location of urban reserve sites
- Designation of which sites will be industrial
- A crude estimate of each site's buildable land acreage

- A crude estimate of environmental resource land acreage
- Directed to assume 15 DU / net acre

This still leaves out some important information needed for future forecasts. The map above illustrates embodies the actual assumptions made concerning governance, financing and infrastructure development. These assumptions are modeled into the forecast in terms of:

- Timing of reserves (when it enters the UGB and when we can expect urbanization to start)
- Residential capacity (expected supply of SF and MF dwelling units)
- Industrial capacity (expected number of net acres)
- Commercial employment capacity (expected number of net acres)

Local governments were consulted and their comments folded into the governance assumptions and infrastructure financing and urbanization timing of each urban reserve. Here's the basics:

1. Urban reserves were divided into 3 phases by local governments. These phases represent the most likely ability of the nearest local government to provide infrastructure financing and governance in terms of spelling zoning and other urbanization factors
2. Each phase was subdivided roughly in half to coincide with the 5 year growth forecast increments
3. A 10 year delay was assumed before an urban reserve site would begin to have urban densities assigned. This represents a crude approximation of the infrastructure delay or about the time expected to make the site development ready.
4. Sites that were designated in the urban reserve process as industrial remained wholly industrial for modeling purposes unless the nearby city proposed concept plans which offered more precise reckoning of future zoning districts
5. Other sites were designated as residential and neighborhood commercial. These sites were given a crude capacity concept based on 15 DU / net acre. 70% of the BLI in each site was given to single family densities; 24% to multifamily density and 6% of the BLI for neighborhood commercial development. SF densities were either set at SFR5, SFR6 or SFR7 depending on existing single family zoning in nearby TAZ inside the UGB. The MF density was set to whatever density would allow the urban reserve site to average the required 15 DU / net acre.
6. Otherwise, if local jurisdictions had on hand their own concept plans for an urban reserve, the TAZ forecast replaced the crude Metro assumptions with the local concept plan.

Exhibit 2: Urban Reserve Density Assumptions.

The urban reserve capacities are hypothetical assumptions deriving from recommendations provided to the Metro Research Center by local government officials. They are technical assumptions and should not be construed as plans for future decisions by the current or any future Metro Council. The urban reserve assumptions are non-binding and intended for research purposes only. They merely represent a subset of capacity assumptions included among a broader set of other technical assumptions necessary for simulating future population and employment growth patterns. The urban reserve assumptions are

solely the responsibility of the Metro Research Center and intended for informational and technical research purposes.

In the context of distributing the regional forecast to specific neighborhoods and locations in the region, urban reserves represent additional areas that can be provisionally added to the Metro UGB in later forecast years. As population and employment in the region grows, residents and businesses need room to grow. A portion of this growth may be accommodated within the existing UGB and others may spill out to Clark county, rural areas in the region, or counties adjacent to Metro. Metro urban reserves provide an identified reservoir of development capacity that can be drawn on in future years to augment the capacity of the Metro UGB to accommodate future growth pressures. Urban reserves provide planning certainty and are intended to help maintain a compact urban form while protecting and sustaining valuable agricultural resources adjacent to the UGB.

As on-going economic development and residential need is absorbed into the Metro UGB, every 5 years Metro is required to take stock of its capacity and replenish the amount of capacity absorbed such that there will be enough capacity on hand for the next 20 years. Urban reserves represent an available choice in which future markets are likely to see growth happen and future Metro Councils will likely decide expansion of the Metro UGB into all or parts of designated urban reserves as a possible solution to meet growth demands.

In order to simulate this cycle of 5 year capacity review and replenishment of the Metro UGB capacity, the Metro Research Center in consultation with local governments has devised a hypothetical schedule for metering in the expansion of the Metro UGB into designated urban reserve locations. Reserves are a fact. Ignoring the likelihood that urban reserves would go untouched in the foreseeable 25 to 60 year time horizon would significantly skew growth distribution results in the Metro UGB. Ignoring periodic inclusion of urban reserves would hamper the growth distribution forecast and severely skew results. The better forecast alternative is to assume a hypothetical schedule of UGB amendments equal to a hypothetical replenishment rate. Even if the timing, location and capacity assumption are less accurate, the inclusion of urban reserves into the forecast distribution limits forecast biases and geographic distribution errors to the urban reserves areas and immediate adjacent zones.

The only piece of information we have about urban reserves are its geographic boundaries. In order to make use of urban reserves, the Metro Research Center has had to impute certain attributes for each designated urban reserve area. Synthetic land use information had to be constructed in order to approximate urban densities, land use capacity to accommodate residential, industrial or commercial development for each urban reserve area.

1. UGB / urban reserve timing: There is – as a point of fact – no schedule for adding urban reserve areas to the Metro UGB. The regional forecast distribution does not actually make any assumptions concerning when any individual or set of urban reserve areas are to be added to the Metro UGB. We skirt this issue of UGB expansion timing instead by assuming when infrastructure might be brought into the area at some future date.

2. Infrastructure timing: A timing-delay function is assumed into the growth distribution to represent when each urban reserve area can start to receive residential (or employment) growth allocations. We have seen abundant evidence from post-1997 Metro UGB expansions that dictate growth will not happen until questions about governance, financing, and infrastructure development actually get resolved. Urban-style growth densities and development are not likely to materialize in any designated urban reserve until these concerns are addressed. We assume a timing delay for modeling and forecasting purposes for each urban reserve area that ranks each by its likelihood toward development readiness.

   Reserves are divided into 3 phases and then assigned a 5-year period in which urban development densities and growth may begin. The delay function starts with reserves identified in the phase 1 and assigning new growth in either 2025 or 2030. Phases 2 and 3 stretch out development in the reserves through year 2045. A reserve area is not likely to reach build-out during its initial phase of inclusion to the UGB; it takes several development cycles for that to occur. How quickly a reserve may reach its development build-out depends on a number of demand factors, competing supply choices and real estate prices. A specific reserve area is more likely to see more growth allocated to it if it was added to the UGB capacity in an earlier year.

Buildable land inventory: Development in the reserves can only occur on buildable land[25]. The buildable land inventory is defined by Metro's vacant land inventory and "modeled" Title 3 and Title 13 environmental data layers. Since the buildable land inventory was derived from modeled data instead of actual surveys and measurements, it is conceivable that later refinements to this data may vary widely from the Metro Research Center BLI estimates in this report. After the mid-term review, Beaverton and Hillsboro provided more detailed capacity estimates (i.e., residential and employment) for the Northern Hillsboro, Southern Hillsboro and Cooper Mountain urban reserve sites. These revisions were incorporated into subsequent growth years. A table listing the Urban Reserve BLI estimates is shown in the appendix.

3. Zoning and residential density: Urban-style density assumptions were not given as part of the urban reserve decision. The only guidance given was a recommendation by Metro Council that each piece of urban reserve should plan for a minimum density of 15 dwelling units per net acre. Therefore, the Metro Research Center devised hypothetical density concept assumptions for each designated urban reserve area[26]. Formulation of the dwelling unit capacity assumption in each urban reserve area follows this basic approach:
   a. Single family dwelling unit capacity = 70% of BLI * SFR units/acre, where the SFR density is determined based on observed single family zoning densities in nearby zoning

[25] The reserve areas are expected to be sparsely developed and any redevelopment potential is assumed to be minimal and therefore will not add material capacity. All development capacity is assumed to derive from vacant buildable sources.

[26] Cities of Beaverton and Hillsboro provided more detailed estimates of buildable capacity in urban reserve areas likely to be annexed by the cities. Planning data concerning the residential development capacities for northern Hillsboro (NOHI) and southern Hillsboro (SOHI) and Cooper Mountain urban reserves were substituted in lieu of Metro's standardized capacity estimates.

districts. This seemed to be a reasonable assertion given that very few urban reserves had detailed site plans or capacity concept plans in place. The forecast assumed a 70% rate of SF development largely in keeping with the development mix that has been the case over the last couple decades. For modeling and forecasting, it seemed prudent to generally duplicate similar development mix of adjacent residential subdivisions.

b. Multifamily dwelling unit capacity = 24% of BLI * MFR units/acre, where the MFR density is determined based on the density needed to achieve approximately 15 dwelling units per acre after considering the density assumed for single family. In order to achieve 15 units an acre, there would have to be a significant MF component. Generally the density required to meet the target density was between 45 and 65 units per net acre.
c. Commercial capacity = 6% of BLI. Commercial capacity was aside to accommodate a mix of neighborhood retail and low-scale office employment to meet the needs of area residents. This capacity is not for industrial uses per se.
d. Industrial capacity = 100% of BLI but only in urban reserve areas designated for industrial development. Industrial capacity is not assumed in non-designated industrial reserves.

Future concept planning and comprehensive plan reviews may yield different assumptions, but in so far as urban reserve areas are devoid of urban density assumptions, this is the density assumption template imposed for each designated urban reserve area.

The only salient disagreement over the urban reserve timing assumptions is the Stafford area site. The cities making up the Stafford triangle have stated clearly that urbanization should be delayed until after 2040. This is what is assumed in the modeling and forecasting. On the other hand, Clackamas county has suggested that the Stafford area should come into the UGB sooner.

Capacity Assumptions beyond the Metro jurisdiction.

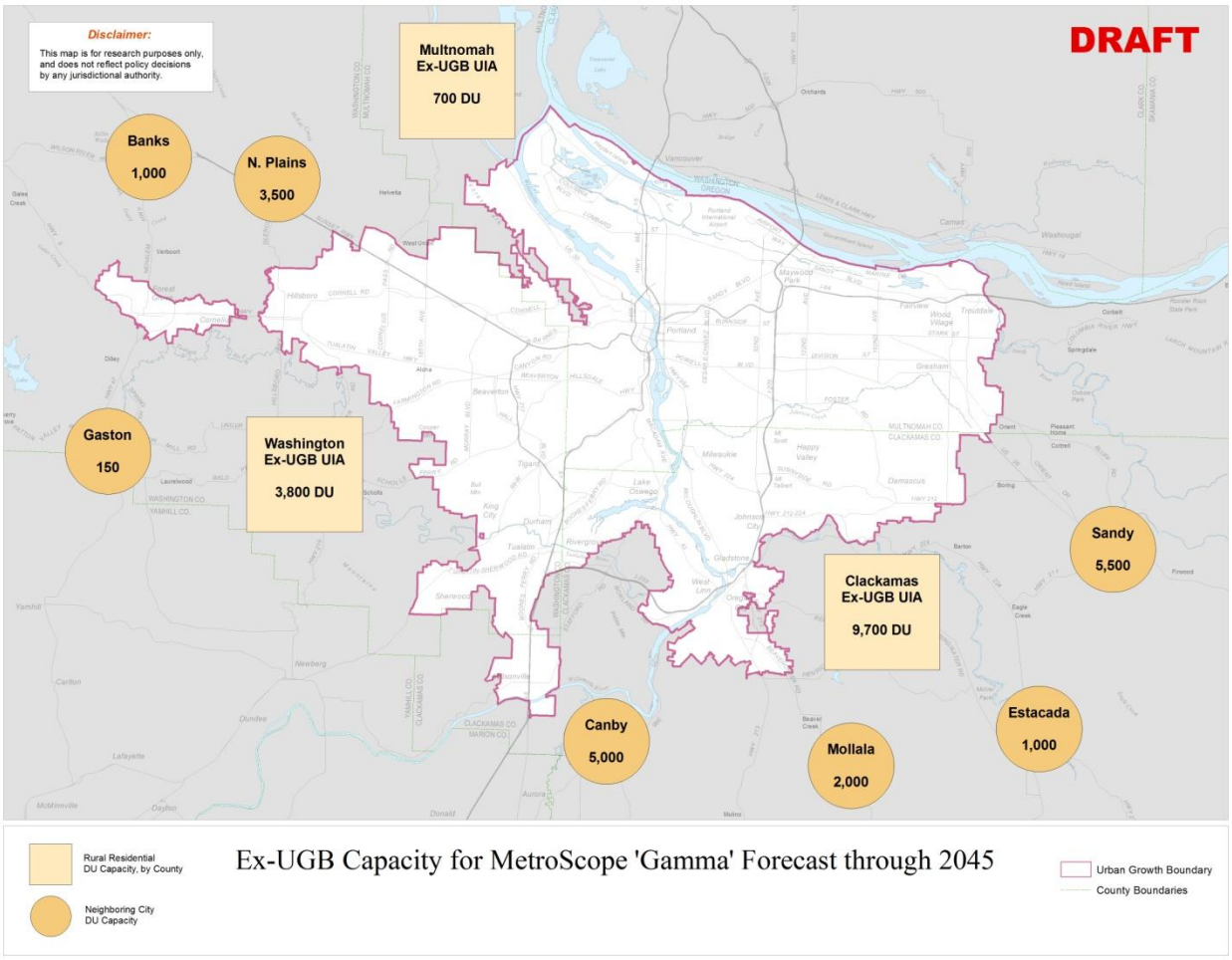
Let's now turn to capacity that's outside the Metro boundary. For complete and consistent accounting of regional development, the modeling and forecasting of land use futures requires estimates of residential and employment capacity in outlying areas that fall in the shadow of the Portland socio-economic influence. These areas are

- the rural county unincorporated areas outside the Metro UGB
- neighboring cities in Clackamas County
- neighboring cities in Washington County
- Clark county (in its entirety).

Generally, capacity estimates for these areas are significantly coarser and may not actually reflect capacity estimates of local governments. Neighboring cities were invited to participate in the forecast distribution and capacity reviews. North Plains and Sandy provided some residential capacity information, but the modeling efforts were ultimately unable to secure capacity estimates that would be compatible with the forecast for the other rural cities. Consequently, Metro staff assumed that future rural city capacities (as noted in the map below) would mimic similar development trends as seen

historically. Manual capacity estimates were eyeballed from 2000 Census data that assumed each neighbor city might practicably double its size during the next 20 to 30 year time horizon.

The residential capacity in the rural tri-county area approximated the combined capacity of Measure-49 claims and a hypothetical estimate of potential farmhouse development. Measure 49 data came from the state. The growth distribution forecast assumed the right to build 3 houses per claim.



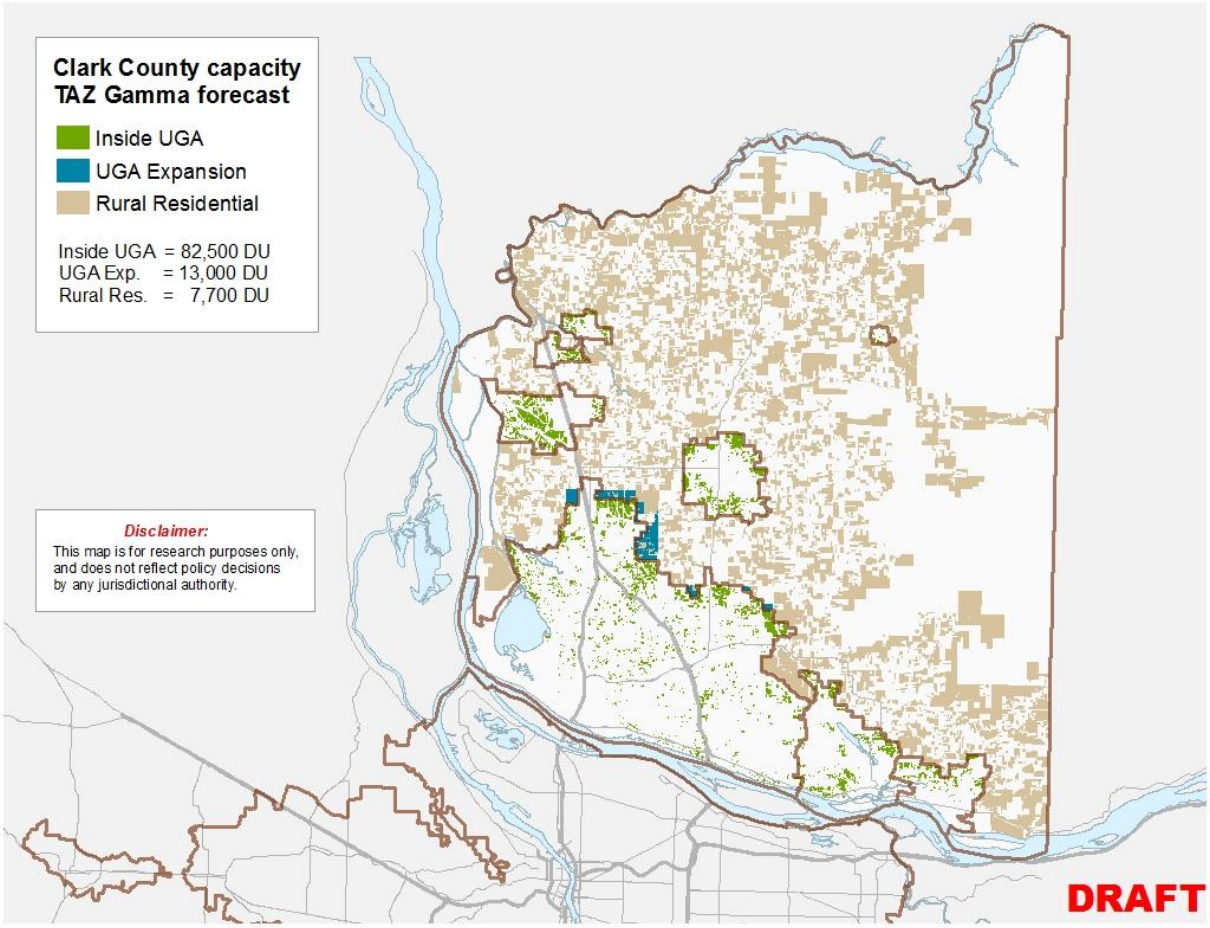
Map 4: Residential Capacity estimates for the rural tri-county area, neighboring cities and rural counties

Additional rural development capacity was computed from exception land information. For all 3 counties, Metro generated an initial rural residential capacity estimate. The initial estimates in each county relied on assuming 4 dwelling units per 5 acres of exception land. This proved inaccurate and later revised. Each county during the capacity review phase overrode and reduced the amount of rural development capacity according to local knowledge and data trends spotted in recent years. MetroScope was designed with the intent of providing a complete analysis of regional growth which includes economic, transportation and land use interactions with adjacent counties. These adjacent areas are often called economic halo regions because there exists significant cross border commuting, economic trade between adjacent counties, and thriving social interactions among the urban counties, suburban counties and ex-urban counties. These socio-economic ties are difficult to disentangle and as a

consequence any exclusions of these counties would severely distort econometric models designed to analyze, forecast and assess the economic conditions of the Portland economic region.

From a Metro-centric perspective, the halo areas in this region include Clark County, Washington, Columbia, Marion and Yamhill counties in Oregon. Additionally, ex-urban areas outside the Metro UGB including neighboring cities (Barlow, Canby, Estacada, Molalla, Sandy in Clackamas County and Banks, Gaston and North Plains in Washington County) and rural unincorporated county areas outside the Metro UGB in Clackamas, Multnomah and Washington counties are included as halo areas.

Because of the close proximity of halo area economies, they provide a pressure release for development both in the model and in reality to excess demand that may form in the Metro UGB. For example, as growth pressures tighten the supply or capacity inside the Metro UGB for residential (or employment) need, the halo areas may provide alternative housing options for residents and businesses in the future. As a market equilibrium model, MetroScope mimics economic choices and conditions. A choice for some residents (and businesses / employees) may be to live in single family housing beyond the UGB if price and availability make it unaffordable. This choice necessarily includes the choice to locate either inside the UGB or outside the UGB. Of course having supply (or capacity) is necessary but not sufficient if there is not the sufficient market demand to want to choose to locate outside the UGB. Where the growth distribution lands depends on many critical factors, one of which is the amount of residential (and employment) capacity available to accommodate regional growth.

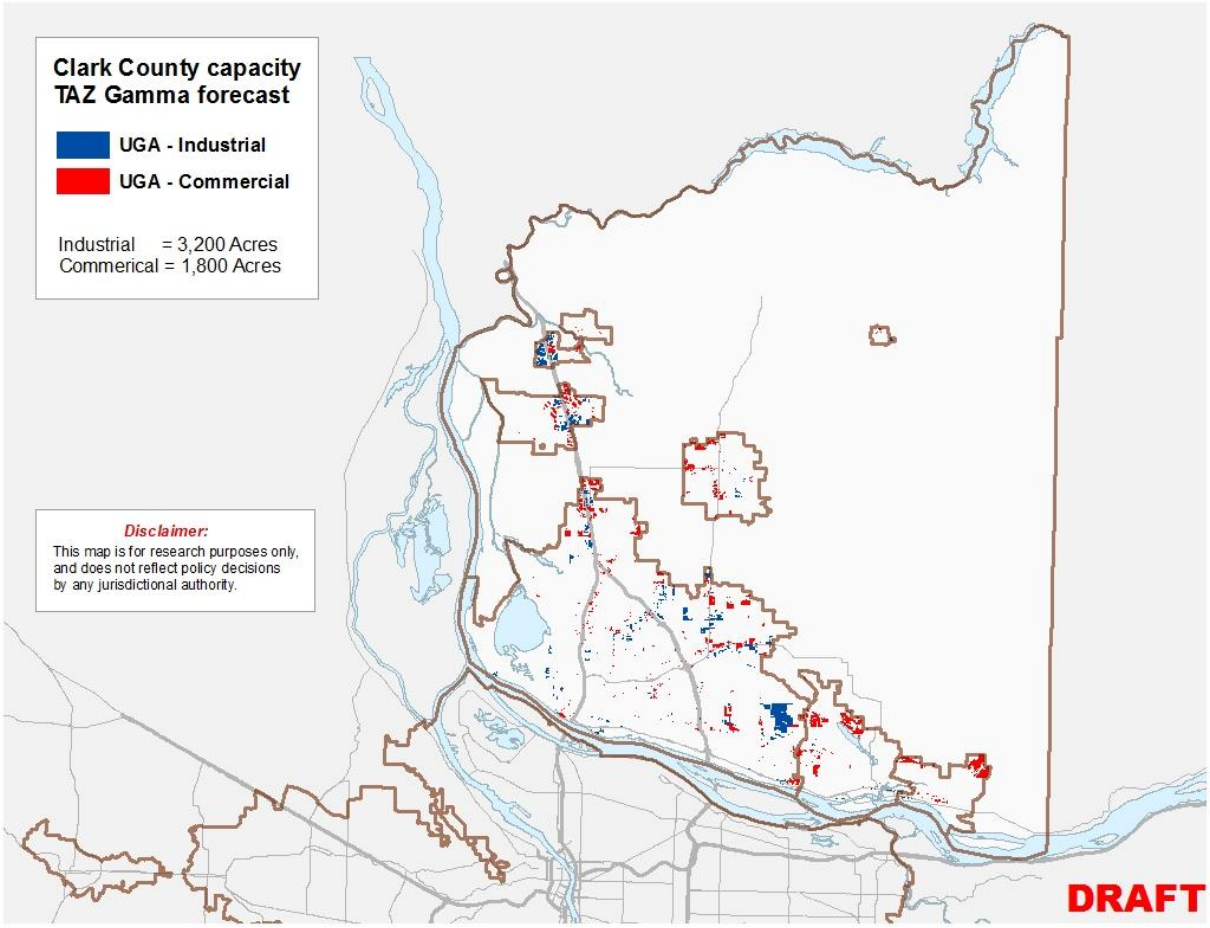


Map 5: Cities and Clark County Residential Capacity

Clark county BLI

The buildable land inventory for Clark County and its cities were given by the county's Vacant Buildable Land Model. Responsibility for this inventory is the county's own GIS and Assessment Department. The BLI includes both vacant and redevelopment supply estimates. The capacity includes data for both residential and non-residential sources. Non-residential capacity was divided into commercial and industrial sources according to zoning. The residential capacity was sorted into same categories of single family, multifamily and mixed used residential sources based on a cross-walk of city and county zoning ordinances to Metro's own standardized zone classification.

The capacity estimates for Clark County and its cities was essentially unchanged and directly inserted into the overall regional growth distribution forecast.



Map 6: Illustration of Cities and Clark County Employment Capacity

Other policy and infrastructure assumptions

In order to accurately assess future development patterns for employment and residential need, the TAZ forecast incorporates detailed Regional Transportation Plan (RTP) assumptions into the final forecast distribution. This includes travel time forecast information from zone pairs, auto occupancy assumptions, existing network assumptions and future network infrastructure investments.

There are 4 separate RTP assumptions used in preparing the final 2010 to 2040 TAZ forecast distributions. Since MetroScope is time path dependent and operates in 5-year growth increments, but the travel demand model has only 4 different networks corresponding to the MetroScope growth forecast years.

MetroScope Growth Forecast Year	Transportation Network
2010 and 2015	Existing 2010 base year
2020 and 2025	2017 Air Quality Conformity
2030 and 2035	2035 Financially Constrained (Federal network)
2040 and 2045	2035 Strategic (State network)

A map of the projects included in the 2035 State and Federal transportation networks is included in the appendix of this report.

- Federal and state regulations require that the region assess the air quality consequences of proposed transportation improvements. Current laws mean that the region must assess the carbon monoxide emissions from surface transportation sources to meet the Clean Air Act. Metro has prepared an air quality conformity transportation network as part of its determination for the federal component of the 2035 RTP and 2010-13 Metropolitan Transportation Improvement Program as required by state and federal law. For further information concerning the description and technical details of the 2017 air quality conformity network assumptions, please refer to the official air quality conformity determination documents.
- The federal component of the 2035 RTP represents a step toward improved implementation of the 2040 Growth Concept, the region's long-range plan for addressing expected growth while preserving our region's livability. The federal RTP meets federal timelines, fiscal requirements, and new requirements in the Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). This was approved by the U.S. Department of Transportation on Feb. 29, 2008. For further information concerning the Metro ordinance, amendments, technical appendix, system management and operation plans, freight plan, transit plans, and final project list, please follow this link: http://www.oregonmetro.gov/index.cfm/go/by.web/id=25038.
- The state component of the 2035 RTP was a second step toward fulfilling the vision of Metro's 2040 Growth Concept. The second step has produced a final RTP that meets regional and state as well as federal planning requirements. The final RTP includes:
    - the first high-capacity transit plan since the early 1980s, which outlines priorities for future investments in an expanded light-rail network, bus rapid transit and other high-capacity transit corridors
    - a regional freight plan that looks at how freight can move more efficiently through the region's transportation system
    - the first comprehensive plan for transportation systems management and operations to make the most of investments already made in the transportation network
    - the first climate change action plan to address how an integrated set of transportation investments, land use policies and other strategies can most effectively reduce greenhouse gases
    - performance measures to link transportation investments to reducing the region's carbon footprint, job creation, protecting the urban growth boundary and enhancing travel options for everyone.

  Additional details and file documents can be found at this link: http://www.oregonmetro.gov/index.cfm/go/by.web/id=25038

Growth Forecast Distribution Summary Guide

Appendix 8 of this report summarizes the primary demand and supply assumptions utilized in the "gamma" growth forecast distribution. The gamma forecast represents a third refinement of the growth distribution. There were earlier versions – alpha and beta – generated on an as needed temporary basis. Both alpha and beta were interim forecasts which are now superseded by the gamma forecast. The alpha distribution was rejected outright and improved beta versions were developed for use in

- GHG modeling and forecast development (beta 1 version)
- Southwest corridor project analysis (beta 1 version)
- East Metro corridor planning (beta 1 version)
- City of Portland Plan (beta 2 version)

Neither alpha nor beta versions are to be used going forward.

Appendix 1: Adjusted "lower middle-third" forecast details (7-county totals)

Household Forecast by Income Bracket

Household Forecast by Age Bracket

Household Forecast by Persons per Household

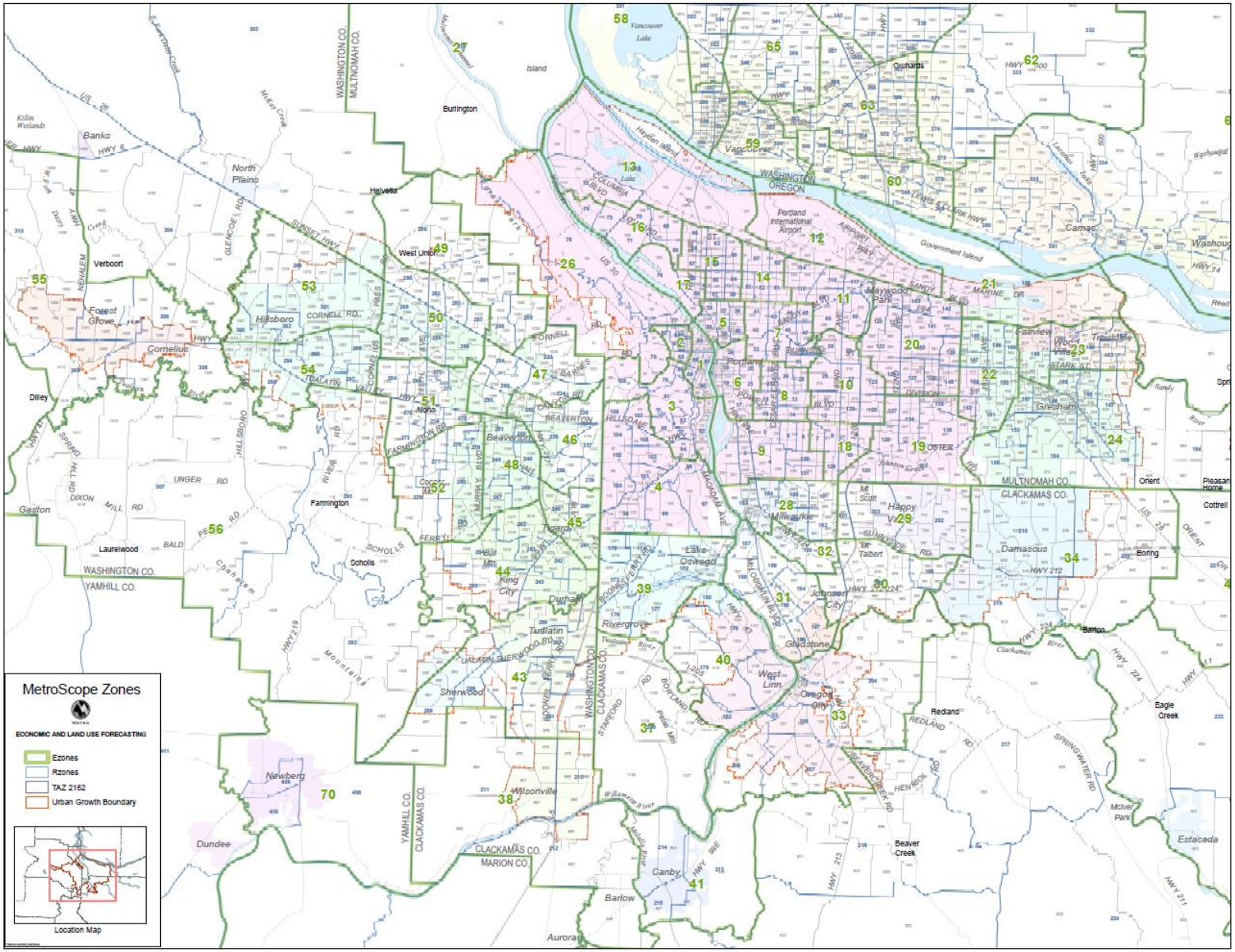
Industry Employment Forecast

Appendix 2: RLIS Standardized Regional Zone Class and Dwelling Unit Density Crosswalk Table

#	Standardized Regional Zones	Zone Class	Residential Lot Size		Maximum Units Allowed (Dwelling Units / Net Acre)			Zone Class
			Min	Max	Min	Max	Avg. Range Density	
1	Single Family 1 acre tax lot	SFR1	35,000	43,560	0	1	1	SFR1
2	Single Family 1/2 acre tax lot	SFR2	15,000	35,000	1.1	2	2	SFR2
3	Single Family 10,000 sq. ft. lot	SFR3	10,000	15,000	2.1	3	3	SFR3
4	Single Family 9,000 sq. ft. lot	SFR4	9,000	10,000	3.1	4	4	SFR4
5	Single Family 7,000 sq. ft. lot	SFR5	7,000	9,000	4.1	5	5	SFR5
6	Single Family 6,000 sq. ft. lot	SFR6	6,000	7,000	5.1	6	6	SFR6
7	Single Family 5,000 sq. ft. lot	SFR7	5,000	6,000	6.1	7	7	SFR7
8	Single Family 4,500 sq. ft. lot	SFR8	4,500	5,000	7.1	8	8	SFR8
9	Single Family 4,000 sq. ft. lot	SFR9	4,000	4,500	8.1	9	9	SFR9
10	Single Family 3,500 sq. ft. lot	SFR10	3,500	4,000	9.1	10	10	SFR10
11	Single Family 3,000 sq. ft. lot	SFR11	3,000	3,500	10.1	11	11	SFR11
12	Single Family 2,900 sq. ft. lot	SFR12	2,900	3,000	11.1	12	12	SFR12
13	Single Family 2,700 sq. ft. lot	SFR13	2,700	2,900	12.1	13	13	SFR13
14	Single Family 2,500 sq. ft. lot	SFR14	2,500	2,700	13.1	14	14	SFR14
15	Single Family 2,300 sq. ft. lot	SFR15	2,300	2,500	14.1	15	15	SFR15
16	Single Family 2,000 sq. ft. lot	SFR16	2,000	2,300	15.1	16	16	SFR16
17	Multi-family-Very Low Density	MFR1	Approx. FAR = 0.4		4	15	12.3	MFR1
18	Multi-family-Low Density	MFR2	Approx. FAR = 0.5		16	20	17.8	MFR2
19	Multi-family-Moderate Density	MFR3	Approx. FAR = 0.7		21	25	23.3	MFR3
20	Multi-family-Medium Density	MFR4	Approx. FAR = 0.8		26	30	29.4	MFR4
21	Multi-family-Med. High Density	MFR5	Approx. FAR = 1		31	35	33.4	MFR5
22	Multi-family-High Density	MFR6	Approx. FAR = 1.1		36	45	40.0	MFR6
23	Multi-family-Very High Density	MFR7	Approx. FAR = 2.1		46	85	73.1	MFR7
24	Mixed-Use Comm. & Res.	MUR1	Approx. FAR = 0.3		4	15	11.2	MUR1
25	Mixed-Use Comm. & Res.	MUR2	Approx. FAR = 0.5		16	20	18.2	MUR2
26	Mixed-Use Comm. & Res.	MUR3	Approx. FAR = 0.7		21	25	23.1	MUR3
27	Mixed-Use Comm. & Res.	MUR4	Approx. FAR = 0.8		26	30	29.1	MUR4
28	Mixed-Use Comm. & Res.	MUR5	Approx. FAR = 1		31	35	34.6	MUR5
29	Mixed-Use Comm. & Res.	MUR6	Approx. FAR = 1.1		36	45	40.1	MUR6
30	Mixed-Use Comm. & Res.	MUR7	Approx. FAR = 1.6		46	65	54.6	MUR7
31	Mixed-Use Comm. & Res.	MUR8	Approx. FAR = 2.2		66	100	75.5	MUR8
32	Mixed-Use Comm. & Res.	MUR9	Approx. FAR = 3.2		101	125	110.5	MUR9
33	Mixed-Use Comm. & Res.	MUR10	Approx. FAR = 6.4		126	700	222.5	MUR10
34	Future Urban Development	FUD					10	FUD
	Standardized Regional Zones	Zoning						Zoning
35	Commercial - Central	CC						CC
36	Commercial - General	CG						CG
37	Commercial - Neighborhood	CN						CN
38	Commercial - Office	CO						CO
39	Public & semi-public Uses	PF						PF
40	Industrial Campus	IC						IC
41	Industrial Office	IO						IO
42	Industrial - Light	IL						IL
43	Industrial - Heavy	IH						IH
44	Parks & Open Space	POS						POS
45	Exclusive Farm Use	EFU						EFU
46	Rural Residential	RRFU						RRFU
47	Rural Commercial	RC						RC
48	Rural Industrial	RI						RI

http://rlismetadata.oregonmetro.gov/display_rl.cfm?Meta_layer_id=416&Db_type=rlislite

Appendix 3: MetroScope_zones_taz2162.pdf



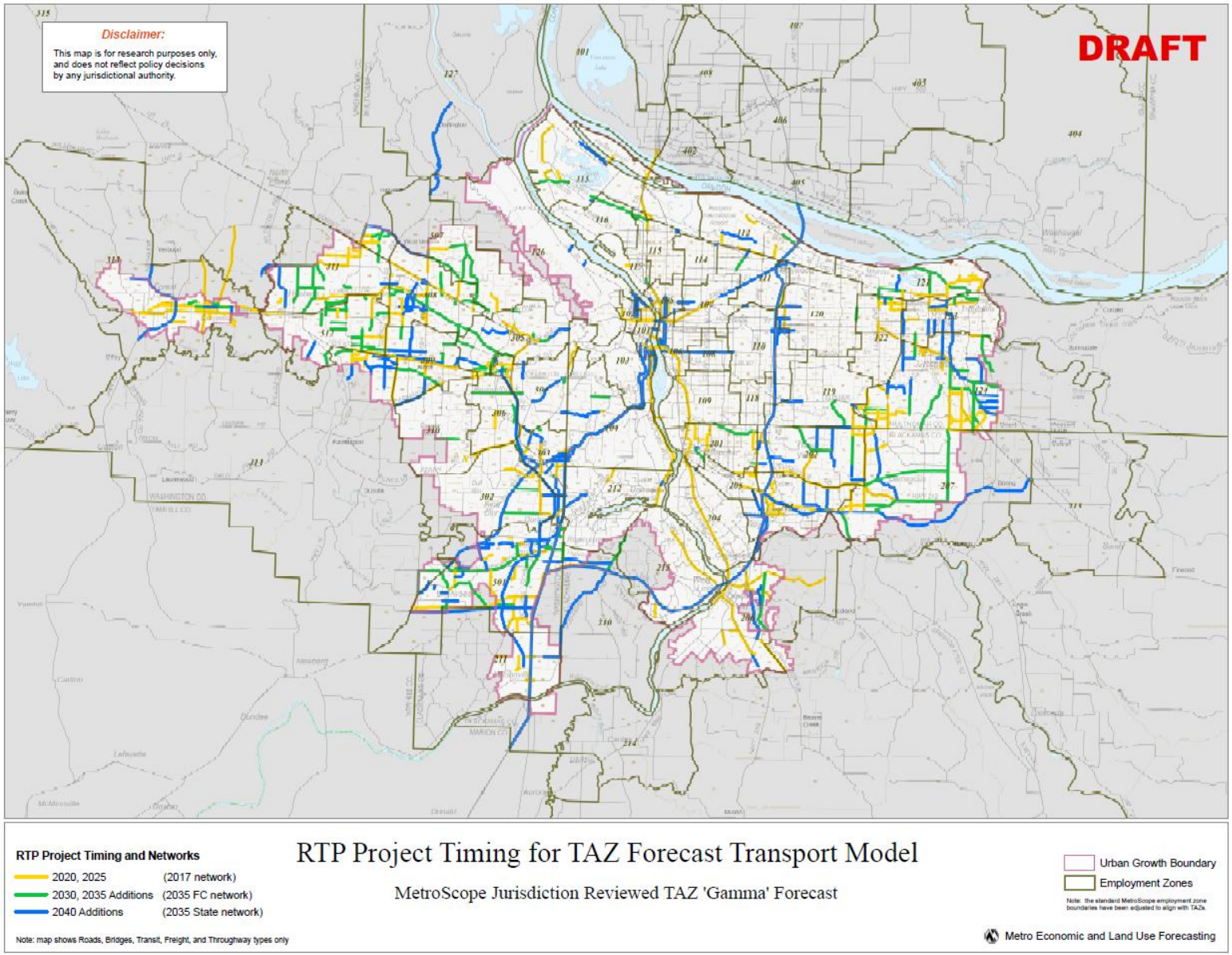
ftp://ftp.oregonmetro.gov/dist/gm/TazAlloc2010/July22_meeting/

Appendix 4: Metro UGB Residential Capacity Assumption – Jurisdiction Reviewed (DRAFT: 9/19/2012)

											Jurisciction Capacity		Percent of Jurisdiction Capacity by Building Type					
				Low Density		High Density				Urban	by Building Type		Percent of Total Capacity					
		Single Family (SF)		Multi-family (MF)		Multi-family (MF)		New Urban		Renewal							Vacant	Redev.
Local Government	TOTAL	Vacant	Infill	Vacant	Redev.	Vacant	Redev.	SF	MF	Areas	SF	MF	%SF	%MF	%Lo-MF	%Hi-MF	%Hi-MF	%Hi-MF
Clackamas Total	**63,228**	**5,578**	**11,906**	**2,241**	**6,020**	**23**	**489**	**17,353**	**14,117**		**34,837**	**22,891**	**55%**	**45%**	**13.1%**	**0.8%**	**0.0%**	**0.8%**
Damascus	**19,932**	0	0	0	0	0	0	10,892	9,041	0	10,892	9,041	55%	45%				
Gladstone	**1,093**	38	210	34	312	0	0	0	0	500	247	346	23%	77%	31.6%			
Happy Valley	**9,099**	1,184	1,403	690	147	0	0	2,013	3,662	0	4,601	4,498	51%	49%	9.2%			
Johnson City	**0**	0	0	0	0	0	0	0	0	0	0	0						
Lake Oswego	**3,383**	275	1,125	94	280	22	387	0	0	1,200	1,400	783	41%	59%	11.0%	12.1%	0.7%	11.4%
Milwaukie	**1,538**	185	897	128	225	1	102	0	0		1,082	456	70%	30%	22.9%	6.7%	0.1%	6.7%
Oregon City	**7,167**	846	1,726	471	1,488	0	0	178	457	2,000	2,750	2,417	38%	62%	27.3%			
Rivergrove	**72**	48	25	0	0	0	0	0	0		72	0	100%					
West Linn	**1,603**	607	766	44	185	0	0	0	0		1,374	230	86%	14%	14.3%			
Wilsonville	**3,570**	377	614	337	1,064	0	0	392	485	300	1,383	1,886	39%	61%	39.3%			
Clackamas UIA	**15,770**	2,017	5,141	443	2,319	0	0	3,878	473	1,500	11,035	3,235	70%	30%	17.5%			
Multnomah Total	**228,859**	**7,174**	**18,063**	**4,509**	**32,844**	**8,289**	**99,000**	**2,679**	**4,801**		**27,916**	**149,443**	**12%**	**88%**	**16.3%**	**46.9%**	**3.6%**	**43.3%**
Fairview	**684**	104	214	103	263	0	0	0	0		318	366	46%	54%	53.5%			
Gresham	**20,976**	1,242	3,463	1,087	6,821	269	1,429	987	1,378	4,300	5,692	10,984	27%	73%	37.7%	8.1%	1.3%	6.8%
Maywood Park	**6**	5	1	0	0	0	0	0	0		6	0	100%					
Portland	**198,991**	5,256	12,597	3,228	25,119	8,020	97,571	0	0	47,200	17,853	133,938	9%	91%	14.2%	53.1%	4.0%	49.0%
Troutdale	**1,124**	98	527	80	420	0	0	0	0		624	500	56%	44%	44.4%			
Wood Village	**270**	17	20	11	222	0	0	0	0		37	232	14%	86%	86.2%			
Multnomah UIA	**6,808**	453	1,240	0	0	0	0	1,693	3,423		3,386	3,423	50%	50%				
Washington Total	**78,236**	**6,600**	**23,786**	**9,579**	**20,373**	**981**	**4,215**	**5,456**	**4,245**		**35,843**	**39,393**	**46%**	**54%**	**38.3%**	**6.6%**	**1.3%**	**5.4%**
Beaverton	**10,217**	296	1,300	2,077	5,480	303	725	36	0		1,632	8,585	16%	84%	74.0%	10.1%	3.0%	7.1%
Cornelius	**209**	22	47	17	122	0	0	0	0		70	140	33%	67%	66.8%			
Durham	**61**	15	25	0	21	0	0	0	0		40	21	66%	34%	34.0%			
Forest Grove	**4,581**	879	1,184	545	1,973	0	0	0	0		2,063	2,518	45%	55%	55.0%			
Hillsboro	**15,038**	910	984	4,816	7,283	27	3	14	0	1,000	1,908	12,130	13%	87%	80.5%	0.2%	0.2%	0.0%
King City	**442**	231	90	110	11	0	0	0	0		320	121	73%	27%	27.4%			
Sherwood	**949**	50	248	111	317	0	0	53	169		351	597	37%	63%	45.1%			
Tigard	**8,893**	640	2,461	1,270	1,811	3	707	0	0	2,000	3,102	3,791	35%	65%	34.7%	8.0%	0.0%	7.9%
Tualatin	**613**	84	345	86	98	0	0	0	0		429	184	70%	30%	30.1%			
Washington UIA	**37,233**	3,473	17,101	546	3,256	648	2,780	5,353	4,076		25,927	11,306	70%	30%	10.2%	9.2%	1.7%	7.5%
UGB TOTAL	**370,324**	**19,352**	**53,755**	**16,329**	**59,237**	**9,294**	**103,704**	**25,489**	**23,163**	**60,000**	**98,596**	**211,728**	**27%**	**73%**	**20.4%**	**30.5%**	**2.5%**	**28.0%**

MF cateogory includes capacity in MFR and MUR zone classes
UIA = unincorporated county areas inside Metro UGB
New Urban = post-1997 UGB amendments
Cities are defined by 2010 RLIS boundaries
Low density MF < 75 units per acre
High density MF > 75 units per acre

Appendix 5: Illustration of the Timing of Transportation Projects and Investments



ftp://ftp.oregonmetro.gov/dist/gm/TazAlloc2010/FINAL_2035-2040_TAZforecast/

Appendix 7: Subsidized Redevelopment Supply Assumptions (8/24/2011)

Location	2040 Design Type	Subsidized Capacity DU	Mscope Zone Class	DU per net acre	Subsidy per Unit	Estimated Subsidy Assumption	Percent of dwelling units with incentive available (timing) 2015	2020	2025	2030	2035	2040	2045	Total
Downtown	CC	6,500	MUR9	125	$50,000	$325,000,000	20%	40%	40%					100%
North Macadam	CC	7,500	MUR9	125	$50,000	$375,000,000	33%	33%	33%					100%
Oregon Conv. Center	CC	6,000	MUR9	125	$50,000	$300,000,000	33%	33%	33%					100%
River District	CC	12,000	MUR9	125	$50,000	$600,000,000	25%	25%	25%	25%				100%
South Park Blocks	CC	1,000	MUR9	125	$50,000	$50,000,000	25%	25%	25%	25%				100%
Amberglen/Tanasbourne	Reg. Ctr.	500	MUR4	30	$25,000	$12,500,000	25%	25%	25%	25%				100%
Clackamas Town Center	Reg. Ctr.	1,500	MUR4	30	$25,000	$37,500,000	25%	25%	25%	25%				100%
Gateway	Reg. Ctr.	2,000	MUR4	30	$25,000	$50,000,000	25%	25%	25%	25%				100%
Gresham	Reg. Ctr.	2,500	MUR4	30	$25,000	$62,500,000	33%	33%	33%					100%
Hillsboro	Reg. Ctr.	500	MUR4	30	$25,000	$12,500,000		20%	20%	20%	20%	20%		100%
Oregon City	Reg. Ctr.	2,000	MUR4	30	$10,000	$20,000,000	33%	33%	33%					100%
Vancouver	Reg. Ctr.	6,000	MUR4	30	$25,000	$150,000,000	20%	20%	20%	20%	20%			100%
Gladstone	Town Ctr.	500	MUR4	30	$10,000	$5,000,000	20%	20%	20%	20%	20%			100%
Hollywood	Town Ctr.	2,500	MUR4	30	$10,000	$25,000,000	25%	25%	25%	25%				100%
Lake Oswego	Town Ctr.	1,200	MUR4	30	$25,000	$30,000,000		20%	20%	20%	20%	20%		100%
Lents	Town Ctr.	1,200	MUR4	30	$25,000	$30,000,000		20%	20%	20%	20%	20%		100%
Rockwood (Gresham)	Town Ctr.	1,200	MUR4	30	$25,000	$30,000,000	20%	20%	20%	20%	20%			100%
Tigard	Town Ctr.	2,000	MUR4	30	$10,000	$20,000,000		20%	20%	20%	20%	20%		100%
Interstate	Non-Ctr. UR	4,000	MUR4	30	$50,000	$200,000,000	25%	25%	25%	25%				100%
MLK	Non-Ctr. UR	1,500	MUR4	30	$50,000	$75,000,000	20%	20%	20%	20%	20%			100%
Villebois (Wilsonville)	Non-Ctr UR	300	MUR4	30	$10,000	$3,000,000	33%	33%	33%					100%
NE 60th Ave MAX Station	Portland TOD*	600	MUR4	30	$10,000	$6,000,000	25%	25%	25%	25%				100%
NE 82nd Ave MAX Station	Portland TOD*	600	MUR4	30	$10,000	$6,000,000	25%	25%	25%	25%				100%
E 148th Ave MAX Station	Portland TOD*	600	MUR4	30	$10,000	$6,000,000	25%	25%	25%	25%				100%
E 162nd Ave MAX Station	Gresham TOD*	600	MUR4	30	$10,000	$6,000,000	25%	25%	25%	25%				100%
E 122nd Ave MAX Station	Portland TOD*	600	MUR4	30	$10,000	$6,000,000	25%	25%	25%	25%				100%
SE Division St.	Portland TOD*	600	MUR4	30	$10,000	$6,000,000	25%	25%	25%	25%				100%
Canby	rural City	600	MUR4	30	$10,000	$6,000,000			20%	20%	20%	20%	20%	100%
Sandy	rural City	600	MUR4	30	$10,000	$6,000,000			20%	20%	20%	20%	20%	100%

REGION TOTAL:	67,200	units
Metro UGB Total:	60,000	units
Portland subtotal:	47,200	units

*** 1/4 mile radius around MAX stations at NE 60th, NE 82nd, 122nd, 148th, SE Division, Portland portion of 162nd**

Note: updated from 7/27/11

Appendix 7: Urban Reserve Capacity Assumptions

Urban Reserve Name	Code	Subarea	Year Avail.	SF acres	MF acres	SF Cap	MF Cap	Total Cap	IND acres	COM acres
Gresham East	1C		2040	323	111	2,815	4,986	7,801	0	28
Boring	1D		2045	0	0	0	0	0	1,159	0
Boring	1F		2045	0	0	0	0	0	492	0
Damascus	2A		2045	466	160	4,064	7,197	11,261	0	40
Holcomb	3B		2045	115	39	713	1,767	2,479	0	10
Holly Ln/Newell Ck Canyon	3C		2045	106	36	658	1,631	2,289	0	9
Maplelane	3D		2035	169	58	1,052	2,608	3,661	0	14
Henrici	3F		2030	110	38	685	1,699	2,384	0	9
Beaver Creek Bluffs	3G		2030	77	26	479	1,187	1,666	0	7
Stafford	4A									
		4A-N	2040	208	71	1,293	3,205	4,497	0	18
		4A-S	2045	590	202	4,282	9,099	13,381	0	51
Rosemont	4B		2040	55	19	343	851	1,195	0	5
Borland	4C		2045	288	99	1,790	4,439	6,229	0	25
Norwood	4D		2045	460	158	2,863	7,098	9,960	0	39
I-5 East – Washington Co	4E		2045	343	117	2,132	5,285	7,417	0	29
I-5 East – Washington Co	4F		2045	112	38	694	1,720	2,414	0	10
I-5 East – Washington Co	4G		2040	264	91	1,643	4,073	5,716	0	23
Advance	4H		2025	98	34	949	1,513	2,462	0	8
Sherwood North	5A		2035	40	14	247	612	859	0	3
Sherwood West	5B		2030	506	173	4,405	7,801	12,206	0	43
Sherwood South	5D		2035	140	48	1,223	2,165	3,388	0	12
Tonquin	5F		2035	0	0	0	0	0	257	0
Grahams Ferry	5G		2035	65	22	403	998	1,401	0	6
Wilsonville Southwest	5H		2030	25	8	239	381	620	0	2
South Hillsboro	6A									
		6A-E	2025	403	138	3,509	6,214	9,723	0	60
		6A-W	2035	245	84	2,369	3,776	6,145	0	21
South Cooper Mountain	6B									
		6B-i	2025	225	77	1,455	2,554	4,009	0	19
		6B-ii	2035	212	73	1,371	2,406	3,777	0	18
		6B-iii	2035	92	31	593	1,041	1,634	0	8
		6B-iv	2045	92	32	597	1,048	1,645	0	8
Roy Rogers West	6C									
		6C-i	2030	117	40	852	1,811	2,662	0	10
		6C-ii	2035	60	20	433	921	1,354	0	5
		6C-iii	2045	59	20	429	913	1,342	0	5
Beef Bend South	6D									
		6D-E	2035	51	18	445	788	1,233	0	4
		6D-W	2045	112	38	815	1,732	2,547	0	10
David Hill	7A									
		7A-i	2040	43	15	309	657	966	0	4
		7A-ii	2045	63	22	456	970	1,426	0	5
Forest Grove North	7B									
		7B-i	2025	0	0	0	0	0	189	0
		7B-ii	2035	0	0	0	0	0	84	0
		7B-iii	2045	0	0	0	0	0	146	0
Cornelius East	7C		2025	53	18	462	819	1,281	0	5
Cornelius South	7D		2025	101	35	878	1,555	2,432	0	9
Forest Grove South	7E		2025	0	0	0	0	0	36	0
North Hillsboro	8A									
		8A-E	2025	168	0	1,120	0	1,120	629	0
		8A-W	2035	339	29	1,933	1,301	3,234	893	172
Shute Road Interchange	8B									
		8B-i	2035	0	0	0	0	0	61	0
		8B-ii	2035	0	0	0	0	0	304	0
Bethany West	8C		2035	76	26	663	1,174	1,837	0	7
Urban Reserves Total				**7,068**	**2,278**	**51,662**	**99,995**	**151,657**	**4,250**	**760**

	SF acres	MF acres	SF Cap	MF Cap	Total Cap	IND acres	COM acres
2025 Total	1,048	302	8,374	12,654	21,028	854	101
2030 Total	835	286	6,660	12,879	19,539	0	72
2035 Total	1,488	423	10,732	17,790	28,522	1,599	270
2040 Total	893	306	6,403	13,772	20,176	0	77
2045	2,805	962	19,493	42,900	62,393	1,797	240

Total							
	7,068	**2,278**	**51,662**	**99,995**	**151,657**	**4,250**	**760**

Appendix 8: 2010-40 TAZ Forecast: MetroScope "Gamma" version land use scenario assumptions

November 2012 Metro Research Center

Theme	Major category	Subcategory	Scenario Assumption
DEMAND	Forecast control totals Portland-Hillsboro-Vancouver, OR-WA, PMSA (7 counties) Source: middle-thrid.xls	Household	Use 2010-35 adjusted lower middle-third forecast 2010: 873,100 (Census 2010) 2040: 1,346,600 2010-35: 473,500 %APR: 1.45%
		Employment	Use 2010-40 adjusted lower middle-third forecast 2010: 968,800 (BLS 2010 estimate) 2040: 1,593,000 2010-35: 624,200 %APR: 1.67%
SUPPLY (CAPACITY)	Metro UGB capacity	Zoned capacity	Tri-county (Clackamas, Multnomah, Washington): updated 2010 zone class
		Vacant land	2008 vacant land based on aerial photography, permit data, and assessor records and amended by local review
		Buildable land	2008 inventory (less environmental constraints based on latest 2010 data, also deduct major known utility easements)
		Redev. capacity	Reviewed by local jurisdictions (see: Metro Research Center capacity white paper)
		Prospective UGB expansions	See separate map (expansion locations based on designated Urban Reserves; expansion timing assumptions informed by local jurisdiction review)
		Recent UGB expansions	Urban zoning assumptions for new urban areas (i.e., post-1997 expansions)and future urban reserves are delayed to account for lags in infrastructure development
	Clark County capacity	Zoning	2010 zoning
		Vacant, buildable land	2010 VBLM - provided by Clark County, using Clark County methodology (i.e. different than Metro's methodology for vacant / buildable)
		Redev. capacity	2010 VBLM
		Urban Growth Area expansions	Clark Co. urban reserve areas in effect in 2009 (incorporates latest court decision that added in ~19 sq. miles) metered in roughly equal proportions [reflects court overturning selected areas] Zoning is based on latest comp plans
	Neighbor city capacity	Zoning	Zoned capacity is assumed equal to twice year 2000 Census number of households
		UGB expansions	Implicitly calculated from zoned capacity amount
	Tri-county rural residential capacity	M-49 and RRFU capacity	Assume 3 dwelling units per Measure 37 claims
	Ex-urban rural county capacity	Columbia, Yamhill & Marion (part)	Zoned capacity is assumed equal to twice year 2000 Census number of households
Other forecast variables	Construction costs	SDC	Assume added $25,000 per new dwelling unit in all locations to per unit construction costs
	exogenous Consumer preference assumptions	Residential subsidized redevelopment	Refer to separate schedule of investments (3 tiers of subsidies: $50,000, $25,000, $10,000 per new redev. unit); e.g., reflects either active urban renewal or other incentive such as a vertical housing tax credit.
		Neighborhood score	Neighborhood score is an input that describes the relative (historic) desirability of different neighborhoods (based on a statistical analysis of historic residential sales data that controls for residence size, lot size, 3 of bedrooms, etc.)
	Accessibility	Transportation Travel times	Use 3 network years: 2010, 2017 and 2035 2010 network of existing conditions (2010-15 forecast years) 2017 network (2020-25 forecast years) 2035 network of federal financially constrained RTP assumptions (2020-25 forecast years) 2035 network state RTP assumptions (2040 and 2045 forecast years)

Appendix 9: Ordinance No. 12-1292 Exhibits A

2035 Reviewed Household Forecast Distribution by Jurisdiction
MetroScope Gamma TAZ Forecast

Final Draft 9/19/2012

Notes: Jurisdiction geographies are approximate, and based on TAZs. Urban Reserves are considered to be outside the UGB.

	2010 Reviewed HH			2035 Reviewed HH			2010-2035 Change		
Inside UGB:	**SF**	**MF**	**Total**	**SF**	**MF**	**Total**	**SF**	**MF**	**Total**
Beaverton	18,128	21,953	40,081	20,038	30,479	50,517	1,910	8,526	10,436
Cornelius	2,467	1,051	3,518	3,428	2,085	5,513	961	1,034	1,995
Damascus	3,322	205	3,527	11,700	217	11,916	8,378	12	8,389
Durham	350	8	358	410	26	436	60	18	78
Fairview	1,677	1,954	3,631	1,927	2,076	4,003	250	122	372
Forest Grove	4,775	2,717	7,492	6,999	3,380	10,379	2,224	663	2,887
Gladstone	2,831	1,356	4,187	3,097	1,779	4,876	266	423	689
Gresham	19,781	18,243	38,024	25,394	25,656	51,051	5,613	7,413	13,027
Happy Valley	4,162	273	4,435	9,898	512	10,410	5,736	239	5,975
Hillsboro	18,575	14,251	32,826	21,762	23,211	44,973	3,187	8,960	12,147
King City	572	383	955	590	379	969	18	-4	14
Lake Oswego	10,887	5,180	16,067	12,307	6,984	19,291	1,420	1,804	3,224
Milwaukie	5,934	2,307	8,241	7,166	2,574	9,740	1,232	267	1,499
Oregon City	8,463	3,511	11,974	12,186	4,861	17,047	3,723	1,350	5,073
Portland	143,801	104,915	248,716	165,636	204,068	369,704	21,835	99,153	120,988
Sherwood	4,971	1,505	6,476	5,553	1,716	7,269	582	211	793
Tigard	12,035	6,632	18,667	15,120	10,877	25,997	3,085	4,245	7,330
Troutdale	3,981	1,806	5,787	4,506	2,126	6,632	525	320	845
Tualatin	5,391	4,847	10,238	5,980	5,190	11,170	589	343	932
West Linn	7,670	2,582	10,252	9,237	2,751	11,988	1,567	169	1,736
Wilsonville	3,471	4,509	7,980	5,625	5,883	11,508	2,154	1,374	3,528
Wood Village	458	1,081	1,539	488	1,121	1,609	30	40	70
Uninc. Clackamas Co.	21,497	13,559	35,056	28,816	16,650	45,466	7,319	3,091	10,410
Uninc. Multnomah Co.	1,715	314	2,029	3,260	847	4,107	1,545	533	2,078
Uninc. Washington Co.	50,176	21,204	71,380	71,698	28,778	100,476	21,522	7,574	29,096
Inside UGB Total	357,090	236,346	593,436	452,823	384,225	837,048	95,733	147,879	243,612
Outside UGB:									
Clackamas County	40,749	4,202	44,951	60,792	5,600	66,392	20,043	1,398	21,441
Multnomah County	3,776	97	3,873	4,243	122	4,365	467	25	492
Washington County	11,259	101	11,360	27,369	5,401	32,770	16,110	5,300	21,410
Clark County	114,638	114,638	158,110	164,207	64,185	228,392	49,569	20,713	70,282
Outside UGB Total	170,422	119,038	218,294	256,610	75,309	331,919	86,188	27,437	113,625
Four-County Total	527,512	284,218	811,730	709,433	459,534	1,168,967	181,921	175,316	357,237

Appendix 8: Ordinance No. 12-1292 Exhibits B

2035 Reviewed Employment Forecast Distribution by Jurisdiction
MetroScope Gamma TAZ Forecast

Final Draft 9/19/2012

Notes: Jurisdiction geographies are approximate, and based on TAZs. Urban Reserves are considered to be outside the UGB.

	2010 Employment Geocode				2035 Jurisdiction Review				2010 - 2035 Change			
Inside UGB:	**Retail**	**Service**	**Other**	**Total**	**Retail**	**Service**	**Other**	**Total**	**Retail**	**Service**	**Other**	**Total**
Beaverton	11,041	19,261	21,539	51,841	14,254	33,282	27,822	75,358	3,213	14,021	6,283	23,517
Cornelius	693	711	1,680	3,084	1,611	1,880	4,440	7,931	918	1,169	2,760	4,847
Damascus	260	357	908	1,525	902	1,613	1,894	4,409	642	1,256	986	2,884
Durham	1	213	318	532	1	307	458	766	0	94	140	234
Fairview	236	497	1,878	2,611	558	3,293	3,724	7,575	322	2,796	1,846	4,964
Forest Grove	882	2,018	2,617	5,517	1,747	3,455	5,343	10,545	865	1,437	2,726	5,028
Gladstone	702	546	883	2,131	903	1,040	1,092	3,035	201	494	209	904
Gresham	7,353	8,871	16,408	32,632	12,334	20,154	26,079	58,567	4,981	11,283	9,671	25,935
Happy Valley	241	256	621	1,118	789	1,842	1,616	4,247	548	1,586	995	3,129
Hillsboro	9,584	14,449	34,227	58,260	12,152	25,518	55,733	93,403	2,568	11,069	21,506	35,143
King City	137	269	64	470	173	511	137	821	36	242	73	351
Lake Oswego	2,553	7,024	8,670	18,247	2,323	11,584	8,879	22,786	-230	4,560	209	4,539
Milwaukie	1,403	3,527	6,658	11,588	1,944	5,751	7,712	15,407	541	2,224	1,054	3,819
Oregon City	3,081	3,727	7,580	14,388	5,418	6,990	10,077	22,485	2,337	3,263	2,497	8,097
Portland	65,150	139,116	170,076	374,342	76,134	218,147	214,199	508,482	10,984	79,031	44,123	134,140
Sherwood	1,103	1,206	1,907	4,216	1,643	2,604	5,005	9,252	540	1,398	3,098	5,036
Tigard	9,072	11,901	16,196	37,169	10,764	23,818	19,650	54,232	1,692	11,917	3,454	17,063
Troutdale	1,272	493	2,361	4,126	2,039	2,357	5,615	10,011	767	1,864	3,254	5,885
Tualatin	4,372	6,140	12,460	22,972	5,066	8,868	21,305	35,239	694	2,728	8,845	12,267
West Linn	966	1,593	1,693	4,252	1,517	2,683	2,331	6,531	551	1,090	638	2,279
Wilsonville	2,480	4,839	9,754	17,073	3,536	9,733	14,150	27,419	1,056	4,894	4,396	10,346
Wood Village	1,261	242	531	2,034	1,783	1,158	1,489	4,430	522	916	958	2,396
Uninc. Clackamas Co.	11,506	13,302	20,344	45,152	15,519	26,628	25,775	67,922	4,013	13,326	5,431	22,770
Uninc. Multnomah Co.	109	377	396	882	749	1,658	2,367	4,774	640	1,281	1,971	3,892
Uninc. Washington Co.	5,929	13,844	17,097	36,870	8,659	23,012	31,142	62,813	2,730	9,168	14,045	25,943
Inside UGB Total	141,387	254,779	356,866	753,032	182,518	437,886	498,034	1,118,440	41,131	183,107	141,168	365,408

Outside UGB:	2010 Employment Geocode				2035 Jurisdiction Review				2010 - 2035 Change			
	Retail	Service	Other	Total	Retail	Service	Other	Total	Retail	Service	Other	Total
Clackamas County	4,803	5,218	15,348	25,369	8,182	11,295	22,359	41,836	3,379	6,077	7,011	16,467
Multnomah County	361	479	1,513	2,353	384	876	1,945	3,205	23	397	432	852
Washington County	854	1,640	5,881	8,375	2,363	6,659	18,084	27,106	1,509	5,019	12,203	18,731
Clark County	25,375	42,061	59,831	127,267	40,864	80,963	100,193	222,020	15,489	38,902	40,362	94,753
Outside UGB Total	31,393	49,398	82,573	163,364	51,793	99,793	142,581	294,167	20,400	50,395	60,008	130,803
Four-County Total	172,780	304,177	439,439	916,396	234,311	537,679	640,615	1,412,607	61,531	233,502	201,176	496,211

ftp://ftp.oregonmetro.gov/dist/gm/TazAlloc2010/FINAL_2035-2040_TAZforecast/2035 Reviewed Forecast Distribution by Jurisdiction.xlsx

Appendix 9: 2010, 2025, 2035, 2040 TAZ Growth Distribution

(forthcoming)

Metro Regional Forecast Distribution Coordination Meetings and Discussions

- **Regional Planning Directors' Meetings**
- **County Coordination Meetings**
- **Local Governments' Comments and Metro Response on the 2025 mid-term and 2035/2040 long-term distributions**

Metro
Research Center and Planning and Development Department
November 2012

Table of Content

Page

Regional Planning Directors meeting invitations and agendas 3 - 11

County Coordination meetings 12

2025 distribution comments and responses
Feb. 9 to May 14, 2012 13 - 181

2035 distribution comments and responses
August 1 to September 10, 2012 182 - 242

Regional Planning Directors meeting invitations and agendas

Purpose: Project kick-off meeting –October 2010

From: Paulette Copperstone
Sent: Thursday, September 30, 2010 4:27 PM
To: Paulette Copperstone
Subject: FW: email for planning director meeting

Planning Directors,

Please find, attached, the agenda for the Household and Employment forecast kick off meeting for October 8, 10:30 – noon at Metro Council Chamber. The purpose of this meeting is to clarify the schedule, input needs and local review for the distribution of household and employment forecasts at the TAZ level.

We realize that many of you are anxiously awaiting new TAZ level data that is consistent with Metro's updated regional forecast and growth management decisions for use in TSPs, Comprehensive Plan Updates, Corridor studies and more. After Metro Council action on 20-year household and employment needs scheduled for this December, we will have the policy direction we need as staff to begin the process of updating the TAZ level data.

The last time we completed the TAZ allocation, in 2002 or 2003, the process took over two years. Based on the needs we all have for an updated TAZ allocation, we are proposing to complete the process in one year, by the end of 2011. We expect to be able to meet this schedule if we take the time now to identify the inputs we will need from you in the next few months and the process for reviewing the draft TAZ allocations in 2011. We would like to hear from you about the feasibility of this schedule and on the proposed review process.

I hope you or your staff will be able to join us next Friday, October 8. If you have questions, please call Gerry Uba at 503-797-1737.

Chris Deffebach

600 NE Grand Ave.
Portland, OR 97232-2736
503-797-1700
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503-797-1797 fax

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Metro | *Agenda*

Meeting: Household & Employment Forecast Kick-off

Date: Friday, October 8, 2010

Time: 10: 30 a.m. to noon

Place: Council Chamber

Objectives:

- Clarify key assumptions and modeling process for distributing household and employment forecasts at the TAZ level
- Identify most efficient method for local review
- Clarify schedule input needs and local review for distribution of household and employment forecasts at TAZ level

Time	Agenda Item	Presenter(s)
10:30 a.m.	**1. Welcome and Introductions**	John Williams
10:35 a.m.	**2. Background and Purpose of Meeting** • Uses of household and employment distributions • Metro's role in regional coordination	Chris Deffebach
10:45 a.m.	**3. Proposed 2011 Allocation Work Plan and Need for Local Review** • Key assumptions, review and confirmation • Base and forecast years • Data format and level of aggregation • Nature of comments needed at TAZ level	Dennis Yee Gerry Uba
11:30 a.m.	**4. Comments on Facilitating Local Review Process** • How to make reviews and comments efficient and effective	Gerry Uba
11:45 a.m.	**5. Near Term Availability of Household and Employment Data**	Ted Reid
11:50 a.m.	**6. Summary and Next Steps** • Planning Director input on assumptions • Future meetings	
Noon	Adjourn	

Purpose: Review and Comments on Land Supply/Capacity Assumptions and Methods

From: Paulette Copperstone
Sent: Friday, June 17, 2011 4:40 PM
To: dmazziotti@beavertonoregon.gov; rreynolds@ci.cornelius.or.us; rmeyer@ci.cornelius.or.us; ayap@ci.damascus.or.us; cityofdurham@comcast.net; jholan@forestgrove-or.gov; boyce@ci.gladstone.or.us; michaelw@ci.happy-valley.or.us; jasont@ci.happy-valley.or.us; patrickr@ci.hillsboro.or.us; johnson.city@hotmail.com; ronshay@buzzworm.com; degner@ci.oswego.or.us; dfrisbee@ci.oswego.or.us; mayorhardie@aol.com; manglek@ci.milwaukie.or.us; asherk@ci.milwaukie.or.us; tkonkol@orcity.org; susan.anderson@portlandoregon.gov; hajdukj@ci.sherwood.or.us; ron@tigard-or.gov; rfaith@ci.troutdale.or.us; ahurd-ravich@ci.tualatin.or.us; arouyer@ci.tualatin.or.us; jsonnen@westlinnoregon.gov; neamtzu@ci.wilsonville.or.us; billp@ci.wood-village.or.us; scottpem@co.clackamas.or.us; lindap@co.clackamas.or.us; ann.pytynia@greshamoregon.gov; camgil@co.clackamas.or.us; jennifer.donnelly@state.or.us; anne.debbaut@state.or.us; John Williams; Robin McArthur; Mike Hoglund; karen.c.schilling@co.multnomah.or.us; darren.nichols@state.or.us; brent_curtis@co.washington.or.us; andrew_singelakis@co.washington.or.us; Paulette Copperstone
Cc: connellpc@comcast.net; tom.armstrong@portlandoregon.gov; dtaylor@beavertonoregon.gov; molly.vogt@greshamoregon.gov; kaha@westlinnoregon.gov; randygra@co.clackamas.or.us; jsalvon@beavertonoregon.com; rmeyer@ci.cornelius.or.us; tfranz@ci.cornelius.or.us; epalmer@ci.damascus.or.us; driordan@forestgrove-or.gov; jonathan.harker@greshamoregon.gov; brian.martin@greshamoregon.gov; michaelw@ci.happy-valley.or.us; dougm@ci.hillsboro.or.us; vickiew@ci.hillsboro.or.us; dono@ci.hillsboro.or.us; degner@ci.oswego.or.us; rossonk@ci.milwaukie.or.us; manglek@ci.milwaukie.or.us; cdunlop@ci.oregon-city.or.us; gary.odenthal@portlandoregon.gov; ortizp@ci.sherwood.or.us; preston@tigard-or.gov; emccallum@ci.troutdale.or.us; camedzake@ci.troutdale.or.us; chahn@ci.tualatin.or.us; tscott@ci.tualatin.or.us; jsonnen@westlinnoregon.gov; ckerr@westlinnoregon.gov; stark@ci.wilsonville.or.us; neamtzu@ci.wilsonville.or.us; billp@ci.wood-village.or.us; larrycon@co.clackamas.or.us; karenb@co.clackamas.or.us; jose.alvarez@clark.wa.gov; jennifer.donnelly@state.or.us; anne.debbaut@state.or.us; Dennis Yee; charles.beasley@multco.us; Cindy Pederson; Gerry Uba; Christina Deffebach; adam.t.barber@multco.us; chi.mai@odot.state.or.us; elaine.smith@odot.state.or.us; tom.bouillion@portofportland.com; steve.iwata@portlandoregon.gov; steve_kelley@co.washington.or.us; Jim Cser; Maribeth Todd; Sonny Conder; lidwien.rahman@odot.state.or.us; Tom Kloster; Kim Ellis; 'Fritzie, Martha'; Jessica Martin
Subject: New Date for Regional Planning Directors Meeting -July 22, 2011

Dear Regional Planning Directors,

The regional planning directors' meeting has been postponed for the last time to **July 22, 2011** (from the last previously scheduled date – June 24). Please replace that date with this new date. We are sorry for the inconvenience in your calendar.

The recent "one-on-one" meetings we had with you and/or your staff to review the draft capacity estimates were very successful. However, we have not received comments from all of you as promised. We would not like to proceed to process the capacity data with a combination of comments from some local governments and Metro staff assumptions – rather – our goal is 100 percent return on comments.

As stated in my previous email, we know that all of you are waiting for and depending on these new allocations for multiple land use and transportation planning purposes. We are therefore looking forward to receiving the rest of the comments. We cannot afford to postpone the rescheduled meeting.

Thank you for your understanding and for your efforts towards the regional coordination of the growth allocation. We are looking forward to seeing you on Friday, July 22, 2011 at the Regional Planning Directors meeting.

Gerry Uba
Metro Regional Growth Allocation Project Coordinator
Gerry.uba@oregonmetro.dst.or.us
503-797-1737

From: Paulette Copperstone
Sent: Friday, April 29, 2011 4:58 PM
To: dmazziotti@beavertonoregon.gov; rreynolds@ci.cornelius.or.us; rmeyer@ci.cornelius.or.us; ayap@ci.damascus.or.us; cityofdurham@comcast.net; jholan@forestgrove-or.gov; boyce@ci.gladstone.or.us; michaelw@ci.happy-valley.or.us; jasont@ci.happy-valley.or.us; patrickr@ci.hillsboro.or.us; johnson.city@hotmail.com; ronshay@buzzworm.com; degner@ci.oswego.or.us; dfrisbee@ci.oswego.or.us; mayorhardie@aol.com; manglek@ci.milwaukie.or.us; asherk@ci.milwaukie.or.us; tkonkol@orcity.org; susan.anderson@portlandoregon.gov; hajdukj@ci.sherwood.or.us; ron@tigard-or.gov; rfaith@ci.troutdale.or.us; ahurd-ravich@ci.tualatin.or.us; arouyer@ci.tualatin.or.us; jsonnen@westlinnoregon.gov; neamtzu@ci.wilsonville.or.us; billp@ci.wood-village.or.us; scottpem@co.clackamas.or.us; lindap@co.clackamas.or.us; camgil@co.clackamas.or.us; jennifer.donnelly@state.or.us; anne.debbaut@state.or.us; Paulette Copperstone; John Williams; Robin McArthur; Mike Hoglund; karen.c.schilling@co.multnomah.or.us; darren.nichols@state.or.us; brent_curtis@co.washington.or.us; andrew_singelakis@co.washington.or.us
Cc: connellpc@comcast.net; tom.armstrong@portlandoregon.gov; dtaylor@beavertonoregon.gov; molly.vogt@greshamoregon.gov; kaha@westlinnoregon.gov; randygra@co.clackamas.or.us; jsalvon@beavertonoregon.com; rmeyer@ci.cornelius.or.us; tfranz@ci.cornelius.or.us; epalmer@ci.damascus.or.us; driordan@forestgrove-or.gov; jonathan.harker@greshamoregon.gov; brian.martin@greshamoregon.gov; michaelw@ci.happy-valley.or.us; dougm@ci.hillsboro.or.us; vickiew@ci.hillsboro.or.us; dono@ci.hillsboro.or.us; degner@ci.oswego.or.us; rossonk@ci.milwaukie.or.us; manglek@ci.milwaukie.or.us; cdunlop@ci.oregon-city.or.us; gary.odenthal@portlandoregon.gov; ortizp@ci.sherwood.or.us; preston@tigard-or.gov; emccallum@ci.troutdale.or.us; camedzake@ci.troutdale.or.us; chahn@ci.tualatin.or.us; tscott@ci.tualatin.or.us; jsonnen@westlinnoregon.gov; ckerr@westlinnoregon.gov; stark@ci.wilsonville.or.us; neamtzu@ci.wilsonville.or.us; billp@ci.wood-village.or.us; larrycon@co.clackamas.or.us; karenb@co.clackamas.or.us; jose.alvarez@clark.wa.gov; jennifer.donnelly@state.or.us; anne.debbaut@state.or.us; Dennis Yee; charles.beasley@multco.us; Cindy Pederson; Gerry Uba; Christina Deffebach; Paulette Copperstone; adam.t.barber@multco.us; chi.mai@odot.state.or.us; elaine.smith@odot.state.or.us; tom.bouillion@portofportland.com; steve.iwata@portlandoregon.gov; steve_kelley@co.washington.or.us; Jim Cser; Maribeth Todd; Sonny Conder; lidwien.rahman@odot.state.or.us; Tom Kloster; Kim Ellis; 'Fritzie, Martha'

Subject: Regional Planning Directors Meeting - June 3, 2011

Dear Planning Directors,

You are invited to a Regional Planning Directors meeting scheduled on Friday, June 3, 2011, from 9 a.m. to noon at Metro Regional Center to finalize the capacity assumptions for use in allocating forecasted household and employment growth. These capacity assumptions are the result of several months of work by local jurisdiction staff who have used their knowledge and experience to refine the regional capacity assumptions.

Metro is in the process of preparing new TAZ allocations of households and employment that reflect the capacity of residential and employment land, as well as the urban and rural reserves designations, transportation investments adopted as part of the Regional Transportation Plan, and the growth forecast adopted in 2009 for the urban growth report. On October 8, 2010 you or your alternate participated in the allocation process kick-off meeting at Metro. Following your review and finalization of the capacity assumptions, you will have the opportunity to review the future allocations beginning in late summer for mid-term allocations (2015, 2020, 2025, 2025) and in the fall for long term allocations (2030, 2035, 2040, 2045).

Please add the June 3 meeting to your calendar. I will send additional meeting information prior to June 3.

Best regards,

Gerry

……..

O. Gerald Uba, PhD
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Metro
600 NE Grand Avenue
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Meeting Agenda

Meeting: Regional Planning Directors Meeting (#2)

Date: Friday, July 22, 2011

Time: 9:00 a.m. to noon

Place: Council Chamber

Outcome: Regional agreement on growth allocation assumptions and land capacity methods

A. Welcome and Introductions [15 minutes] Hoglund/All

B. Overview of Meeting Materials and Agenda [5 minutes] Hoglund
Regional Zoning Map /TAZ Map & Table /2010 Base Year data/etc.

C. Completion of Basic Data Sets [20 minutes]

1. Local to Regional Zoning: Highlights of local governments' comments Yee
2. TAZ Boundary Adjustments: Changes requested and made Uba
3. Base Year (2010) Household Estimates Yee
4. Base Year (2010) Jobs Estimates Yee

BREAK - (5 minutes)

⊙ **Presentation format and guidelines** Hoglund
Questions for agenda item D will be answered during the Presentation of agenda item E

D. Buildable Land and Capacity Results [60 minutes]

1. **Single family capacity** Yee
   Vacant and Developed land capacity/ Redevelopment capacity filters

2. **Multifamily and Mixed use residential capacity** Yee
   Vacant and Developed land capacity / Redevelopment capacity filters / Mixed use capacity (residential and commercial split / Subsidized redevelopment method

3. **Employment (Commercial & Industrial) Land Capacity** Yee

E. Overview of Revised Regional Methods for BLI and Capacity [50 minutes]
(explanation of why the new methods are better)

1. Vacant land identification by zoning (or comp plan) Yee
   (fully vacant / partially vacant) (New urban areas assumptions capacity assumptions method)
2. Exempt tax lots (zero capacity land) identification: Exceptions
   Todd/Kelley
3. Environmentally constrained land identification
   Mensher
   (Title 3/Title 13/floodway/utility easement)
4. Single family vacant and redevelopment land capacity method
   Kelley/Todd
   (including density transfer calculation)
5. MFR and MUR vacant land and redevelopment capacity
   Armstrong/Conrad
   (including density transfer calculation)
6. Employment (Commercial and Industrial) vacant and redevelopment land capacity method Todd
7. Urban reserve areas urbanization/capacity assumptions method Uba
8. Ex-urban city / county supply assumptions Cser

F. Determine Value from Forecast Range [10 minutes] Reid

G. Next Steps [10 minutes] Uba

a) Tandem operation: Transportation and MetroScope models calibration
b) Mid-term and Long-term allocations: Release and Comments
c) Reports: Documentation of methods, etc
d) MTAC review and comment on forecast allocation
e) MPAC on forecast allocation coordination
f) Metro Council adoption

H. Closing Remarks/Adjourn [5 minutes] Hoglund

Purpose: Review and Comments on 2035/2040 Forecast Distributions

From: Alexandra Eldridge **On Behalf Of** Robin McArthur
Sent: Friday, September 07, 2012 2:29 PM
To: Alexandra Eldridge
Subject: Meeting Confirmation: 9/19/12 Regional Planning Directors meeting

Dear Regional Planning Directors,

The purpose of this email is to inform you of the change in the date of the meeting of the Regional Planning Directors meeting to discuss the final results of the distribution of population and employment growth out to 2040 and to the Transportation Analysis Zone (TAZ) level. We moved the meeting from September 12 to September 19 after allowing for additional local government review and comment.

The meeting is now scheduled for **Wednesday, September 19, 2012, from 2:30 p.m. to 4:30 p.m., at Metro Regional Center, in Room 370 A & B**. Please put this new meeting date on your calendar. The meeting agenda will include an overview of previous accomplishments and the discussion of the short-term (2025) and long-term (2035, 2040) distributions of population and employment growth. A detailed meeting agenda will be sent to you next week. The meeting will be chaired by Mike Hoglund, Director of Metro's Research Center and Metro project staff will be available to present results and answer questions.

You and other staff in your jurisdictions played major role in the effort leading up to this meeting. It has been a truly coordinated effort between Metro and local governments in the Portland metropolitan area. I am aware that many of you are looking forward to using the final allocation information for various projects and we are anxious to complete this project this November.

Please do not hesitate to contact the project coordinator, Gerry Uba, at 503-797-1737 or Gerry.uba@oregonmetro.dst.or.us if you have questions.

Thank you,

Robin McArthur, AICP
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Meeting Agenda

Meeting:	Regional Planning Directors Meeting (#3)
Date:	September 19, 2012
Time:	2:30 p.mto 4:30 p.m.
Place:	Room 370 A & B
Outcome:	Update planning directors on growth distribution and key steps and remaining deliverables General agreement on the distribution of population and employment growth

I. Welcome and Introductions [10 minutes] Hoglund/All

- Overview of the Agenda

J. Review of Meeting Materials [5 minutes] Uba

K. Overview of Previous Accomplishments [20 minutes] Hoglund / et al.

5. Regional planning directors meetings – October 2010; July 2011
6. Key issues of concerns –Refer to the flip chart
7. Agreement reached on:
   a) Basic data sets (base year, zoning, TAZ boundary)
   b) Land supply assumptions (single family, multifamily and mixed use, employment, redevelopment, urban reserve urbanization and supply, and neighboring communities)

L. Distribution of Population and Employment [70 minutes] Yee / et al.

Focus is on the 2035 forecast distribution

M. Next Steps /Overview of schedule [10 minutes] Uba

g) Presentations to Metro Committees
   MPAC / JPACT ---for comment on the distribution
   TPAC / MTAC --- on distribution coordination and results
h) Metro Council adoption

N. Closing Remarks/Adjourn [5 minutes] Hoglund

O. Metro staff will stay to answer questions related to the maps on the walls

County Coordination and other key meetings

A. TAZ Subgroup[1]: Growth Allocation: Base Year 2010 Capacity Methodologies

- March 9, 2011
- March 16, 2011
- March 29, 2011
- April 12, 2011

B. County Coordination (for cites in each county): Review and comments on Refill capacity methods and coarse refill supply data

- Washington County – April 26, 2011
- Clackamas County – April 28, 2011
- Multnomah County – April 29, 2012

C. Urban Reserve Local Governments' Staff Group: Criteria (final) for sequencing urbanization of urban reserves and zoning assumptions and make recommendations

- May 19, 2011

D. County Coordination (for cites in each county): Review and comments on further refinement of the methodologies for estimating regional growth capacity

- Clackamas County – September 29, 2011
- Multnomah County – September 30, 2011
- Washington County – October 6, 2011

E. County Coordination (for cites in each county): Review and comments on mid-term 2025 Forecast Distribution

- Clackamas County – February 9, 2012
- Multnomah County – February 10, 2012
- Washington County – February 15, 2012

F. County Coordination (for cites in each county): Review and comments on long-term 2035-2040 Forecast Distribution

- Multnomah County – July 10, 2012
- Clackamas County – July 11, 2012
- Washington County – July 19, 2012

[1] The three counties, and cities of Beaverton, Gresham, Hillsboro, Lake Oswego, Milwaukie and Portland

2025 comments and responses

Feb. 9 to May 14, 2012

2025 TAZ Forecast Distribution Review Background, Key comments and adjustments

The forecast distribution predicts small area estimates of population (i.e. households) and employment trends for the Portland metro area. These predicted estimates were generated from MetroScope using regional capacity estimates and the Metro Regional Forecast as the broad economic basis for the forecast distribution. Local jurisdictions were asked to review the 2025 TAZ forecast distribution as a prelude to final 2035/2040 TAZ forecast. In July, local jurisdictions will be afforded a final opportunity to challenge the forecast distributions before they go before the Metro Council for final adoption. The 2025 forecast review has served as a check-in with local jurisdictions and provided valuable input to the forthcoming 2035/2040 forecast distribution.

The 2025 forecast review represented a first for Metro in its population coordination for its transparency, meticulous detail and collaboration with local jurisdictions. Metro provided local jurisdictions unprecedented opportunities to participate in the challenge and review process. This process included supply changes and reassignment of predicted growth patterns for jobs and housing as local jurisdictions were given opportunities to justify changes to the 2025 TAZ forecast distribution. Local jurisdictions continued participation in on-going efforts to clean up the capacity assumptions based on their more detailed local knowledge, assisted Metro in developing economic filters to identify residential redevelopment capacity, contributed in refining environmental set aside assumptions and generally improved the regional Buildable Land Inventory (BLI).

Still with all these adjustments and contributions, local jurisdictions were afforded a formal check-in point to review and comment towards the on-going forecast process. The 2025 forecast review was another in a series of planned formal opportunities for Metro to engage and solicit local jurisdiction in helping refine and finalizing TAZ estimates that regional planners could rely on. The proceedings herein summarize and reflect the formal comments received from local jurisdictions during the 2025 review. The following points largely describe two types of adjustments: 1) supply capacity adjustments in the existing UGB, particularly in 2040 design centers; adjustments in urban reserves in which concept plans have become available to inform long term capacity expectations, and 2) re-assignment of employment (or household) growth from one TAZ to another set of TAZ in order to reflect a local jurisdictions assessment of the pace at which the given BLI capacity is likely to be absorbed.

Supply Changes

Cities

1. Hillsboro – Hillsboro's requested changes were accepted to the residential capacity in the Amberglen and Orenco Station areas. Hillsboro initially provided capacity estimates to revise and to update the Metro BLI. However, the capacity information was interpreted as gross unit data instead of net, and therefore a gross-to-net reduction had been incorrectly applied. This

problem has now been corrected. In addition, while correcting this problem, Hillsboro determined that additional capacity should be added to the Amberglen area on top of what they requested in their initial capacity estimates. This mistake should have no material impact going forward as capacity to accommodate more growth is now anticipated in the BLI.

2. Beaverton – Beaverton was not able to thoroughly examine the tax lot level supply files that were sent to them for review before the modeling began. Upon reviewing the 2025 allocation and supply, they determined that several changes should be made to the residential supply. The first change involved the zoning crosswalk. Beaverton requested that we change the zoning crosswalk for some of their local mixed use zones to reflect a slightly higher density, so the capacity with these zoning designations was accordingly also increased. This mostly impacted the downtown Beaverton area. Second, several large buildable Peterkort properties had been excluded from the supply so we added additional capacity along Highway 26 to account for this oversight. In both cases, we introduced additional supply capacity according to the number of dwelling units requested by Beaverton.
3. Canby – Canby supplied Metro with its latest Transportation System Plan (TSP) which included aggregate estimates of projected employment and population growth plus recent capacity estimates for residential and non-residential real estate. Metro adapted this TSP data to the TAZ forecast by adjusting shortfalls in commercial and industrial capacity identified in the TSP but not registered in Metro's Buildable Land Inventory (BLI) for the Canby city area. This adjustment, though not reflected in the 2025 TAZ forecast distribution has now been incorporated into the BLI data going forward for the later forecast distribution years. 200 industrial acres and 100 commercial acres were add factored into the future BLI.

<u>Rural</u>

The county coordinators are of the opinion that rural residential capacity was overestimated throughout the region. This capacity was reduced in all four counties, with each county varying in how the removed rural units were accommodated elsewhere.

1. Washington County – Washington County requested that we reduce the supply and household allocation in rural areas in 2025 and beyond. These households were accommodated by shifting them into the centers in Hillsboro and Beaverton where additional capacity and households were requested. However, there is a disconnect between the types of households (HIAK) that would choose these two different types of housing (rural SFR vs. urban MFR) that is introduced by making this change.
2. Clackamas County – Clackamas County requested that we reduce the supply and household allocation in rural areas in 2025 and beyond. The cities in Clackamas County that are outside of the Metro UGB wanted to see additional capacity and households, so these rural households will be shifted into Canby and other areas as needed in additional reviews.
3. Multnomah County – Multnomah County requested that we reduce the supply and household allocation in rural areas in 2025 and beyond. Multnomah County rural capacity represents a small fraction of the regional supply and therefore there were not many units to absorb from this change. An adjustment in capacity will occur going forward to align the Metro BLI with expectations given for rural Multnomah County. The 2025 growth allocation was generally re-

assigned to many other TAZ's throughout the region with no material impacts recognized in this change.

4. Clark County – Clark County rural residential capacity was grossly overestimated because the current level of development and use on the properties was not considered in estimating additional residential capacity. To correct this, we received a shapefile from Clark County with their estimates of rural capacity and substituted this in place of the Metro capacity analysis. This created a large number of displaced households in 2025, so we re-ran the model from 2010 to 2025 with the lower Clark County rural capacity to determine what the impacts of the change would be. Since we had no detailed jurisdiction review for Clark County, the outcome of this test run in Clark County was merged with the jurisdiction review on the Oregon side of the river to establish the 2025 base to which additional growth would be assigned for 2030 and beyond.

Reserves

1. All urban reserves – Due to some concerns about the capacity estimates and forecast allocations, the urban reserves capacity was re-estimated to correct errors in how that capacity was initially calculated. The new version properly deducts rights of way, and environmental and utility constraints in the reserve areas, and makes some attempt to account for existing development and parcelization. The capacity in urban reserve areas was reduced and its impact on the growth distribution will be felt in years after 2025.
2. North Hillsboro / South Hillsboro – Additional planning has been completed since we began this forecast process so more detailed assumptions are now available for some of the reserve areas. Hillsboro requested that the forecast should utilize the urban reserve concept plans for the North Hillsboro and South Hillsboro urban reserve areas. Our previous assumption for North Hillsboro was that it would be all industrial capacity, but Hillsboro's plans now include a mix of residential and employment land in that area. We used a map and capacity numbers that were provided by Hillsboro to assign this capacity to regional zone classes for modeling purposes. For South Hillsboro, the city provided residential capacity estimates at the TAZ level in the 2025 review, so these supply estimates are to be modeled into 2030 and beyond.
3. South Cooper Mountain – As part of a larger correction of capacity assumed for urban reserve areas, the south Cooper Mountain reserve area drew our attention to a systemic error in calculating residential and commercial capacity for all urban reserves. Definitions for environmental no build areas were found to be misinterpreted in the initial capacity estimate. Too much capacity had been assigned to environmental set asides in all the urban reserve areas. This has now been corrected in the 2025 TAZ forecast and for the forecast going forward.

2025 TAZ Allocation changes

As described above, the supply changes also imply changes to the 2025 household and employment allocations. In addition, several jurisdictions requested allocation changes with no adjustments to the supply data. These requests are outlined below.

Cities

1. Portland – Portland requested a number of TAZ's to be reduced in its 2025 forecast distribution due to too-high capacity estimates in Metro' BLI. Correspondingly, other TAZ increases in TAZ growth distributions in other TAZ for a zero sum change. In locations where allocations were

reassigned to higher figures, capacity was deemed insufficient so additional growth was moved to these TAZ, but supplies were unchanged for modeling purposes for future years.

2. Happy Valley / Damascus – There was an issue with the initial conditions from calibration in Happy Valley and Damascus. Property values appeared to be much higher in Happy Valley than in Damascus in the base year, which carried through in the forecast to continuing higher housing prices in Happy Valley. This made Damascus relatively more attractive than Happy Valley because Damascus had lower housing costs, so many more households were assigned to Damascus than Happy Valley. Due to issues of governance and infrastructure, the opposite is more likely to happen, with Happy Valley developing sooner than Damascus, so we manually changed the 2025 allocation. In addition, we adjusted the calibration price for Happy Valley so that the model will maintain this pattern.
3. The growth distributions were rebalanced for a number of cities. These adjustments were not materially large from a regional perspective, but significant for the city in general. All recommended 2025 TAZ growth distribution adjustments were accepted for Beaverton, Forest Grove, Gresham, Hillsboro, King City, Lake Oswego, Sherwood, Tigard, Troutdale, Tualatin, and Wilsonville. The TAZ growth distributions in each of the listed cities were redistributed to balance out expected faster growing TAZ's while other TAZ's which had too much capacity estimated to begin with were reduced. No adjustments were made to the supply capacity in these TAZ's as the adjustments were not materially large.

2025 comments and response

#	Local Government	Comment and response completed
1	Beaverton	Yes
2	Cornelius	Yes
3	Damascus	Yes
4	Durham	No comment/No TAZ staff
5	Fairview	No comment/No TAZ staff
6	Forest Grove	Yes
7	Gladstone	Yes
8	Gresham	Yes
9	Happy Valley	Yes
10	Hillsboro	Yes
11	Johnson City	No comment/No TAZ staff
12	King City	Yes
13	Lake Oswego	Yes
14	Maywood Park	No comment/No TAZ staff
15	Milwaukie	Yes
16	Oregon City	Yes
17	Portland (& POP)	Yes
18	Rivergrove	No comment/No TAZ staff
19	Sherwood	Yes
20	Tigard	Yes
21	Troutdale	Yes
22	Tualatin	Yes
23	West Linn	Yes
24	Wilsonville	Yes
25	Wood Village	Yes
26	Clackamas County	Yes
27	Multnomah County	Yes
28	Washington County	Yes

Following are the actual correspondences between local governments and Metro leading up to the completion of the comments and response.

CITY OF BEAVERTON

Distribution Review and Adjustments Completed (May 14, 2012)

From: Laura Kelly [mailto:lkelly@beavertonoregon.gov]
Sent: Monday, May 14, 2012 4:32 PM
To: Dennis Yee; Jeff Salvon
Cc: steve_kelley@co.washington.or.us; Robert McCracken; Maribeth Todd; Gerry Uba
Subject: RE: 2025 Final TAZ Allocations

Thanks Dennis!

Laura

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Monday, May 14, 2012 2:58 PM
To: Jeff Salvon
Cc: steve_kelley@co.washington.or.us; Laura Kelly; Robert McCracken; Maribeth Todd; Gerry Uba
Subject: RE: 2025 Final TAZ Allocations

Jeff:

We will be making corrections per your instructions shown below. Thanks for the heads up on this. This will be reflected in the final final 2025 and subsequent TAZ allocations for years 2030 through 2045.

Maribeth will follow up with a confirmation. This should not be any problem.

(Not bad…only one miscue given the many different formatted comments that we received from everyone! Sorry it was Beaverton.)

Regards

Dennis

From: Jeff Salvon [mailto:jsalvon@beavertonoregon.gov]
Sent: Tuesday, May 08, 2012 4:37 PM
To: Dennis Yee
Cc: steve_kelley@co.washington.or.us; Laura Kelly; Robert McCracken
Subject: 2025 Final TAZ Allocations

Dennis:

We've reviewed the final 2025 household and employment numbers you distributed last week and concluded that in general, the projections are reasonable and make sense - with a few key exceptions. Our concern focusses mainly on Reserve Area 6B and Cooper Mountain.

As evidenced from the table below, it appears that Metro has altered our recommendations for TAZ #s 1152, 1153,and 1154 significantly. From various calculations derived from the area prospectus and numerous field observations, we regard the revised 2025 job projections specific to Area 6B and Cooper Mountain to be unrealistic.

TAZ #s	Beaverton Recommended Allocation			Metro Allocation		
	Retail	Service	Other	Retail	Service	Other
1152	1	13	389	0	0	0
1153	0	0	13	7	34	889
1154	0	10	40	14	126	899

In our meeting with you last month, we indicated that the numbers we recommended for this area were derived from the City's 6B Concept Prospectus submitted to Metro as part of the urban reserves process. In this study, we projected that the majority of employment in 6B will occur in TAZ# 1152 with very little occurring in TAZ #1153. Additionally, as TAZ # 1152 comprises a majority of the proposed 2011 UGB expansion phase, we believe it more likely that any new jobs attributed to 6B will land in this area within the 2025 timeframe. Although we acknowledge that this prospectus is conceptual in nature, we regard it to be the most legitimate source to date for information specific to future growth the area.

As for TAZ #1154 (Cooper Mountain), staff made a fairly detailed examination of the area and found that the entire area is occupied by large lot delux homes. This was a topic of some discussion in our meeting in April. If memory serves, we came to the conclusion that any prospect that these properties either redevelope or subdivide to support commercial enterprises was fairly remote.

Based upon thse findings, we recommend that Metro revise their employment projections to reflect the City's recommended allowcations that were submitted in April.

Thanks for your consideration and we look forward to your response.

Jeff P Salvon, AICP
Associate Planner | Community Development Department
City of Beaverton | PO Box 4755 | Beaverton OR 97076-4755
p: 503.526.3725 | f: 503.526.3720 | www.beavertonoregon.gov

From: Laura Kelly [mailto:lkelly@beavertonoregon.gov]
Sent: Wednesday, April 11, 2012 4:31 PM
To: Dennis Yee; Jeff Salvon
Cc: Robert McCracken; steve_kelley@co.washington.or.us; Gerry Uba; Maribeth Todd; Steven Sparks
Subject: RE: Beaverton response to Metro TAZ comments 4/3/2012

Hi Dennis,
This is a follow up to our conversation last week about South Cooper Mountain capacity and allocation assumptions. It is my understanding that you will be receiving information from your GIS team about the buildable land assumptions that went into the Gamma forecast, and we look forward to reviewing those numbers. However, it should be noted that the buildable net acreage for this area has been professionally evaluated and determined to be approximately 700 net acres. Net acreage is calculated by taking gross site acreage (1,776ac), subtracting natural and infrastructure constraints (817ac) to obtain a gross developable area of 959 acres. The gross acreage is multiplied by the standard calculation for net acreage (removing 23%), for a total net of 700 acres. Please see the analysis from last year's UGB expansion decision (*South Cooper Mountain Prospectus*) for additional information about net acreage. With that in mind, we again request that the capacity and allocation numbers in the Metro model be revised to reflect both the accepted net acreage for the area and Metro Council's density assumptions.

TAZ 1155, 1153, 1152 (mix of Cooper Mtn and South Cooper Mountain):
The current zoning for all parcels within the portion of TAZ 1155 that is currently within the UGB is R-9 (7-9 units per acre). Metro assumed capacity for these parcels is 197 households. This appears to be consistent with zoning for that area. The remaining portion of the parcel is part of the 6b Urban Reserve area (South Cooper Mountain). Development scenarios for the entirety of this area (which extends into TAZ 1152 and 1153) show a net developable area of 700 acres. At 15 du/net acre, the total capacity for the entirety of Area 6B (within TAZ 1155, 1153, and 1152) is 10,500 households. The 2025 allocation should be consistent with the urbanization schedule for this Urban Reserve. Thus, the 2025 allocation should provide for some HH in all three TAZs, as it should assume development of 6B Phase 1 (in TAZ 1152 and 1153) and some development in the non-6B portion of TAZ 1155.

<u>Capacity</u>
Metro's capacity number for South Cooper Mountain is 20,663hh, or approximately 29.5 du/net acre. (20,663hh/700 net acres). This is approximately **double the density** required by Metro Council (15 du/net ac). Thus, the capacity numbers for SCM need to be reduced to reflect the 15du/net acre requirement. This totals 10,558hh (including 58 units allocated to the non-SCM parcels at the extreme southeastern edge of TAZ 1152), which we propose to split between TAZ 1152 and 1153 as follows: TAZ 1152: 7,588hh and TAZ 1153: 3,080hh.

As noted above, capacity for TAZ 1155 should be reduced to approximately 197hh, as only the portion of the TAZ that is currently within the UGB (i.e. the non-6b portion) is expected to have any significant capacity. Further, the total 6b capacity (10,500hh) will be split between TAZ 1152 and 1153 per Beaverton's request.

<u>2025 Allocation</u>
Metro's 2025 allocation number for South Cooper Mountain (TAZ 1152 and 1153) is 1,579hh. We find this to be a reasonable estimate and have not proposed any changes to allocation in TAZs 1152 and 1153.

Thanks again for meeting with us last week. We found it very helpful to go through these issues in person.

Laura Kelly
Senior Planner| Community and Economic Development Department

City of Beaverton | P.O. Box 4755 | Beaverton, OR 97076
503.526.2548 | lkelly@BeavertonOregon.gov

From: Dennis Yee
Sent: Tuesday, April 03, 2012 1:31 PM
To: Jeff Salvon
Cc: Laura Kelly; Robert McCracken; steve_kelley@co.washington.or.us; Gerry Uba; Maribeth Todd
Subject: RE: Beaverton response to Metro TAZ comments 4/3/2012

Thank you Jeff.

I am not yet able to respond officially, but you have done a very good job of summarizing our telephone conversation today regarding the residential feedback.

I cannot fully agree to the "resolution" stated for each item below, particularly with respect to the Reserves, the Cooper Mtn areas inside today's UGB, the Peterkort area, downtown Beaverton and TAZ's in the western edge of Beaverton. In order to maintain county control totals, there may not be enough "extra" households to attain the city's recommended household counts for these areas for year 2025. Your comments do not reflect what I suggested was to "ration" overages identified in rural Washington county and to relocate them to these areas and also the "resolutions" do not reflect the model results which do not indicate that the areas around Peterkort and downtown are not even absorbing all of the current capacity assumed in MetroScope. This suggests to us that the market is not yet ripe enough in 2025 to absorb all the capacity suggested by your revised TAZ household allocations.

We will finalize the TAZ figures in coordination with Beaverton staff and Washington county planning. Stay tuned as I try to get a more complete picture of all jurisdiction review comments.

Regards,

Dennis Yee
Metro Economist

From: Jeff Salvon [mailto:jsalvon@beavertonoregon.gov]
Sent: Tuesday, April 03, 2012 12:48 PM
To: Dennis Yee
Cc: Laura Kelly; Robert McCracken; steve_kelley@co.washington.or.us
Subject: FW: Beaverton response to Metro TAZ comments 4/3/2012

Dennis:

We've had a chance to discuss the issues you brought up over the phone within the last hour. Assuming I understood your issues correctly, we would like to submit the following comments.

We look forward to your response.

Thanks.

Jeff

……

From: Laura Kelly
Sent: Tuesday, April 03, 2012 12:33 PM
To: Jeff Salvon
Subject: Beaverton response to Metro TAZ comments 4/3/2012

Dennis,

Beaverton received your comments on five issue areas related to our 3/29/2012 comments on the TAZ Allocations Gamma Forecast. Please find below a brief summary of our understanding of Metro's comments along with our corresponding response. There appear to be questions related to both capacity assumptions and allocation assumptions and have attempted to separate those issues in our response below.

We dedicated a substantial number of person hours to this review and sincerely hope to hear back from you if there are any lingering questions or concerns with Beaverton's allocations; otherwise, we assume that our comments have been accepted. Should you require any additional information about our review or if you would like to set up a meeting time to discuss with the work group who compiled our comments, please don't hesitate to contact me.

1. Cooper Mountain and South Cooper Mountain
   Metro Issue: Jurisdiction capacity numbers must reflect the 15du/net acre requirement for UGB expansion areas
   Beaverton Response: Capacity numbers were not changed in jurisdiction review. Metro capacity assumptions appear much higher (2x) than needed to produce 15 du/net acre. Allocations were modified based on urbanization schedule.
   Resolution: Accept jurisdiction 2025 allocations or indicate whether there are additional questions on this subject. Work w/ jurisdiction to resolve capacity discrepancies.

2. Murrayhill
   Metro Issue: None
   Beaverton Response: None
   Resolution: Accept jurisdiction 2025 allocations

3. Sunset Transit Center
   Metro Issue: Jurisdiction reviewed capacity numbers and 2025 allocations acceptable in part
   Beaverton Response: Capacity numbers have been changed based on recent zone changes in area (Peterkort). Allocations based on known master plans expected to be completed by 2025 (Timberland and Peterkort).

Resolution: Accept jurisdiction 2025 allocations or indicate whether there are additional questions on this subject.

4. Downtown Areas
   Metro Issue: MUR 9 not appropriate for RC-TO zoned properties. Revise to MUR 8
   Beaverton Response: MUR 9 is the closest approximation of RC-OT zoning, which has a 120' max height and no maximum FAR
   Resolution: Accept jurisdiction 2025 allocations or indicate whether there are additional questions on this subject.

5. TAZ 1196, 1196, 1211
   Metro Issue: What is intended by comment to "Projected growth exceeds gamma capacity. Zoning maximums allow for excess. Capacity changes needed"
   Beaverton Response: MUR 8 is closest approximation of SC-HDR zoning, which has a which has a 60-100' max height and no maximum FAR.
   Resolution: Accept jurisdiction 2025 allocations or indicate whether there are additional questions on this subject.

……

From: Maribeth Todd
Sent: Friday, March 16, 2012 2:34 PM
To: Laura Kelly; Jim Cser
Cc: Jeff Salvon; Gerry Uba; Dennis Yee
Subject: RE: Revised Land Capacity Data for TAZ Allocation

Hi Laura,

Her nb nbe is my somewhat long explanation that may not quite answer your questions, but I hope it helps.

The employment allocation is a MetroScope model output, so it's not a direct conversion of jobs/acre. Every employment sector is allowed to shift across various nonresidential real estate types and adjust density in terms of FAR and square feet per employee, with varying amounts of flexibility depending on the sector. Within the same employment sector, locations that are projected to be in high demand and allow construction of buildings with higher FAR will generally show more employment allocated and higher densities than other areas. The resulting allocation will be different in every forecast year.

There is another step involved in the TAZ outputs that you're looking at, the mapback process, which takes the model outputs from the large ezones down to the TAZ level. In that process, I allocated half of the employment change from 2010 to 2025 to locations with existing employment and half to areas

identified as capacity for additional employment. This helps in dealing with employment sectors that are projected to decline in a particular ezone as well as smoothing out the future employment distribution, but could lead to some counter-intuitive results depending on the balance between current employment and additional capacity in a zone.

Let me know if you still have questions.

Maribeth

……
From: Laura Kelly [mailto:lkelly@beavertonoregon.gov]
Sent: Friday, March 16, 2012 1:57 PM
To: Maribeth Todd; Jim Cser
Cc: Jeff Salvon; Gerry Uba; Dennis Yee
Subject: RE: Revised Land Capacity Data for TAZ Allocation

Hi Maribeth,
Can you tell us about the jobs conversion used in the 2025 forecast? All the information we have about the 2010 base year is in acres. What is the conversion you used to get to jobs/acre and is it different for different employment types? Is it different for different forecast years?
Thanks,

Laura

……
From: Laura Kelly [mailto:lkelly@beavertonoregon.gov]
Sent: Friday, March 16, 2012 8:18 AM
To: Maribeth Todd; Jim Cser
Cc: Jeff Salvon; Gerry Uba; Dennis Yee
Subject: RE: Revised Land Capacity Data for TAZ Allocation

Yes, thank you Maribeth. I didn't realize you'd already sent it.
We appreciate it.

Laura

……
From: Maribeth Todd
Sent: Thursday, March 15, 2012 1:40 PM
To: Jim Cser; Laura Kelly
Cc: Jeff Salvon; Gerry Uba; Dennis Yee
Subject: RE: Revised Land Capacity Data for TAZ Allocation

Hi Laura,

Are you looking for the final supply data (where future growth is allocated) or the 2010 households (i.e. Census data)? I posted the final supply files on ftp for Jeff Salvon a couple of weeks ago so he may have them. If not, it looks like they are still available at: ftp://ftp.oregonmetro.gov/pub/gm/drc/todd/

It's not the easiest mess of files to work with so here's the explanation I gave Jeff:

I think the only two data files that you'll be interested in are "CombinedUGBTaxlots_Frego" and "MF_db_refill_supply_Frego" (so named because I cleaned these files up a bit so that I could share them with Fregonese Assoc for another project). The final capacity numbers are in the far right columns in both files with "Fin" (final) in the name:

NetUnitFin – final estimate of net units
NetAcreFin – final estimate of residential acres (for modeling purposes, we use acres instead of units)
COMAcreFin – final estimate of commercial acres
INDAcreFin – final estimate of industrial acres
Many records will have 0 in all of these columns, indicating that there is no capacity for additional growth on those lots.

There are two zoning fields showing what type of capacity these numbers represent:
FutZoneCla – future zoning class (typically the current zoning, could also be comp plan, concept plan or some other source if there is no urban zoning)
FutZoneGen – general category of future zoning

I hope you are able to interpret the data in these files, let me know if you have any questions.

Maribeth

Maribeth Todd
Research Center
Metro

……
From: Jim Cser
Sent: Thursday, March 15, 2012 12:08 PM
To: Laura Kelly
Cc: Maribeth Todd; Jeff Salvon; Gerry Uba; Dennis Yee
Subject: RE: Revised Land Capacity Data for TAZ Allocation

Laura,
Sorry, I misunderstood. We'll get back to you.
-Jim

……
From: Laura Kelly [mailto:lkelly@beavertonoregon.gov]
Sent: Thursday, March 15, 2012 12:03 PM
To: Jim Cser
Cc: Maribeth Todd; Jeff Salvon; Gerry Uba; Dennis Yee
Subject: RE: Revised Land Capacity Data for TAZ Allocation

Thanks Jim. We're looking for the final 2010 base year shapefile so we can look at the final numbers on a parcel level. Any way you could send over that shapefile?

Thanks.

Laura

……
From: Jim Cser [mailto:Jim.Cser@oregonmetro.gov]
Sent: Thursday, March 15, 2012 12:01 PM
To: Laura Kelly
Cc: Maribeth Todd; Jeff Salvon; Gerry Uba; Dennis Yee
Subject: RE: Revised Land Capacity Data for TAZ Allocation

Hi Laura,
The 2025 shapefile contains the reviewed 2010 households, in the field "HH2010".

Regards,
Jim Cser

……
From: Gerry Uba
Sent: Thursday, March 15, 2012 11:50 AM
To: Dennis Yee
Cc: Jim Cser; Maribeth Todd; Laura Kelly; 'Jeff Salvon'
Subject: FW: Revised Land Capacity Data for TAZ Allocation

Hello Dennis,

Please see and take care of this request from Laura. Thanks

Gerry

……
From: Laura Kelly [mailto:lkelly@beavertonoregon.gov]
Sent: Wednesday, March 14, 2012 8:25 AM
To: Gerry Uba; Jeff Salvon
Subject: RE: Revised Land Capacity Data for TAZ Allocation

Hi Gerry,
We've been reviewing the 2025 allocations and would like to overlay the 2025 shapefile with the 2010 base year shapefile. On the ftp site, we can find the initial 2010 base shapefile (pre-jurisdiction review), but not the final base year shapefile modified to reflect jurisdiction comments. We do see the pdfs of those, but not the shapefile. Is there any way to send us that shapefile or post it on the ftp site?
Thanks!

Laura Kelly
Senior Planner| Community and Economic Development Department
City of Beaverton | P.O. Box 4755 | Beaverton, OR 97076
503.526.2548 | lkelly@BeavertonOregon.gov

……..
From: Gerry Uba [mailto:Gerry.Uba@oregonmetro.gov]
Sent: Wednesday, December 28, 2011 1:56 PM
To: Jeff Salvon
Cc: Laura Kelly; Steven Sparks; Dennis Yee; Maribeth Todd; Jim Cser; Christina Deffebach
Subject: FW: Revised Land Capacity Data for TAZ Allocation

Hello Jeff,

In response to the second part of your email to me earlier today about the base year data, I am forwarding the email I sent on May 16, 2011 to all local government staff involved in the TAZ project, providing the link to the FTP site containing the 2010 base year population and employment data. Please do not hesitate to let me know if you have problem accessing the data.

Best regards,

Gerry

……
From: Gerry Uba
Sent: Monday, May 16, 2011 1:28 PM
To: connellpc@comcast.net; dmazziotti@ci.beaverton.or.us; rreynolds@ci.cornelius.or.us; rmeyer@ci.cornelius.or.us; ayap@ci.damascus.or.us; cityofdurham@comcast.net; gessnerj@ci.fairview.or.us; jholan@forestgrove-or.gov; boyce@ci.gladstone.or.us; mike.abbate@greshamoregon.gov; michaelw@ci.happy-valley.or.us; jasont@ci.happy-valley.or.us; patrickr@ci.hillsboro.or.us; johnson.city@hotmail.com; dwells@ci.king-city.or.us; degner@ci.oswego.or.us; dfrisbee@ci.oswego.or.us; mayorhardie@aol.com; asherk@ci.milwaukie.or.us; manglek@ci.milwaukie.or.us; tkonkol@orcity.org; susan.anderson@portlandoregon.gov; hajdukj@ci.sherwood.or.us; ron@tigard-or.gov; susanh@tigard-or.gov; rfaith@ci.troutdale.or.us; ahurd-ravich@ci.tualatin.or.us; jsonnen@westlinnoregon.gov; neamtzu@ci.wilsonville.or.us; ritz@ci.wood-village.or.us; prestonp@ci.wood-village.or.us; lindap@co.clackamas.or.us; scottpem@co.clackamas.or.us; karen.c.schilling@co.multnomah.or.us; brent_curtis@co.washington.or.us; andrew_singelakis@co.washington.or.us; tom.armstrong@portlandoregon.gov; jsalvon@ci.beaverton.or.us; dtaylor@ci.beaverton.or.us; tfranz@ci.cornelius.or.us; rmeyer@ci.cornelius.or.us; epalmer@ci.damascus.or.us; driordan@forestgrove-or.gov; jonathan.harker@greshamoregon.gov; molly.vogt@greshamoregon.gov; michaelw@ci.happy-valley.or.us; dougm@ci.hillsboro.or.us; dono@ci.hillsboro.or.us; vickiew@ci.hillsboro.or.us; degner@ci.oswego.or.us; manglek@ci.milwaukie.or.us; rossonk@ci.milwaukie.or.us; cdunlop@ci.oregon-city.or.us; gary.odenthal@portlandoregon.gov; ortizp@ci.sherwood.or.us; preston@tigard-or.gov; camedzake@ci.troutdale.or.us; emccallum@ci.troutdale.or.us; chahn@ci.tualatin.or.us; tscott@ci.tualatin.or.us; kaha@westlinnoregon.gov; ckerr@westlinnoregon.gov; jsonnen@westlinnoregon.gov; neamtzu@ci.wilsonville.or.us; stark@ci.wilsonville.or.us; prestonp@ci.wood-village.or.us; karenb@co.clackamas.or.us; larrycon@co.clackamas.or.us; randygra@co.clackamas.or.us; jose.alvarez@clark.wa.gov; jharmon@ci.oswego.or.us; charles.beasley@multco.us; adam.t.barber@multco.us; tom.bouillion@portofportland.com; steve.iwata@portlandoregon.gov; steve_kelley@co.washington.or.us; nels_mickaelson@co.washington.or.us; connellpc@comcast.net

Cc: Sonny Conder; Maribeth Todd; Jim Cser; Dennis Yee; Christina Deffebach; Paulette Copperstone
Subject: Revised Land Capacity Data for TAZ Allocation

Dear TAZ Allocation Planners,

A set of eight data files has been posted on the Metro FTP site for your review and comments. The files include:

- Base year 2010 household estimates
- Base year employment estimates
- Land capacity files [The data in these files were based on the refined regional methodology for calculating capacity that some of you helped to refine and were discussed with you at the County coordination meetings during the last week of April.]

The link to these files is: ftp://ftp.oregonmetro.gov/dist/gm/TazAlloc2010/Forecast_Inputs/

Two additional data files will be posted on the FTP site soon (Subsidized redevelopment data file and New urban area data file). The first file on the above FTP site contains some background information and instructions for reviewing the data files.

We would like to have your comments on all these data files by Tuesday, May 31, 2010.

The FTP site for dropping off the reviewed files (your comments) is:
ftp://ftp.oregonmetro.gov/incoming/

This FTP folder is a "blind" box. You can write to the folder, but cannot see what is inside the folder. Any uploaded files to the site will be deleted after three days. **Please send us an e-mail (jim.cser@oregonmetro.gov) after you have transferred any files to the "blind" box**.

If you have questions, please do not hesitate to contact Dennis Yee (503-797-1578) or me. Thanks very much for your time, assistance and contribution towards developing credible databases for the TAZ allocation.

Gerry

……..
O. Gerald Uba, PhD
Planning and Development Department
Metro

CITY OF CORNELIUS

Distribution Review and Adjustments Completed (February 28, 2012)

From: Dennis Yee
Sent: Tuesday, February 28, 2012 3:54 PM
To: Gerry Uba
Subject: RE: Cornelius Growth Projections

Done…working on it…Maribeth is handling it very well.

From: Gerry Uba
Sent: Tuesday, February 28, 2012 3:41 PM
To: Dennis Yee
Subject: FW: Cornelius Growth Projections

I assume you will take care of this one. Thanks

……
From: Reynolds, Dick [mailto:rreynolds@ci.cornelius.or.us]
Sent: Monday, February 27, 2012 3:10 PM
To: Gerry Uba
Cc: Dennis Yee; Meyer, Richard
Subject: Cornelius Growth Projections

Hi Dennis & Gerry,

After attending the presentation (2/15) about the TAZ level Regional Growth Allocations hosted by Washington County I thought you stated that the allocations were based on land inside the UGB? If that is still the case I would like to state again my concerns about your projections for TAZ 1386 and 1381?

METRO HOUSING ALLOCATIONS: TAZ 1381 = 673 dwelling units This number seems very high for net dwelling units inside the UGB? There is no residential land inside the UGB in this TAZ that is currently vacant(?). So, where are these numbers from?

TAZ 1386 = 1026 dwelling units There is approximately 3 acres inside the UGB that is vacant and another 10 acres that is redevelopable in 1386 …..even at Mayor Sam's density levels that does not add up to 1026 d.u.'s??

METRO EMPLOYMENT ALLOCATIONS: TAZ 1381 = 215 Jobs This seems to accurately represent the vacant Commercially zoned property in this TAZ

TAZ 1386 = 111 Jobs This land is zoned Residential and I am not sure how you guys are forecasting 111 jobs in this residential area inside the UGB?

Did you mistakenly happen to include the Urban Reserves area as part of the projections in these TAZ's? Explanation, please?

Dick Reynolds
Planning Manager
City of Cornelius

CITY OF DAMASCUS (and Happy Valley)

Distribution Review and Adjustments Completed (April 3, 2012)

From: Dennis Yee
Sent: Tuesday, April 03, 2012 1:58 PM
To: Erika Palmer; Steve Gaschler; John Morgan
Cc: Gerry Uba; Maribeth Todd; Conrad, Larry
Subject: RE: 2025 TAZ review

Thanks Erika, I think we are good to go with respect to Damascus' feedback.

……

From: Erika Palmer [mailto:epalmer@damascusoregon.gov]
Sent: Tuesday, April 03, 2012 1:56 PM
To: Dennis Yee; Steve Gaschler; John Morgan
Cc: Gerry Uba; Maribeth Todd; Conrad, Larry
Subject: FW: 2025 TAZ review

Attachment: Revised 2025 TAZ HH & Jobs for Damascus and Happy Valley.xlsx (31KB)

Dennis,

Yes, the attached TAZ allocations are acceptable. Let me know if you need any additional information. Thanks!

Best Regards,

Erika Palmer
Senior Planner

City of Damascus
19920 SE Highway 212
Damascus, OR 97089

……

From: Dennis Yee
Sent: Tuesday, April 03, 2012 1:49 PM
To: Erika Palmer (epalmer@ci.damascus.or.us)
Cc: Gerry Uba; Maribeth Todd; Conrad, Larry
Subject: 2025 TAZ review

Hi Erika,

I am in receipt of your letter dated 3/26 regarding the necessary TAZ adjustments as discussed. I've attached your letter as reference.

Also attached are the TAZ level changes I implemented as a result of agreed upon actions Metro will take to correct the TAZ distributions. Accordingly, we assume that you are satisfied with the draft 2025 TAZ allocations for total households and employment. I am attaching these results again as reference. This information was sent to you in early March.

We would like at this time to confirm again that the attached TAZ revisions are acceptable. Please reply as soon as possible and if you need an extra few days, please let me know ahead now.

Regards,

Dennis Yee
Metro Chief Economist

Metro
600 NE Grand Av.
Portland, OR 97232-2736

[See Erik Palmer's letter to Dennis Yee next page]

City of
Damascus

19920 SE Highway 212
Damascus, OR 97089
www.ci.damascus.or.us
Phone: 503-658-8545
Fax: 503-658-5786

March 26, 2012

Metro
Attn: Dennis Yee, Metro Economist
600 NE Grand Avenue
Portland, OR 97232-2736

RE: 2025 TAZ Forecast Distributions Comments

Dear Mr. Yee,

Thank you for giving us the opportunity to comment on the 2025 TAZ Forecast Distribution. When the Gamma 2025 TAZ Forecast was distributed for review earlier this year it was realized that the forecast shifted +4,000 more households out of Happy Valley TAZs and into Damascus. This forecast showed that 45% of Damascus' development capacity used by 2025, which, we believe, will not be case. It was an error that needed to be corrected between Metro, Clackamas County, Happy Valley and Damascus.

Staff from Metro, Clackamas County, Happy Valley, Damascus, and the Department of Land Conservation and Development met on February 21, 2012 to discuss a solution.

The solution that all agreed upon was to shift the Household TAZ forecast for the two cities. This means adding 4,000 more households into Happy Valley TAZ's and a corresponding drop of 4,000 households from Damascus' set of TAZ's, for a net difference of zero. The Employment TAZ forecast has also been changed, reflecting a decrease of -1,500 jobs out of Damascus.

We look forward to reviewing the next 2035 TAZ Forecast Distribution.

Best regards,

Erika Palmer
Senior Planner

From: Dennis Yee
Sent: Thursday, March 22, 2012 10:42 AM
To: Gerry Uba
Cc: Maribeth Todd; Sonny Conder
Subject: FW: Damascus TSP

Gerry: Please add this to the record. The failure of ODOT to fund any Damascus TSP tasks seriously endangers the viability or believability of the TAZ forecast assigned to Damascus.

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Thursday, March 22, 2012 10:31 AM
To: Dennis Yee; Gerry Uba
Subject: FW: Damascus TSP (Attachment)

Larry Conrad

Principal Transportation Planner

[ATTACHMENT IS IN FILE]

Oregon
John A. Kitzhaber, MD, Governor

Department of Transportation
Region 1 Headquarters
123 NW Flanders Street
Portland, OR 97209
(503) 731.8200
FAX (503) 731.8531

March 20, 2012

Mayor Spinnett and Damascus City Council Members,

In June 2011, following a public vote that rejected a comprehensive land use plan the Damascus City Council had previously adopted, ODOT requested that the City postpone further work and spending of federal funds on the City's Transportation System Plan (TSP) until consensus could be reached among community leaders on a working land use map to be the basis for further comprehensive plan efforts. It was hoped a decision from the City Council could provide the necessary assurance that funding would not be spent developing a TSP for a comprehensive plan that would later change, requiring additional funds be spent revising the TSP.

ODOT very much appreciates efforts by the City Council and city staff (e.g. Steve Gaschler) to give ODOT the assurances requested (Resolution No. 12-295). However, with recent passage of a voter initiative in Damascus requiring voter approval of all comprehensive plan and zoning actions submitted to the Department of Land Conservation and Development and Metro it is unclear that the assurances as previously envisioned are sufficient for moving ahead to spend federal funds on planning work at this time. Over the next few weeks, with further consultation from the City, we will need to take some time to review our options. In the meantime, I'm afraid we need to put a hold on further development of the City's TSP.

ODOT looks forward to meeting with your staff over the next few weeks to lay out a plan for working through this new issue. Ross Kevlin, Region 1 Planner, will be in touch with your staff to schedule a meeting.

Regards,

Kirsten Pennington
ODOT Region 1 Planning Manager

CC: Dan O'Dell, Damascus City Manager
Steve Gaschler, Damascus Community Services Director
Penny Morrison, Damascus City Recorder
Rian Windsheimer, ODOT Region 1 Policy & Development Manager
Ross Kevlin, ODOT Region 1 Planner
Kelly Brooks, ODOT Region 1 Governmental Liaison

From: Dennis Yee
Sent: Monday, March 05, 2012 3:56 PM
To: Michael Walter, AICP Happy Valley; Erika Palmer
Cc: Gerry Uba; Maribeth Todd; Jim Cser; Conrad, Larry
Subject: REVISED Provisional 2025 TAZ Forecast Distributions - Happy Valley and Damascus only

All:

I have made the revisions to the TAZ allocations for jobs and households for Happy Valley and Damascus.

The Household (HH) TAZ forecast for the two cities reflects +4,000 more households sprinkled into Happy Valley TAZ's and a corresponding drop of 4,000 households from Damascus' set of TAZ's, for a net difference of zero

The Employment TAZ forecast has also been changed, reflecting a decrease of -1,500 jobs out of Damascus. These jobs are left unallocated and some fraction (or all) can be re-assigned to Happy Valley or elsewhere in the region. I did not re-assign the jobs to Happy Valley, although I am aware that some of these jobs may be expected to be redistributed to the TAZ with the Providence site. Happy Valley should feel free to add a few more jobs to go along with the added households as you see fit.

Finally, these new TAZ household (and job) allocations are still PROVISIONAL. I look forward to Happy Valley and Damascus in reviewing / editing the allocation and then returning your final estimates to Metro for us to incorporate into the next set of forecast years (2035/2045).

I will sending this info under separate email. If you do not receive the second email with the attachment, I am also placing a temporary file on the following ftp server location: ftp://ftp.oregonmetro.gov/pub/gm/drc/dennis/TAZAllocation/2025%20TAZ%20Forecast/. The file is named: Revised GAMMA TAZ for HV & Damascus.xlsx. Please download the ftp file within the next 24 hours.

Regards,

Dennis Yee
Metro Chief Economist

Metro
600 NE Grand Av.
Portland, OR 97232-2736
(503) 797-1578
(503) 797-1909 (FAX)
dennis.yee@oregonmetro.gov

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Meeting Summary: Damascus and Happy Valley 2025 TAZ Forecast Distribution Reconciliation
February 21, 2012

Attendees: Steve Gaschler and Erika Palmer (Damascus); Matt Hastie (Damascus consultant); Mike Walter (Happy Valley); Larry Conrad (Clackamas County); Jennifer Donnelley (DLCD); Dennis Yee and Gerry Uba (Metro)

2025 Household Projections for Review/Discussion

Metro proposed shifting the household 2025 allocation to correct an error discovered in the TAZ modeling and forecasting assumption for Happy Valley. The final settlement between Metro, the county, and the cities was to shift/re-distribute 4,000 households in year 2025 from Damascus to Happy Valley. This re-distribution would carry forward through 2035/45 in addition to the continuance of future growth trends anticipated after 2025 using the adjusted lower base in Damascus and the higher adjusted base for Happy Valley.

Jurisdiction	Households	Suggestion/Decision
South Stafford	1,126	Move 500 out, and into Villebois
Canby	3,000	No change (defended by Larry)
Damascus	9,700	Move out 4,000 out, and into Happy Valley
S. Hillsboro (St. Mary's)	2,000	No action
Clackamas Co. - unallocated	1,500	TBD
Happy Valley		Put the 4,000 from Damascus

2025 Employment Projections for Review/Discussion

As a result of shifts in households, it was determined that the reduction of households out of Damascus would pull jobs out Damascus too. The rationale was that some fraction of jobs (i.e., 1500 total jobs) would not materialize as jobs with high affinity with household location choice would not locate in Damascus given the adjustment to a fewer number of households in 2025. The primary justification for both the shift in households and employment was that Damascus felt that the delay function assumed for infrastructure development was too optimistic in the model forecast. It was felt that infrastructure development would come later and stunting the 2025 growths for Damascus.

Jurisdiction	Employment	Suggestion/Decision
Damascus		Option 1: Move jobs from Damascus TAZs 827 and 831 to Happy Valley TAZs 801, 799 and 881 Option 2: Move 1500 jobs from Damascus to other

		TAZs in the region, such as the TAZs in Hillsboro

Next Step:

1) Metro will use the suggestions above to reallocate year 2025 households and employment
2) Metro will send the re-allocation result to County TAZ Forecast coordinator and Damascus and Happy Valley staff for review and final comment
3) County coordinator will meet with Damascus and Happy Valley staff to review the re-allocation
4) Damascus, Happy Valley and County will send their final comments to Metro
5) Damascus will use the 2011 Beta Forecast data as provisional/interim forecast for its planning work (BLI, TSP and Facility planning). They will update their analysis later this year when the revised 2035/45 Gamma TAZ forecast data becomes available.

From: Dennis Yee
Sent: Friday, February 17, 2012 11:45 AM
To: Matt Hastie; Gerry Uba; Ray Valone; Donnelly, Jennifer; 'Conrad, Larry (LarryC@co.clackamas.or.us)'; 'John Morgan (john@morgancps.com)'; 'Steve Gaschler (sgaschler@damascusoregon.gov)'
Subject: RE: Damascus Population discussion

The TAZ information is found at this ftp server:

ftp://ftp.oregonmetro.gov/dist/gm/TazAlloc2010/Midterm_review/TAZ_2025/

no passwords or logins needed. Just use your favorite browser to navigate to the location above and download the files.

Regards,

Dennis Yee
Metro Economist
503-797-1578

……..
From: Matt Hastie [mailto:mhastie@angeloplanning.com]
Sent: Friday, February 17, 2012 9:15 AM
To: Gerry Uba; Ray Valone; Donnelly, Jennifer; 'Conrad, Larry (LarryC@co.clackamas.or.us)'; Dennis Yee; 'John Morgan (john@morgancps.com)'; 'Steve Gaschler (sgaschler@damascusoregon.gov)'
Subject: RE: Damascus Population discussion

I'm available from about 1:30 until 3 that afternoon if you want me to attend part of that meeting. Would that work? And in advance of the meeting would someone be able to send me whatever information you have that describes the current 20-year population forecast you are currently assuming? Thanks!

Matt

…….

From: John Morgan [mailto:john@morgancps.com]
Sent: Thursday, February 16, 2012 8:18 PM
To: Gerry Uba
Cc: Ray Valone; Donnelly, Jennifer; Conrad, Larry(LarryC@co.clackamas.or.us); Dennis Yee; Steve Gaschler (sgaschler@damascusoregon.gov); Matt Hastie; Erika Palmer
Subject: Re: Damascus Population discussion

I will not be with you Tuesday as I'll be leading a training for the Eugene Planning Commission that day. You may have more fun.

Do well.

John

Sent from my iPhone

…….

From: Gerry Uba [mailto:Gerry.Uba@oregonmetro.gov]
Sent: Thursday, February 16, 2012 5:41 PM
To: Ray Valone; Donnelly, Jennifer; 'Conrad, Larry (LarryC@co.clackamas.or.us)'; Dennis Yee; 'John Morgan (john@morgancps.com)'; 'Steve Gaschler (sgaschler@damascusoregon.gov)'; Matt Hastie
Subject: RE: Damascus Population discussion

That's right. We can use the same meeting to discuss all key concerns about the forecast distribution. Following is the meeting information:

February 21st
1:30 PM to 3:30 PM
Happy Valley City Hall offices

I will see you all next week.

Gerry

…….

From: Ray Valone
Sent: Thursday, February 16, 2012 3:40 PM
To: Donnelly, Jennifer; 'Conrad, Larry (LarryC@co.clackamas.or.us)'; Dennis Yee; 'John Morgan (john@morgancps.com)'; 'Steve Gaschler (sgaschler@damascusoregon.gov)'; 'Matt Hastie'
Cc: Gerry Uba
Subject: RE: Damascus Population discussion
Importance: High

I just found out from Gerry Uba of our office – he is coordinating Metro's allocation of population – that there is a meeting scheduled for next Tuesday at 1:00 in Happy Valley for the both cities to iron out the final numbers. Invited attendees include Michael Walter, Larry Conrad, John Morgan, Steve Gaschler,

Erika Palmer, Dennis Yee and Gerry. So, I suggest that Jennifer attend that meeting and we kill the two proverbial birds (in this case, I think it is one bird) with one meeting.

Gerry said he would have no problem with having Matt there as well and, if needed, maybe extend the meeting 30 minutes to work out the issues.

Ray

……

From: Michael Walter [mailto:MichaelW@ci.happy-valley.or.us]
Sent: Thursday, February 16, 2012 11:22 AM
To: Dennis Yee; Conrad, Larry
Cc: Gerry Uba; Maribeth Todd; John Morgan; Steve Gaschler; Erika Palmer
Subject: RE: Meeting to resolve TAZ allocation between Damascus and Happy Valley

When this was distributed and discussed at the previous meeting at the County, the numbers for Damascus/Happy Valley were described as "flubbed" and "wet clay". I'd hoped to see these tables with the "non-flubbed" numbers that we are supposed to make comments on.

Thanks for all your work on this "Hulkian" project (Gamma forecast—gamma rays – Bruce Banner – the Hulk). Ok, sorry, it's been a long week…

Regards,

Michael D. Walter, AICP
ECONOMIC & COMMUNITY DEVELOPMENT DIRECTOR
503-783-3839
MICHAELW@CI.HAPPY-VALLEY.OR.US
Preserve. Serve. Enrich.

……

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Thursday, February 16, 2012 8:20 AM
To: Dennis Yee; Erika Palmer; Michael Walter, AICP Happy Valley
Cc: Gerry Uba; Maribeth Todd; John Morgan; Steve Gaschler; Buehrig, Karen; Fritzie, Martha
Subject: RE: Meeting to resolve TAZ allocation between Damascus and Happy Valley
Importance: High

Good Morning –

Just a quick thought on this approach --

I am reluctant to move anything from Canby at this time – the county is starting a separate but parallel population coordination process with the 5 rural cities and this change would be premature without further discussion with the rural cities.

I think that between the 1400 unallocated households, some shifts from Damascus (which I assume they want to occur) and from Pete's Mountain -- we can make the 2500 fairly easily.

Larry Conrad

Principal Transportation Planner

(v) 503.742.4539

larrycon@co.clackamas.or.us

''It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so.''

Mark Twain

……..

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Wednesday, February 15, 2012 10:45 AM
To: Erika Palmer; Conrad, Larry; Michael Walter
Cc: Gerry Uba; Maribeth Todd; John Morgan; Steve Gaschler
Subject: RE: Meeting to resolve TAZ allocation between Damascus and Happy Valley

Mike: You mentioned earlier that you wanting more information about a secondary scenario. I have laid out a recommendation (please see email thread below) on how we might agree to shift household TAZ distributions into Happy Valley. Is what I sent out (see my message below) sufficient information or were you thinking about something more specific to help with discussions?

All: I'm trying to think about what info might be useful, so please send me your questions or request for info and I'll do my best to prepare the data ahead of the meeting on the 21st.

Update: I spoke at length with Hillsboro about shifting a few hundred households from South Hillsboro (aka St. Mary's properties) into Happy Valley. I think I want to nix that suggestion and go with shifting the approximate 1,400 "unallocated households" in Clackamas county all into Happy Valley in addition to some of the other suggestions.

Regards,

Dennis Yee
Metro Economist
503-612-9532

……

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Tuesday, February 14, 2012 1:21 PM
To: Erika Palmer; Conrad, Larry; Michael Walter, AICP Happy Valley
Cc: Gerry Uba; Maribeth Todd; John Morgan; Steve Gaschler
Subject: RE: Meeting to resolve TAZ allocation between Damascus and Happy Valley

All:

I haven't heard from everyone regarding availability, but February 21st seems like a good day for all who have replied.

Tentatively let's plan to meet:

February 21st
1:30 PM to 3 PM
Happy Valley City Hall offices

The agenda will be to agree on an adjustment algorithm for fixing the Happy Valley TAZ distribution.

After correcting for an incorrect initial construction costs for Happy Valley, the corrected scenario suggests the following shift of households from around the region for the year 2025 TAZ distribution. In this correction, Happy Valley grows more rapidly – at least through year 2025.

My proposal is to:

Add/distribute +2,500 more households to Happy Valley TAZ's

Subtract:
-500 from Canby
-500 from area below Stafford/I 205/east of Wilsonville outside city limits
-1,000 from Damascus area TAZ's
-500 from St. Mary's/south Hillsboro expansion area (will have to coordinate with Hillsboro too or forgo this and assign from the unallocated households in Clackamas, which totals to about 1,000 households)

The model actually shifts households from practically everywhere around the region, but the above listed locations are where the model seems to estimate the highest places where the changes should happen from.

Regards,

Dennis
……..

From: Dennis Yee
Sent: Monday, February 13, 2012 2:33 PM
To: Conrad, Larry; Erika Palmer (epalmer@ci.damascus.or.us); Michael Walter, AICP Happy Valley
Cc: Gerry Uba; Maribeth Todd
Subject: Meeting to resolve TAZ allocation between Damascus and Happy Valley

All:
Here's a few potential meeting dates to discuss and resolve issues. . .please invite anyone else from your city that should participate.

I propose meeting in Happy Valley city hall for about an hour to 90 minutes on this matter.

Here' my availability. Will any of these times work for you all? Please indicate your availability.

Thursday 16th 9 to 5
Friday 17th 9 to 5
Monday 20th 9 to noon
Tuesday 21st 9 to 5
Wednesday 22nd 2 to 5
Thursday 23rd 3 to 5
Friday 24th 2 to 5

Mike: okay to meet at city hall?

Dennis Yee

CITY OF FOREST GROVE

Distribution Review and Adjustments Completed (April 3, 2012)

From: Dennis Yee
Sent: Tuesday, April 03, 2012 1:53 PM
To: Daniel Riordan; Gerry Uba
Cc: Paulette Copperstone; Steve Kelley; Maribeth Todd
Subject: RE: Forest Grove Review Comments on TAZ Gamma Forecast

Hi Dan:

This email acknowledges receipt of the city's 2025 TAZ review feedback. We thank you for your assistance and appreciate what you have done in participating. If I have questions, I will get back in touch with you. I am presently melding together local feedback into one coherent county and regional TAZ distribution.

Regards,

Dennis Yee
Metro Economist.

From: Dennis Yee
Sent: Monday, April 02, 2012 9:24 AM
To: Daniel Riordan; Gerry Uba
Cc: Paulette Copperstone; Steve Kelley; Maribeth Todd
Subject: RE: Forest Grove Review Comments on TAZ Gamma Forecast

Thank you Dan. We will adjust the TAZ 2025 figures to consider your suggested edits.

Regards,

Dennis Yee

……

From: Daniel Riordan [mailto:driordan@forestgrove-or.gov]
Sent: Friday, March 30, 2012 4:37 PM
To: Gerry Uba
Cc: Paulette Copperstone; Dennis Yee; Steve Kelley
Subject: Forest Grove Review Comments on TAZ Gamma Forecast

Attachment: TAZ Gamma Review Forest Grove. Xls (25KB)

Hi Gerry,

Please find attached an Excel file with revisions to the TAZ level Gamma household projections for Year 2025. Our changes are based on development patterns in the community and where we feel growth will most likely occur. We did not change the total forecasted household numbers for TAZs in Forest Grove (a total of 2,544 households). We simply reallocated households from one TAZ to another to better reflect expected development patterns.

Please let me know if you have any questions or comments regarding the revisions. Thank you for the opportunity to review.

Best Regards,

Dan

Dan Riordan
Senior Planner
City of Forest Grove

CITY OF GRESAHM

Distribution Review and Adjustments Completed (March 7, 2012)

From: Dennis Yee
Sent: Wednesday, March 07, 2012 1:37 PM
To: Martin, Brian; Gerry Uba; Maribeth Todd
Cc: Harker, Jonathan; Randel, Emily; Charles BEASLEY (charles.beasley@multco.us)
Subject: RE: Gresham comments

Thanks Brian.

This is the type of conversation that I had hoped for with city officials for this project. Your comments throughout the process have been extremely constructive. We will record your feedback and incorporate your review into the final 2025 TAZ distributions after we get all the other reviews returned from other cities. Thank you.

I'll let you know what we end up doing with the former LSI site.

Regards,

Dennis Yee
Metro Economist

From: Martin, Brian [mailto:Brian.Martin@greshamoregon.gov]
Sent: Wednesday, March 07, 2012 1:20 PM
To: Dennis Yee; Gerry Uba; Maribeth Todd
Cc: Harker, Jonathan; Randel, Emily; Charles BEASLEY (charles.beasley@multco.us)
Subject: Gresham comments

Hello.

Attached please find Gresham's comments regarding the housing and employment forecasts on a TAZ level.

In the fields, I put what I think the household or employment change should be for 2025 (except for TAZ 606 for employment – there I put a large number just to draw your attention to the comment). In the comments field, I described how the numbers I inserted are different from the Gamma forecast and the reason for the change.

Regarding the former LSI site, I added 1,800 jobs to the site. If you only add 1,500, that should be close enough. I think either of those numbers will reflect what is likely to happen there in the next 13 years or so.

Please let me know if you have any questions.

Thanks for asking for our input and for your help along the way.

Brian Martin, AICP, LEED AP
Associate Planner
Comprehensive Planning
City of Gresham
1333 N.W. Eastman Parkway, Second Floor
Gresham, OR 97030

v 503-618-2266
f 503-669-1376
brian.martin@GreshamOregon.gov
www.greshamoregon.gov

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Wednesday, March 07, 2012 10:14 AM
To: Martin, Brian; Armstrong, Tom; Tom Bouillion AICP; Charles BEASLEY
Cc: Maribeth Todd; Gerry Uba; Steve Kelley; Conrad, Larry; Erika Palmer (epalmer@ci.damascus.or.us); Gerry Uba
Subject: RE: Former LSI property TAZ forecasts

Brian:

Yes. It's in my lap to suggest a means of devising a mechanical means of reassigning part of Portland empl data to the LSI site. Tom is not in a position to suggest a shift. Brian, go ahead and assume an added allocation to the site and I'll work on subtracting an amount from Portland area TAZ's after I see what number you decide.

Also, I have a mix of "other" and "service" sector jobs which I have reassigned out of Damascus for a total of 1500 jobs. I'd like to assign these to your LSI site. I think this leaves Gresham still short about 300 industrial jobs?

I've copied the other county leads and Damascus so they are aware of this cross county adjustment. This I believe finishes up my piece on adjusting the Happy Valley and Damascus problem which I've alerted everyone about at the last TAZ GAMMA distribution county meetings.

Dennis

……

From: Martin, Brian [mailto:Brian.Martin@greshamoregon.gov]
Sent: Wednesday, March 07, 2012 8:28 AM
To: Dennis Yee
Subject: RE: Former LSI property TAZ forecasts

Heard anything from Portland?

Brian Martin, AICP, LEED AP
Associate Planner
Comprehensive Planning
City of Gresham

1333 N.W. Eastman Parkway, Second Floor
Gresham, OR 97030

v 503-618-2266
f 503-669-1376
brian.martin@GreshamOregon.gov
www.greshamoregon.gov

From: Dennis Yee
Sent: Friday, March 02, 2012 9:00 AM
To: Martin, Brian
Cc: Tom Bouillion AICP; Harker, Jonathan; Randel, Emily; Armstrong, Tom; 'Charles BEASLEY'; Gerry Uba
Subject: RE: Former LSI property TAZ forecasts

Brian,

Thanks for the heads up concerning the former LSI Logic site. I think it makes sense to see if there are other jurisdictions that may want to redistribute excess employment allocations, perhaps Portland is a likely donor for a couple thousand industrial and or service jobs which could be relocated to the former LSI site. At this point, we will need to confer with Tom and check in also with Chuck regarding this issue.

I am copying both Chuck and Tom Armstrong to inform them of this proposal. I'd like to hear from Portland or any other city that seems to be struggling with an excess allocation. I seem to remember Tom saying that perhaps the MetroScope machine allocation may be a bit aggressive in allocating too many jobs into some Portland TAZ's. Tom could you chime in on this topic?

Dennis Yee
Metro Economist

From: Martin, Brian [mailto:Brian.Martin@greshamoregon.gov]
Sent: Thursday, March 01, 2012 4:47 PM
To: Dennis Yee
Cc: Tom Bouillion AICP; Harker, Jonathan; Randel, Emily; Armstrong, Tom; 'Charles BEASLEY'; Gerry Uba
Subject: Former LSI property TAZ forecasts

Dennis,

The City of Gresham has identified a potential employment forecast adjustment needed for TAZ 559 and TAZ 560. This is the former LSI site now owned by the Port of Portland and referred to as the Vista Business Park.

The current GAMMA forecast shows a total of 886 “other” and “service” jobs on the two TAZs. The Port of Portland has estimated that an additional 2,768 direct jobs will be developed on the property by 2025.

Because that is a difference of about 1,800 jobs, it seems the two TAZs should have higher employment numbers, and the higher numbers would be difficult to achieve by just moving employment projections within Gresham’s boundaries.

I hope we can all work together to improve the forecast. Let me know if you have any questions or need more information.

Thanks.

Brian Martin, AICP, LEED AP
Associate Planner
Comprehensive Planning
City of Gresham

1333 N.W. Eastman Parkway, Second Floor
Gresham, OR 97030

v 503-618-2266
f 503-669-1376
brian.martin@GreshamOregon.gov
www.greshamoregon.gov

From: Dennis Yee
Sent: Thursday, April 05, 2012 1:47 PM
To: Michael Walter
Cc: Gerry Uba; Conrad, Larry
Subject: RE: Happy Valley 2025 land use review

I have received the email….will be working on it today to incorporate in a final TAZ tally.

Thanks

Dennis

……

From: Michael Walter [mailto:MichaelW@ci.happy-valley.or.us]
Sent: Thursday, April 05, 2012 1:45 PM
To: Dennis Yee
Cc: Conrad, Larry; Gerry Uba
Subject: RE: Happy Valley 2025 land use review

Please confirm receipt of these materials…

Michael D. Walter, AICP
ECONOMIC & COMMUNITY DEVELOPMENT DIRECTOR
503-783-3839
MICHAELW@CI.HAPPY-VALLEY.OR.US
Preserve. Serve. Enrich.

……

From: Reah Flisakowski [mailto:rlf@dksassociates.com]
Sent: Thursday, April 05, 2012 12:22 PM
To: Dennis Yee
Cc: Michael Walter; Larry Conrad; gerry.uba@oregonmetro.gov
Subject: Re: Happy Valley 2025 land use review

This email is a resend of the email below with a much smaller attachment. The revisions are no longer comments in the table but shown in a new column.

Let me know if you have questions.

Dennis,

The proposed revisions to the 2025 land use for Happy Valley are attached. The household revisions are shown with comments in columns Q and W on the first tab. The employment revisions are shown with a comment in column I on the second tab.

Please let me know if you have any questions.

Thanks, Reah

--

WE ARE MOVING!
On April 2nd 2012 DKS Portland will be operating out of our new location at
720 SW Washington Street, Suite 500, Portland, OR 97205

Reah Flisakowski, PE
DKS Associates
P: 503.243.3500 | C: 503.473.3362
rlf@dksassociates.com

From: Dennis Yee
Sent: Monday, March 05, 2012 3:56 PM
To: Michael Walter, AICP Happy Valley; Erika Palmer
Cc: Gerry Uba; Maribeth Todd; Jim Cser; Conrad, Larry
Subject: REVISED Provisional 2025 TAZ Forecast Distributions - Happy Valley and Damascus only

All:

I have made the revisions to the TAZ allocations for jobs and households for Happy Valley and Damascus.

The Household (HH) TAZ forecast for the two cities reflects +4,000 more households sprinkled into Happy Valley TAZ's and a corresponding drop of 4,000 households from Damascus' set of TAZ's, for a net difference of zero

The Employment TAZ forecast has also been changed, reflecting a decrease of -1,500 jobs out of Damascus. These jobs are left unallocated and some fraction (or all) can be re-assigned to Happy Valley or elsewhere in the region. I did not re-assign the jobs to Happy Valley, although I am aware that some of these jobs may be expected to be redistributed to the TAZ with the Providence site. Happy Valley should feel free to add a few more jobs to go along with the added households as you see fit.

Finally, these new TAZ household (and job) allocations are still PROVISIONAL. I look forward to Happy Valley and Damascus in reviewing / editing the allocation and then returning your final estimates to Metro for us to incorporate into the next set of forecast years (2035/2045).

I will sending this info under separate email. If you do not receive the second email with the attachment, I am also placing a temporary file on the following ftp server location: ftp://ftp.oregonmetro.gov/pub/gm/drc/dennis/TAZAllocation/2025%20TAZ%20Forecast/. The file is

named: Revised GAMMA TAZ for HV & Damascus.xlsx. Please download the ftp file within the next 24 hours.

Regards,

Dennis Yee
Metro Chief Economist

Metro
600 NE Grand Av.
Portland, OR 97232-2736
(503) 797-1578
(503) 797-1909 (FAX)
dennis.yee@oregonmetro.gov

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Meeting Summary: Damascus and Happy Valley 2025 TAZ Forecast Distribution Reconciliation
February 21, 2012

Attendees: Steve Gaschler and Erika Palmer (Damascus); Matt Hastie (Damascus consultant); Mike Walter (Happy Valley); Larry Conrad (Clackamas County); Jennifer Donnelley (DLCD); Dennis Yee and Gerry Uba (Metro)

2025 Household Projections for Review/Discussion

Metro proposed shifting the household 2025 allocation to correct an error discovered in the TAZ modeling and forecasting assumption for Happy Valley. The final settlement between Metro, the county, and the cities was to shift/re-distribute 4,000 households in year 2025 from Damascus to Happy Valley. This re-distribution would carry forward through 2035/45 in addition to the continuance of future growth trends anticipated after 2025 using the adjusted lower base in Damascus and the higher adjusted base for Happy Valley.

Jurisdiction	Households	Suggestion/Decision
South Stafford	1,126	Move 500 out, and into Villebois
Canby	3,000	No change (defended by Larry)
Damascus	9,700	Move out 4,000 out, and into Happy Valley
S. Hillsboro (St. Mary's)	2,000	No action
Clackamas Co. - unallocated	1,500	TBD
Happy Valley		Put the 4,000 from Damascus

2025 Employment Projections for Review/Discussion

As a result of shifts in households, it was determined that the reduction of households out of Damascus would pull jobs out Damascus too. The rationale was that some fraction of jobs (i.e., 1500 total jobs) would not materialize as jobs with high affinity with household location choice would not locate in Damascus given the adjustment to a fewer number of households in 2025. The primary justification for both the shift in households and employment was that Damascus felt that the delay function assumed for infrastructure development was too optimistic in the model forecast. It was felt that infrastructure development would come later and stunting the 2025 growths for Damascus.

Jurisdiction	Employment	Suggestion/Decision
Damascus		Option 1: Move jobs from Damascus TAZs 827 and 831 to Happy Valley TAZs 801, 799 and 881 Option 2: Move 1500 jobs from Damascus to other TAZs in the region, such as the TAZs in Hillsboro

Next Step:

1) Metro will use the suggestions above to reallocate year 2025 households and employment
2) Metro will send the re-allocation result to County TAZ Forecast coordinator and Damascus and Happy Valley staff for review and final comment
3) County coordinator will meet with Damascus and Happy Valley staff to review the re-allocation
4) Damascus, Happy Valley and County will send their final comments to Metro
5) Damascus will use the 2011 Beta Forecast data as provisional/interim forecast for its planning work (BLI, TSP and Facility planning). They will update their analysis later this year when the revised 2035/45 Gamma TAZ forecast data becomes available.

From: Dennis Yee
Sent: Friday, February 17, 2012 11:45 AM
To: Matt Hastie; Gerry Uba; Ray Valone; Donnelly, Jennifer; 'Conrad, Larry (LarryC@co.clackamas.or.us)'; 'John Morgan (john@morgancps.com)'; 'Steve Gaschler (sgaschler@damascusoregon.gov)'
Subject: RE: Damascus Population discussion

The TAZ information is found at this ftp server:

ftp://ftp.oregonmetro.gov/dist/gm/TazAlloc2010/Midterm_review/TAZ_2025/

no passwords or logins needed. Just use your favorite browser to navigate to the location above and download the files.

Regards,

Dennis Yee

Metro Economist
503-797-1578

……

From: Matt Hastie [mailto:mhastie@angeloplanning.com]
Sent: Friday, February 17, 2012 9:15 AM
To: Gerry Uba; Ray Valone; Donnelly, Jennifer; 'Conrad, Larry (LarryC@co.clackamas.or.us)'; Dennis Yee; 'John Morgan (john@morgancps.com)'; 'Steve Gaschler (sgaschler@damascusoregon.gov)'
Subject: RE: Damascus Population discussion

I'm available from about 1:30 until 3 that afternoon if you want me to attend part of that meeting. Would that work? And in advance of the meeting would someone be able to send me whatever information you have that describes the current 20-year population forecast you are currently assuming? Thanks!

Matt

……

From: John Morgan [mailto:john@morgancps.com]
Sent: Thursday, February 16, 2012 8:18 PM
To: Gerry Uba
Cc: Ray Valone; Donnelly, Jennifer; Conrad, Larry(LarryC@co.clackamas.or.us); Dennis Yee; Steve Gaschler (sgaschler@damascusoregon.gov); Matt Hastie; Erika Palmer
Subject: Re: Damascus Population discussion

I will not be with you Tuesday as I'll be leading a training for the Eugene Planning Commission that day. You may have more fun.

Do well.

John

Sent from my iPhone

……

From: Gerry Uba [mailto:Gerry.Uba@oregonmetro.gov]
Sent: Thursday, February 16, 2012 5:41 PM
To: Ray Valone; Donnelly, Jennifer; 'Conrad, Larry (LarryC@co.clackamas.or.us)'; Dennis Yee; 'John Morgan (john@morgancps.com)'; 'Steve Gaschler (sgaschler@damascusoregon.gov)'; Matt Hastie
Subject: RE: Damascus Population discussion

That's right. We can use the same meeting to discuss all key concerns about the forecast distribution. Following is the meeting information:

February 21st
1:30 PM to 3:30 PM
Happy Valley City Hall offices

I will see you all next week.

Gerry

……

From: Ray Valone
Sent: Thursday, February 16, 2012 3:40 PM
To: Donnelly, Jennifer; 'Conrad, Larry (LarryC@co.clackamas.or.us)'; Dennis Yee; 'John Morgan (john@morgancps.com)'; 'Steve Gaschler (sgaschler@damascusoregon.gov)'; 'Matt Hastie'
Cc: Gerry Uba
Subject: RE: Damascus Population discussion
Importance: High

I just found out from Gerry Uba of our office – he is coordinating Metro's allocation of population – that there is a meeting scheduled for next Tuesday at 1:00 in Happy Valley for the both cities to iron out the final numbers. Invited attendees include Michael Walter, Larry Conrad, John Morgan, Steve Gaschler, Erika Palmer, Dennis Yee and Gerry. So, I suggest that Jennifer attend that meeting and we kill the two proverbial birds (in this case, I think it is one bird) with one meeting.

Gerry said he would have no problem with having Matt there as well and, if needed, maybe extend the meeting 30 minutes to work out the issues.

Ray

……

From: Michael Walter [mailto:MichaelW@ci.happy-valley.or.us]
Sent: Thursday, February 16, 2012 11:22 AM
To: Dennis Yee; Conrad, Larry
Cc: Gerry Uba; Maribeth Todd; John Morgan; Steve Gaschler; Erika Palmer
Subject: RE: Meeting to resolve TAZ allocation between Damascus and Happy Valley

When this was distributed and discussed at the previous meeting at the County, the numbers for Damascus/Happy Valley were described as "flubbed" and "wet clay". I'd hoped to see these tables with the "non-flubbed" numbers that we are supposed to make comments on.

Thanks for all your work on this "Hulkian" project (Gamma forecast—gamma rays – Bruce Banner – the Hulk). Ok, sorry, it's been a long week…

Regards,

Michael D. Walter, AICP
ECONOMIC & COMMUNITY DEVELOPMENT DIRECTOR
503-783-3839
MICHAELW@CI.HAPPY-VALLEY.OR.US
Preserve. Serve. Enrich.

the intended recipient, please send a reply e-mail to let the sender know of the error and destroy all copies of the original message.

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Thursday, February 16, 2012 8:20 AM
To: Dennis Yee; Erika Palmer; Michael Walter, AICP Happy Valley
Cc: Gerry Uba; Maribeth Todd; John Morgan; Steve Gaschler; Buehrig, Karen; Fritzie, Martha
Subject: RE: Meeting to resolve TAZ allocation between Damascus and Happy Valley
Importance: High

Good Morning –

Just a quick thought on this approach --

I am reluctant to move anything from Canby at this time – the county is starting a separate but parallel population coordination process with the 5 rural cities and this change would be premature without further discussion with the rural cities.

I think that between the 1400 unallocated households, some shifts from Damascus (which I assume they want to occur) and from Pete's Mountain -- we can make the 2500 fairly easily.

Larry Conrad
Principal Transportation Planner
(v) 503.742.4539
larrycon@co.clackamas.or.us

''It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so.''

Mark Twain

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Wednesday, February 15, 2012 10:45 AM
To: Erika Palmer; Conrad, Larry; Michael Walter
Cc: Gerry Uba; Maribeth Todd; John Morgan; Steve Gaschler
Subject: RE: Meeting to resolve TAZ allocation between Damascus and Happy Valley

Mike: You mentioned earlier that you wanting more information about a secondary scenario. I have laid out a recommendation (please see email thread below) on how we might agree to shift household TAZ distributions into Happy Valley. Is what I sent out (see my message below) sufficient information or were you thinking about something more specific to help with discussions?

All: I'm trying to think about what info might be useful, so please send me your questions or request for info and I'll do my best to prepare the data ahead of the meeting on the 21st.

Update: I spoke at length with Hillsboro about shifting a few hundred households from South Hillsboro (aka St. Mary's properties) into Happy Valley. I think I want to nix that suggestion and go with shifting the approximate 1,400 "unallocated households" in Clackamas county all into Happy Valley in addition to some of the other suggestions.

Regards,

Dennis Yee
Metro Economist
503-612-9532
…….

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Tuesday, February 14, 2012 1:21 PM
To: Erika Palmer; Conrad, Larry; Michael Walter, AICP Happy Valley
Cc: Gerry Uba; Maribeth Todd; John Morgan; Steve Gaschler
Subject: RE: Meeting to resolve TAZ allocation between Damascus and Happy Valley

All:

I haven't heard from everyone regarding availability, but February 21st seems like a good day for all who have replied.

Tentatively let's plan to meet:

February 21st
1:30 PM to 3 PM
Happy Valley City Hall offices

The agenda will be to agree on an adjustment algorithm for fixing the Happy Valley TAZ distribution.

After correcting for an incorrect initial construction costs for Happy Valley, the corrected scenario suggests the following shift of households from around the region for the year 2025 TAZ distribution. In this correction, Happy Valley grows more rapidly – at least through year 2025.

My proposal is to:

Add/distribute +2,500 more households to Happy Valley TAZ's

Subtract:
-500 from Canby
-500 from area below Stafford/I 205/east of Wilsonville outside city limits
-1,000 from Damascus area TAZ's
-500 from St. Mary's/south Hillsboro expansion area (will have to coordinate with Hillsboro too or forgo this and assign from the unallocated households in Clackamas, which totals to about 1,000 households)

The model actually shifts households from practically everywhere around the region, but the above listed locations are where the model seems to estimate the highest places where the changes should happen from.

Regards,

Dennis

……..

From: Dennis Yee
Sent: Monday, February 13, 2012 2:33 PM
To: Conrad, Larry; Erika Palmer (epalmer@ci.damascus.or.us); Michael Walter, AICP Happy Valley
Cc: Gerry Uba; Maribeth Todd
Subject: Meeting to resolve TAZ allocation between Damascus and Happy Valley

All:
Here's a few potential meeting dates to discuss and resolve issues. . .please invite anyone else from your city that should participate.

I propose meeting in Happy Valley city hall for about an hour to 90 minutes on this matter.

Here' my availability. Will any of these times work for you all? Please indicate your availability.

Thursday 16th 9 to 5
Friday 17th 9 to 5
Monday 20th 9 to noon
Tuesday 21st 9 to 5
Wednesday 22nd 2 to 5
Thursday 23rd 3 to 5
Friday 24th 2 to 5

Mike: okay to meet at city hall?

Dennis Yee

CITY OF HILLSBORO

Distribution Review and Adjustments Completed (April 18, 2012)

From: Doug Miller [mailto:dougm@ci.hillsboro.or.us]
Sent: Wednesday, April 18, 2012 1:10 PM
To: Dennis Yee
Subject: RE: TAZ Allocations

Perfect – thanks!

Doug

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Wednesday, April 18, 2012 1:06 PM
To: Doug Miller
Subject: RE: TAZ Allocations

I think we are good to go. We are adding 797 more units to the total cap. This was per your data.

d

From: Doug Miller [mailto:dougm@ci.hillsboro.or.us]
Sent: Wednesday, April 18, 2012 11:33 AM
To: Dennis Yee
Subject: TAZ Allocations

Hi Dennis,

Ali mentioned that you had called her last Friday to ask about the additional capacity for the upzone in the Orenco Station area. Can you tell me what figure she provided so that I can make sure it ties to my data?

Doug

From: Doug Miller [mailto:dougm@ci.hillsboro.or.us]
Sent: Tuesday, April 17, 2012 4:20 PM
To: Dennis Yee
Subject: 2045 Capacity Adjustments

Attachments: 2045 Adjustments to Metro_Final_updates_41712.xlsx; 2010 TAZ with NoHi Concept Plan_Traffic_Modeling.pdf

Hi Dennis,

The adjustment to the 2045 capacity for TAZ 1275 I sent you last week was not correct. Per the attached Urban Reserves pre-concept plan, the capacity for #1275 should be 1025 DUs which would require an adjustment of 1020 DUs. In addition, TAZ #1275 has a 2045 capacity of 2291 per the pre-concept plan, requiring an adjustment of 2291 DUs.

Doug

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Thursday, April 05, 2012 12:59 PM
To: Doug Miller
Cc: Steve Kelley
Subject: RE: TAZ Allocation Meeting

Doug: Let me sync up with Steve's availability first.

Steve: What's your availability?

Tuesday or Wednesday look good. I can take the train out to your place.

Dennis

.....
From: Doug Miller [mailto:dougm@ci.hillsboro.or.us]
Sent: Thursday, April 05, 2012 12:33 PM
To: Dennis Yee
Subject: TAZ Allocation Meeting

Hi Dennis,

I just left a phone message that I will not be able to make it to the meeting in Beaverton tomorrow afternoon. We need to reschedule for next week to meet for a discussion on this matter between Metro and the City of Hillsboro alone. We could meet at the Metro office or you can come to our office. Let me know which you prefer.

Doug Miller
Urban Planner II - GIS
City of Hillsboro
503-681-6231

From: Doug Miller [mailto:dougm@ci.hillsboro.or.us]
Sent: Thursday, March 29, 2012 4:51 PM
To: Dennis Yee
Cc: Steve Kelley; Gerry Uba
Subject: 2025 TAZ Allocation Adjustments

Attachment: Hillsboro Final Gamma Adjustments to Metro.xlsx (22kb)

Hi Dennis,

Attached is out adjustments to the 2025 TAZ jobs and HH allocations in Hillsboro and our current UGB and Urban Reserves. The spreadsheet has separate tabs for jobs and HHs. We allocated jobs between TAZs and kept to the control total. However, on the HH side, we came up short by 5,811 households. Steve Kelley at Washington County told me he thinks that he has over-allocated unincorporated areas TAZs with enough households to fill our gap.

Doug Miller
Urban Planner II - GIS
City of Hillsboro
503-681-6231

From: Steve Kelley [mailto:Steve_Kelley@co.washington.or.us]
Sent: Tuesday, February 21, 2012 11:59 AM
To: Dennis Yee; Doug Miller; Alwin Turiel
Cc: Gerry Uba; Maribeth Todd
Subject: RE: Amberglen 2025 HH distribution

Dennis & Ali:

I'm OK with shifting jobs from the unincorporated areas to our Centers, but only in cases where the unincorp. TAZ's seem high for the allocated timeframe.
It would not make much sense to shift growth among TAZ's within a given Employment Zone if the collective growth of the entire zone appears too low.
At the next level, we could be shifting between Employment Zones (EZ's) within Wash. Co., as long as such shifts would not be under-allocating the 'donor' EZ.

As we work toward a final set of allocations for 2025, we may see a variety of areas requiring some level of 'adjustment'. Again, I'm comfortable with any adjustments that make sense based upon historic and recent development trends and remaining zoned capacities.

Given that we are only at 2025, and Washington County seems to have ample jobs capacity to a point well beyond that time, we should not need to worry about our employment allocations. On the other hand, I am concerned about our housing capacities (especially single family) - even for the mid-term allocations.

Steve

.....
From: Richard Walker
Sent: Sunday, February 19, 2012 10:06 PM
To: Alwin Turiel; Dennis Yee; Doug Miller; Steve Kelley; Gerry Uba
Cc: Don Odermott; Patrick Ribellia
Subject: RE: Hillsboro Jobs Base Estimate

alwin .....

I can explain this to you more effectively via phone. Time does not permit a detailed written response. Are you available tuesday morning for a chat?

But for now, I guarantee that this characteristic does not affect the number of trips.

.....dick w

From: Alwin Turiel [alwint@ci.hillsboro.or.us]
Sent: Friday, February 17, 2012 5:15 PM
To: Richard Walker; Dennis Yee; Doug Miller; Steve Kelley; Gerry Uba
Cc: Don Odermott; Patrick Ribellia
Subject: RE: Hillsboro Jobs Base Estimate

Dick – When you explain that "***employment serves as a "size variable" to rate the relative attractiveness of potential destinations***" does that mean a kind of gravity modeling is being used to attract employment trips from origins (e.g.,household locations)? If I understood that correctly, then would 1,500 to 1,700 fewer jobs in an area significantly affect the traffic generation for that area (multiple TAZs, but in proximity to each other)? That's the order of magnitude I'm concerned about.

Per the information our folks plugged into the data sent back to you, Intel had 12,709 total employees in Hillsboro in 2011 – YET IN THE SAME YEAR INTEL's EcoNW report cited the company's employment as 15,150 in Washington County. Subtracting the reported 775 employees at the Aloha plant, that would be 14,375 in the city of Hillsboro – or 1,666 MORE than the total reported based on the survey work city staff did. I did a little cross checking this afternoon and am confident Intel employment has not declined over the past three years.

Thanks for your patience in explaining this to me Dick and Dennis!
Ali Turiel

……
From: Alwin Turiel [mailto:alwint@ci.hillsboro.or.us]
Sent: Friday, February 17, 2012 4:52 PM
To: Dennis Yee; Doug Miller; Steve Kelley; Gerry Uba
Cc: Don Odermott; Patrick Ribellia; Richard Walker
Subject: RE: Hillsboro Jobs Base Estimate

Thanks for the explanation Dennis. It's helpful to understand the inputs more thoroughly. While I understand the dilemma this presents for the model structure, the bottom line question remains. Are we somehow undercounting the actual (real) number of employees in our industrial areas, and if we are, what does that mean for base year trip generation as well as future estimates of employment growth in our industrial area (which build off the base year)?

Have a good three-day weekend.
Ali

……
From: Dennis Yee
Sent: Friday, February 17, 2012 3:15 PM
To: Doug Miller; Alwin Turiel; Steve Kelley
Cc: Gerry Uba; Maribeth Todd
Subject: Amberglen 2025 HH distribution

All:

Depending on the perception of how "light" the allocation is for the TAZ's that approximate Amberglen, my suggestion is to assign part of the "unallocated dwelling units" in UIA Washington county (please reference Gamma_TAZ Forecast_report_2025.xlsx, tab sheet 2025 HH by City) to TAZ's 1288 to 1292.

Presently, the 2025 TAZ spreadsheet shows an average absorption rate of 8.5 percent utilized in the Amberglen TAZ's. Assigning 1,000 or so more units (from the Washington UIA + Hillsboro's unallocated of 255 units) into the Amberglen TAZ's brings the absorption rate up to 25%. This would reflect the increase in development posited by two developers who have indicated a desire to develop the area in the near term.

Also, assigning 1,000 more units would raise the overall Hillsboro city 2025 absorption rate to 41% from 33%. All-in-all, this would be my suggestion.

After you all have had a chance to further review the data, all parties concerned should convene to hammer out the details before the end of March 30th. I look forward to your future review comments.

Thanks all for working on this issue.

Regards,

Dennis Yee
Metro Chief Economist

…….
From: Richard Walker
Sent: Friday, February 17, 2012 1:12 PM
To: Dennis Yee; Doug Miller; Alwin Turiel; Steve Kelley; Gerry Uba
Cc: Don Odermott; Patrick Ribellia
Subject: RE: Hillsboro Jobs Base Estimate

I wish to add a few comments regarding the impact of employment in the travel demand model. But first, be assured that ***trips are not reduced due to the BEA to BLS relationship.***

The number of trips made in the region are linked to the attributes of households (number of workers, HH size, income, presence of children, etc.). Given these number of trips, employment serves as a "size variable" to rate the relative attractiveness of potential destinations. Since all employment is expressed in BLS terms, the relativity of the attractiveness remains somewhat consistent.

…….dick walker, manager of modeling and forecasting

From: Dennis Yee
Sent: Friday, February 17, 2012 12:55 PM
To: Doug Miller; Alwin Turiel; Steve Kelley; Gerry Uba
Cc: Don Odermott; Patrick Ribellia; Richard Walker
Subject: RE: Hillsboro Jobs Base Estimate

Alwin:

Per our conversation, allow me to summarize the current position on Metro's TAZ employment data/forecast.

1. The 2010 employment data is derived from covered nonfarm wage and salary data (aka QCEW or aka ES202)
2. Metro geocodes / maps the QCEW employment data to individual tax lots and zonal sums the employment data to city level for tabular display purposes. We feel that the geocoding of the QCEW data we receive from the state is the most accurate and consistent data source of this type.
3. Covered means employees/employers who pay into unemployment insurance for the worker
4. Cities (including Hillsboro) have reviewed and acknowledged the 2010 base year data (reviews were completed early 2011); we are now using this data for TAZ modeling and forecasting purposes
5. The 2010 TAZ employment forecast data is wage and salary establishment jobs only – meaning they **exclude** from the count such workers as proprietors, (i.e. self employment which include some consultants), unpaid workers, farm workers, workers who are headquartered elsewhere but commute to Hillsboro to work sometimes.
6. Metro's transportation demand model is calibrated to accept QCEW employment data for TAZ forecasting, QCEW data is distinguished as not CENSUS worker data (which is based on residency), nor is the travel demand model calibrated anymore to BEA employment (place of work data, which includes a self employment component).
7. BEA data is difficult to use because the smallest geographic unit for BEA employment data is county-level. Moreover, BEA employment data does not divide the self employment by industry, it is all lumped together as one undifferentiated employment category.
8. We could not easily switch to another employment definition at this time for the TAZ forecast as we would not have the resources to adjust our models quickly and effectively. Any switch in employment definitions would include a much longer conversation to weigh the pros and cons of switching.
9. Going forward, Metro will take care to label any table, spreadsheet, map, or chart characterizing the employment data as nonfarm wage and salary employment, excludes self employment
10. I have copied Richard "Dick" Walker as he may have additional comments regarding the behavioral characteristics of employment and the transportation demand model

Regards,

Dennis Yee
Metro Economist

……

From: Doug Miller [mailto:dougm@ci.hillsboro.or.us]
Sent: Thursday, February 16, 2012 4:56 PM

To: Alwin Turiel; Dennis Yee; Steve Kelley; Gerry Uba
Cc: Don Odermott; Patrick Ribellia
Subject: RE: Hillsboro Jobs Base Estimate

Just to clarify, the City of Hillsboro employment numbers that were submitted to Metro for the 2010 TAZ base year update included adjustments for the actual number of employees by site, including temp and contract employees. We got a great response to our request for accurate employment figures from our top employers. Most of them are in hi-tech industries.

Doug Miller
Urban Planner II - GIS
City of Hillsboro
503-681-6231

From: Alwin Turiel
Sent: Thursday, February 16, 2012 4:09 PM
To: Dennis Yee; Steve Kelley; Gerry Uba
Cc: Doug Miller; Don Odermott; Patrick Ribellia
Subject: Hillsboro Jobs Base Estimate

Hello gentlemen,
Please see the email string below regarding the difference between Metro base year jobs allocations by city and the estimates found in the city of Hillsboro's draft Economic Opportunities Analysis (circa 2008). This is the issue I spoke with Dennis about after the Washington County allocations meeting yesterday.

Is there something we can do about this issue in the employment data (either now for the RTP work or later when DRC "refines" the data further for the next urban growth report)? I am a bit troubled that whatever coefficients Metro may be using to account for non-covered jobs in the region may not reflect the real picture in some of our high-tech oriented industrial areas (e.g., Hillsboro, Wilsonville, Tualatin).

If there is someone else at Metro I should contact about this could you please let me know?

Thanks!
Ali Turiel
City of Hillsboro
503.681.6156

From: wer@johnson-reid.com [mailto:wer@johnson-reid.com]
Sent: Friday, September 30, 2011 10:51 AM
To: Alwin Turiel
Cc: Colin Cooper
Subject: Re: Employees vs. jobs in Hillsboro

Hi Ali.

Indeed, Washington County has an unusually high rate of total employment to covered for the reason you cited: Intel and other high-tech that are R&D project-based rather than sustained assembly line jobs. But in Beaverton for instance, Nike/athletic wear does the same basic thing

with their R&D, design.

Thank you and enjoy your weekend!

Bill

Sent via BlackBerry from T-Mobile

From: Alwin Turiel <alwint@ci.hillsboro.or.us>
Date: Fri, 30 Sep 2011 10:20:21 -0700
To: wer@johnson-reid.com<wer@johnson-reid.com>
Cc: Brad Choi<bradc@ci.hillsboro.or.us>; Doug Miller<dougm@ci.hillsboro.or.us>; Colin Cooper<colinc@ci.hillsboro.or.us>
Subject: RE: Employees vs. jobs in Hillsboro

Thanks Bill!

That will give us a ballpark for now. I must admit I was surprised back in 2008 when I saw the original calculations in the draft EOA that the city's non-covered employment was estimated to **be 16% of the total jobs base**. Riffing off your comment about different industries having different ratios of sole proprietor/self-employed workers, does the 16% include Intel's "green badge" workers (contractors)? Given national trends, it would be interesting to know at some point whether non-covered employment has increased in Hillsboro and Washington County during the Great Recession (aka, Jobless Recovery).

Hope you have a lovely weekend,
Ali

Hi Ali.

It turns out the easiest answer is to multiply the City's average "total" jobs adjustment by the 2010 number from Metro.

That is to say:

58578 x (71212 ÷ 60884) = 68511

That is a rough estimate of course. When we calc'd Hillsboro's total employment by adjusting each broad industry ES202 employment number by a sole proprietor/self-employed/total employment factor. What I just did was rather blunt compared to our original analysis.

Without seeing the Metro numbers, it would be difficult to assess industry-specific adjustment of course. It would be interesting though because each industry has adjusted to this terrible economy differently. That means the "total employment" adjustment will have changed.

I hope that helps you Ali. If we had the detailed industry numbers and knew Metro's own adjustments we could do a better but fairly fast adjustment.

Thanks,

Bill

Sent via BlackBerry from T-Mobile

From: Alwin Turiel <alwint@ci.hillsboro.or.us>
Date: Wed, 28 Sep 2011 13:24:06 -0700
To: wer@johnson-reid.com<wer@johnson-reid.com>
Cc: Doug Miller<dougm@ci.hillsboro.or.us>
Subject: Employees vs. jobs in Hillsboro

Hi Bill,

Hope things are going well for you these days. I was wondering if you could answer a question that's come up regarding the Hillsboro jobs count found in the 2009 EOA you guys did for us and recent employees working in the city numbers being used by Metro and our staff for transportation modeling, etc. The Metro data is ES202 based (with some Metro adjustments apparently) and establishes 58,578 employees working in the city for the 2010 base year. Doug Miller has confirmed the "employees" number is NOT the census based employed persons number for the city 2010 census area.

The 2009 EOA lists the 2006 base year "total employment" in the city as 71,212 (page 31) and cites ES 202 data as the source of 60,884 of those employee jobs. Can you help us understand how this gap might translate to a comparable "total jobs" now in the city?

Thanks!
Ali
681.6156

"What lies behind us, and what lies before us, are tiny matters compared to what lies within us."
– Oliver Wendell Holmes


This email was sent to you using 100% recycled electrons

CITY OF KING CITY

Distribution Review and Adjustments Completed (April 5, 2012)

From: Dennis Yee
Sent: Thursday, April 05, 2012 3:18 PM
To: Liden, Keith S.
Cc: Dave Wells; Gerry Uba; Steve Kelley
Subject: RE: King City TAZ Allocations

Keith:

I will take the 10% into advisement and adjust accordingly.

With respect to 1050, we implemented a new redevelopment model aided by comments and other reviewers which set a very aggressive approach for estimating potential infill or redevelopment capacity, hence the 33 units. We will scale back this figure to zero capacity.

With 1051, straddles part of the city and unincorporated Washington county both partly inside and outside the UGB, which is why we carry so much capacity in this TAZ. The city if it does not annex in coming years the entirety of the UGB reserve in this TAZ will of course yield much lower capacity estimates. We are comfortable with this estimate as of now, but will consult Washington County for the long term forecast, in which this area will be added to the UGB and accordingly receive greater development density.

With 1052, we will scale back capacity and housing unit growth by 10%.

Thanks for your input at this time for the midterm 2025 TAZ distributions.

Regards,

Dennis Yee
Metro Economist

From: Liden, Keith S. [mailto:Liden@pbworld.com]
Sent: Thursday, April 05, 2012 3:04 PM
To: Dennis Yee
Cc: Dave Wells; Gerry Uba; Steve Kelley
Subject: RE: King City TAZ Allocations

Dennis,

I've discussed your TAZ household estimates with Dave Wells. We're comfortable with your general approach and overall, the numbers look reasonable. We believe that you really need to consider TAZ 1051 and 1052 as part of KC because TAZ 1050 only represents about 50% of the city's current land area. Our comments by TAZ for HH by 2025:

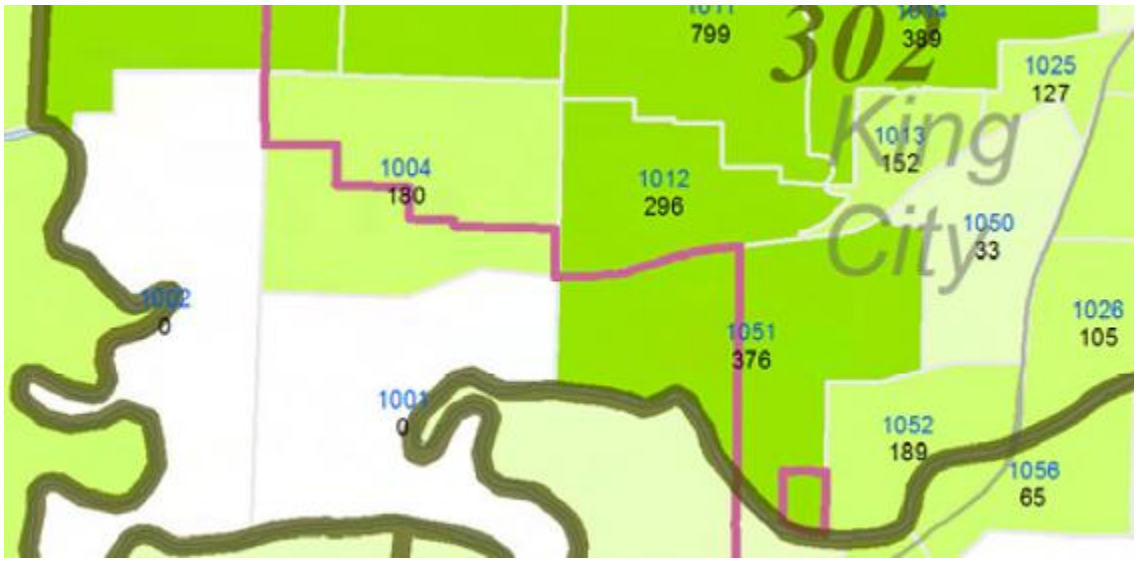
- **1050** – 33 would be high without any changes in zoning, because all residential land in this TAZ is currently developed. However, if Metro and the city decide to get serious about implementing the Metro 2040 town center concept with higher densities and mixed-use near 99W in what is our LC (Limited Commercial) zone, then 33 units would be pretty low.
- **1051** – 376 would be a little high if no annexation occurs. We estimate this area has another 250± lots, which are either platted or pending. With development of remaining underdeveloped parcels and a modest amount of annexation, 376 could be a very reasonable assumption. While the city has no immediate interest in annexing west of 137th Avenue, modest adjustment of the UGB and annexation beyond 137th is something the city would like the ability to entertain prior to 2025 should the need arise. Though we're not focused on this now, your estimate of 2,618 after 2035 for this TAZ seems high. The city's concept plan (in coordination with Washington County) for the area bounded by 137th, Beef Bend Rd., Roy Rogers Rd. and the Tualatin R. flood plain/wildlife refuge arrived at an estimate of 3,180 units assuming 10 du/ac). 2,618 for ½ of that area appears pretty high.
- **1052** - 189 seems high. There is only one significant undeveloped property in this TAZ, and the current multi-family zoning would allow 130-140 units (Lindquist property on the east side of the TAZ). Tualatin River flood plain, wetlands, and ODOT access issues will probably continue to limit future development potential. The properties in the western half of the TAZ are in Washington County and are mostly developed.

In summary, we agree with your household estimates for 2025 if they are intended to reflect maximum development possible. Given the considerations noted above and our feeling that we can't expect 100% of available properties to develop, we recommend reducing the King City household estimate by approximately 10%.

Please feel free to contact me if you need any further clarification. Thanks.

Keith S. Liden, AICP
Lead Planner, PlaceMaking

Parsons Brinckerhoff
400 SW 6th Avenue, Suite 802, Portland, OR 97204
Direct: 503.478.2348/ Office: 503.274.8772
www.pbworld.com/pbplacemaking



From: Liden, Keith S. [mailto:Liden@pbworld.com]
Sent: Thursday, April 05, 2012 1:37 PM
To: Dennis Yee
Cc: Gerry Uba
Subject: RE: King City TAZ Allocations

Thanks, Dennis. I'll discuss this with Dave Wells, City Manager, and get back to you within the next couple of days.

Keith S. Liden, AICP
Lead Planner, PlaceMaking

Parsons Brinckerhoff
400 SW 6th Avenue, Suite 802, Portland, OR 97204
Direct: 503.478.2348/ Office: 503.274.8772
www.pbworld.com/pbplacemaking

From: Dennis Yee
Sent: Thursday, April 05, 2012 12:17 PM
To: Gerry Uba; Liden, Keith S.
Cc: Dave Wells; Gerry Uba
Subject: RE: King City TAZ Allocations

Hi Keith:

For the midterm 2025 distribution of households in the TAZ adjacent to King City and in the reserves that's just west of the city, it's not surprising that you see a "lower" number of expected household units assigned. It is because the reserve has yet to be assigned into the UGB by the year 2025. We assume a later year for the urban reserve to enter and get developed, so the timing is a bit delayed for this TAZ due to the delay in the reserves capacity. Parts of TAZ 1051 lie inside and outside the Metro UGB. When the Reserve enters the UGB by 2035, we should see more growth assigned, but not yet in year 2025. As the model projects growth in 5 year increments, it's very likely that full build out won't appear in the TAZ's that intersect with the reserves until 2040 or later.

Lastly, we've generally assigned TAZ 1050 to approximate King City, but Steve Kelley with Washington county and you may look at additional adjacent TAZ's. Anyhow, TAZ 1050 shows little capacity (33 units), in which the 2025 TAZ forecast shows 2010 HH = 955 and 2025 HH = 988, 100% of estimated units built out.

Here's what we are seeing for adjacent TAZ's to King City:

	2010 HH	2025HH	2025 DU Capacity assumed
1050	955	988	33
1051	1091	1467	376 (capacity jumps to 2,618 units after 2035 when the reserves is added to the UGB)
1052	700	889	224

Does this household forecast look acceptable? You mentioned it might be a bit aggressive for King City. If so, how much would you like to reduce it by? 10%, 20%?

Regards,

Dennis Yee
Metro Economist

From: Gerry Uba
Sent: Thursday, April 05, 2012 11:15 AM
To: Dennis Yee
Subject: FW: King City TAZ Allocations
Importance: High

Hello Dennis,

Per my email to Keith that I copied you, please call Keith to discuss and wrap up King City's TAZ distribution. See also the attached map he sent. Thanks

Gerry

……

From: Gerry Uba
Sent: Thursday, April 05, 2012 11:12 AM
To: 'Liden, Keith S.'
Cc: Dave Wells; Dennis Yee
Subject: RE: King City TAZ Allocations

Hello Keith,

Thanks for getting back to me quickly. I'm happy that you are consulting with Dave on this subject and has shared your thoughts with Steve. I am copying our Chief Economist, Dennis Yee, on this email. Since we are running behind on the project schedule (local governments comments deadline was March 30), Dennis will call you soon to discuss any concerns that you and Dave may have on the 2025 mid-term forecast distribution so as to wrap up King City numbers. Thanks again.

Gerry

Regional Growth Distribution Coordinator
Metro
gerry.uba@oregonmetro.gov

……

From: Liden, Keith S. [mailto:Liden@pbworld.com]
Sent: Thursday, April 05, 2012 8:26 AM
To: Gerry Uba

Cc: Dave Wells
Subject: King City TAZ Allocations

Gerry,

Thanks for your message about King City's reaction to the TAZ allocations. Dave Wells, City Manager, and I have reviewed this map (attached). As I read the map, Metro appears to be estimating an additional 598 dwelling units for the city and unincorporated area between 99W and around 150th. The amount for the area east of 131st may be a bit high, but the development in the UR area to the west may be on the low side based on what the city estimated as part of a concept planning exercise we undertook in coordination with Washington County. I indicated to Dave that for general planning purposes, these numbers look reasonable to me. I passed this sentiment on to Steve Kelly at Washington Co. DLUT. However, we have not expressed an "official" city position regarding the estimates.

I'll give you a call a little later this morning, so I can have a better understanding about the estimates and what they potentially mean for the city. Thanks.

Keith S. Liden, AICP
Lead Planner, PlaceMaking

Parsons Brinckerhoff
400 SW 6th Avenue, Suite 802, Portland, OR 97204
Direct: 503.478.2348/ Office: 503.274.8772
www.pbworld.com/pbplacemaking

From: Egner, Dennis [mailto:degner@ci.oswego.or.us]
Sent: Wednesday, April 25, 2012 11:37 AM
To: Dennis Yee
Cc: Maribeth Todd; Gerry Uba
Subject: RE: Gamma Timing

Perfect – thank you

……

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Wednesday, April 25, 2012 9:25 AM
To: Egner, Dennis
Cc: Maribeth Todd; Gerry Uba
Subject: RE: Gamma Timing

Denny:

Here's the final disposition of your requested change by TAZ.

2025 TAZ EMPLOYMMENT

	RET	SER	OTH	TOTAL
1073	120	1165	1031	2316
1087	130	920	714	1764

I will be sending out final spreadsheets numbers for all regional TAZ's in coming days.

Regards,

Dennis

……

From: Dennis Yee
Sent: Thursday, April 05, 2012 2:04 PM
To: Egner, Dennis
Cc: Conrad, Larry; Gerry Uba
Subject: RE: LO staff comments on 2025 Forecasts and TAZ allocations

Denny:

Thank you for your comments on households and employment. We will make the adjustments of household units that you have recommended in your memo to Metro. We concur with your assessment that the city is largely built out especially in the SF urban neighborhoods, but as you may recall, the TAZ subcommittee opted for fairly aggressive capacity assumptions in an effort to eke out as much SF redevelopment (based on the oversize lot approach and the recalculation to eke out even more capacity

from tax lots with environmental constraints) supplies as might exist in the region. I'm noticing that our aggressive attempt at estimating SF capacity in region may be backfiring on the actual capacity estimates cities are comfortable with assuming as many suburban cities are finding our assumptions too high.

On the matter of jobs in LO, I see 2 edits to the 2025 TAZ allocations:

1) Add 200 more jobs to #1073 near the freeway on Boones Ferry
2) Subtract 500 jobs from the Marylhurst commercial area as listed in your memo to us. (I will work with other cities to re-assign the "overage"…. Into Happy Valley)

Thanks for your help.

Regards,

Dennis Yee
Metro Economist

……

From: Egner, Dennis [mailto:degner@ci.oswego.or.us]
Sent: Tuesday, March 27, 2012 4:16 PM
To: Dennis Yee
Cc: Conrad, Larry
Subject: LO staff comments on 2025 Forecasts and TAZ allocations

Dennis – Here are the Lake Oswego comments on the TAZ forecasts for 2025. Let me know if you have any questions.

Denny

Dennis Egner, AICP
Assistant Planning Director/Long Range Planning Manager
City of Lake Oswego
PO Box 369, Lake Oswego, 97034
503-697-6576

CITY OF MILWAUKIE

Distribution Review and Adjustments Completed (April 5, 2012)

From: Gerry Uba
Sent: Thursday, April 05, 2012 11:48 AM
To: 'Mangle, Katie'; Conrad, Larry
Cc: Alligood, Li; Dennis Yee
Subject: RE: 2035 Mid Term Forecast Comments Due March 30

Hello Katie,

Thanks very much for getting back to me with City of Milwaukie comment on the 2025 mid-term growth distribution at the TAZ level. We will contact you and other jurisdictions this summer to review and comment on the long-term (2030, 2035, 2040) distribution.

Best regards,

Gerry

Regional Growth Distribution Coordinator
Metro
gerry.uba@oregonmetro.gov

From: Mangle, Katie [mailto:MangleK@ci.milwaukie.or.us]
Sent: Thursday, April 05, 2012 10:05 AM
To: Conrad, Larry
Cc: Gerry Uba; Alligood, Li
Subject: RE: 2035 Mid Term Forecast Comments Due March 30

Hi Larry and Gerry,
My apologies for not writing last week, but this is to confirm that the City does not have any comments to submit on the forecast. We reviewed the files and find the numbers for Milwaukie to be adequate. We are not interested in receiving any of the extra housing unit allocations.

Please let me know if you have any specific questions you need feedback on.

Take care,
- Katie

Katie Mangle, Planning Director
City of Milwaukie
6101 SE Johnson Creek Blvd
Milwaukie, OR 97206

CITY OF OREGON CITY

Distribution Review and Adjustments Completed (April 17, 2012)

From: Dennis Yee
Sent: Tuesday, April 17, 2012 4:57 PM
To: Laura Terway
Cc: Gerry Uba
Subject: RE: Oregon City comments on 2025 Growth Distribution

Thank you Laura.

From: Laura Terway [mailto:lterway@ci.oregon-city.or.us]
Sent: Tuesday, April 17, 2012 4:50 PM
To: Gerry Uba
Cc: Conrad, Larry; Dennis Yee
Subject: RE: Oregon City comments on 2025 Growth Distribution

Gerry,
Oregon City does not have a significant concern with the data thus far. Thank you

Laura Terway, AICP
Planner
Planning Division
PO Box 3040
221 Molalla Avenue, Suite 200
Oregon City, Oregon 97045
7:30am-6pm Monday-Thursday and
by appointment on Friday
Phone: 503.496.1553
Fax: 503.722.3880
lterway@orcity.org

From: Laura Terway [mailto:lterway@ci.oregon-city.or.us]
Sent: Wednesday, April 11, 2012 12:07 PM
To: Gerry Uba
Subject: RE: Oregon City comments on 2025 Growth Distribution

Good afternoon,
You are at the top of my list, I am just waiting for one more manager at the City to sign off on the findings before we send you anything in writing. This should happen today or tomorrow.
-Laura

From: Gerry Uba
Sent: Wednesday, April 11, 2012 12:00 PM

To: Laura Terway (Lterway@orcity.org)
Cc: Tony Konkol (Tkonkol@orcity.org); Conrad, Larry; Dennis Yee
Subject: Oregon City comments on 2025 Growth Distribution

Hello Laura,

I have left you messages about getting the City of Oregon City comment on the 2025 mid-term growth distributions (at TAZ level) that were presented and reviewed with local governments in Clackamas County on February 9, 2012. The distribution was posted on the following FTP site for your further review.

ftp://ftp.oregonmetro.gov/dist/gm/TazAlloc2010/Midterm_review/TAZ_2025

As you know the deadline for comments was March 30, 2012. We received comments from more than 95% of local governments in the region.

If you are satisfied with the 2025 households and employment forecast distribution within your jurisdiction please email me to confirm to, otherwise email your concerns to me right away so we that we address them with the assistance of the county coordinator, Larry Conrad.

Thanks very much for your attention to this matter.

Gerry

Growth Distribution Project Coordinator
503-797-1737
Gerry.uba@oregonmetro.gov

CITY OF PORTLAND

Distribution Review and Adjustments Completed (April 6, 2012)

From: Armstrong, Tom [mailto:Tom.Armstrong@portlandoregon.gov]
Sent: Friday, April 06, 2012 3:10 PM
To: Dennis Yee; Gerry Uba
Subject: Portland 2025 TAZ adjustments

Thanks for your patience.

Here are some changes.

In general, Metroscope capacity is a little high in residential capacity in the Central City.

Also, have a residential and employment capacity issue up at the Sylvan/Zoo area.

Why is there is such a big decline in retail jobs in the Central City?

I shifted 400 jobs from TAZ 38 to TAZ 124 to account for the West Hayden Island jobs. Will add more jobs to West Hayden Island in 2035 to get to 650 jobs (total number we agreed with Port).

Some TAZs

From: Dennis Yee
Sent: Thursday, March 01, 2012 12:50 PM
To: Armstrong, Tom; 'Charles BEASLEY'; Gerry Uba
Subject: RE: TAZ ftp link

ftp://ftp.oregonmetro.gov/dist/gm/TazAlloc2010/Midterm_review/TAZ_2025/

From: Armstrong, Tom [mailto:Tom.Armstrong@portlandoregon.gov]
Sent: Thursday, March 01, 2012 12:48 PM
To: 'Charles BEASLEY'; Dennis Yee; Gerry Uba
Subject: TAZ ftp link

Please send me the link to ftp site with the 2025 data.

Thanks,
Tom

Tom Armstrong
Supervising Planner for Research and Analysis
Bureau of Planning and Sustainability
City of Portland
1900 SW Fourth Ave, 7th Floor
Portland, OR 97201
(503) 823-3527 (direct)

From: Dennis Yee
Sent: Thursday, February 23, 2012 3:22 PM
To: Armstrong, Tom
Cc: Gerry Uba; Chuck Beasley (charles.beasley@multco.us)
Subject: RE: 2025 allocation

Tom: I glanced at the HH TAZ allocations you list below.

Are your concerns a matter of estimating too much capacity and therefore the allocation is too high as a result of the apparent capacity assumption?

I see this particularly in TAZ 53, 54 and 96.

The redevelopment assumption for TAZ 296 seem aggressive. This was also noticed by Larry Conrad….4922 residential capacity seems steep. I suggest spreading the re-allocation to Ezones 106, 108 and 109?

Sellwood shows a lot of capacity and therefore, especially TAZ 230 receives a higher number of households due to available capacity.

It appears that Ezone 111 (Rocky Butte) doesn't receive much demand despite capacity available.

There's a bunch of capacity in St. John's, but overall very little demand seems to want to locate in this locale. Did we overestimate capacity?

There probably should be no housing capacity assigned to Swan Island (TAZ 163), but there seems to be a small sliver of MUR8 adjacent which is probably why we show small amount of res. capacity in TAZ 163. Those handful of household can be moved elsewhere within Ezone 117. Is it the same concern for TAZ 348 and 330? We show limited SF zoning which is probably why we assign a small amount of res. growth in these 2 TAZ's.

I will await your more detailed / in -depth explanation.

Dennis

From: Armstrong, Tom [mailto:Tom.Armstrong@portlandoregon.gov]
Sent: Wednesday, February 22, 2012 4:09 PM
To: Dennis Yee
Subject: 2025 allocation

Dennis -

Here is a list of residential TAZs that give me some concern:

West Hills - 53, 54, 55, 56
SW - 96
Sandy Blvd - 296

Eastmoreland - 237, 238
Sellwood - 230, 231
Rocky Butte - 341, 352
St. Johns - 155, 156, 159, 160 ,161
Industrial areas - 163, 348, 330

Employment
TAZs 55, 59, 127, 367

It will be next week before I can dig deep into what I think is going on with these TAZs.

Tom

Tom Armstrong
Supervising Planner for Research and Analysis
Bureau of Planning and Sustainability
City of Portland
1900 SW Fourth Ave, 7th Floor
Portland, OR 97201
(503) 823-3527 (direct)

West Hayden Island

From: Bouillion, Tom [mailto:Tom.Bouillion@portofportland.com]
Sent: Tuesday, March 20, 2012 4:54 PM
To: Dennis Yee
Cc: 'Armstrong, Tom'; 'Martin, Brian'; Chuck Beasley (charles.beasley@multco.us); Gerry Uba; Maribeth Todd; 'Rich Faith'; 'nesbittl@ci.fairview.or.us'; Boren, John
Subject: Port of Portland TAZ Comments-Multnomah Co.

Hi Dennis:

Please see the attached comments from the Port of Portland regarding the 2025 Gamma TAZ forecast. Please let me know if you have any questions.

Thanks,

Tom

Tom Bouillion, AICP
Planning Manager
Marine & Industrial Development
Port of Portland
(503) 415-6615

……

From: Bouillion, Tom [mailto:Tom.Bouillion@portofportland.com]
Sent: Wednesday, February 22, 2012 5:13 PM
To: 'Armstrong, Tom'; Dennis Yee; Chuck Beasley (charles.beasley@multco.us)
Cc: Gerry Uba; Maribeth Todd
Subject: RE: West Hayden Island

The attached memo p.7 estimates 1,371 direct jobs, based on a development footprint of 350 acres. Since the current assumed development footprint is 300 acres, the pro-rated direct number of jobs by 2035 is estimated at 1,170.

This memo is also posted on the City of Portland Bureau of Planning and Sustainability website:

http://www.portlandonline.com/bps/index.cfm?c=53715&

it is called the Estimates of Port Costs and Development, memo by Port of Portland.

Let me know if you have questions or need additional information.

Thanks,

Tom

Tom Bouillion, AICP
Planning Manager
Marine & Industrial Development
Port of Portland
(503) 415-6615

From: Bouillion, Tom [mailto:Tom.Bouillion@portofportland.com]
Sent: Friday, February 17, 2012 3:35 PM
To: 'Armstrong, Tom'; Dennis Yee; Chuck Beasley (charles.beasley@multco.us)
Cc: Gerry Uba; Maribeth Todd
Subject: RE: West Hayden Island

I should have an employment forecast available to distribute on Tuesday.

Thanks,

-Tom

Tom Bouillion, AICP
Planning Manager
Marine & Industrial Development
Port of Portland
(503) 415-6615

From: Dennis Yee
Sent: Friday, February 17, 2012 3:35 PM
To: Armstrong, Tom; Tom Bouillion; Chuck Beasley (charles.beasley@multco.us)
Cc: Gerry Uba; Maribeth Todd
Subject: RE: West Hayden Island

I understand that, but I recall that for future year 2030, 35 and beyond, in order to get the "proper" allocation, we should show to the model , some amount of industrial capacity. I thought 300 per City Council recommendation would do the "trick" so to speak for future year allocations.

d

From: Armstrong, Tom [mailto:Tom.Armstrong@portlandoregon.gov]
Sent: Friday, February 17, 2012 3:33 PM
To: Dennis Yee; Tom Bouillion; Chuck Beasley (charles.beasley@multco.us)
Cc: Gerry Uba; Maribeth Todd
Subject: RE: West Hayden Island

No, we agreed to shift employment within the ezone, but not add capacity. Tom Bouillion is working on an employment estimate that I will incorporate into the 2025 TAZ distribution.

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Friday, February 17, 2012 3:31 PM
To: Armstrong, Tom; Tom Bouillion; Chuck Beasley (charles.beasley@multco.us)
Cc: Gerry Uba; Maribeth Todd
Subject: West Hayden Island

All:

I'm following up on our conversation concerning W. Hayden Island and to confirm agreement on what we should assume as a change to capacity for West Hayden Island.

As I recall, we will assume thru 2035 the following added capacity of 300 industrial acres and carry this assumption through the long term portion of the TAZ forecast.

Tom A: Please be sure to include this recommendation in the Portland review of TAZ numbers and coordinated with Tom B. and that it is ok with Chuck.

Thank you all for your assistance.

Regards,

Dennis Yee
Metro Chief Economist

Metro
600 NE Grand Av.

Portland, OR 97232-2736
(503) 797-1578
(503) 797-1909 (FAX)
dennis.yee@oregonmetro.gov

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PORT OF PORTLAND

Box 3529, Portland, Oregon 97208
(503) 415-6615

MEMORANDUM from Planning

Date: March 20, 2012

To: Dennis Yee, Gerry Uba, Maribeth Todd, Brian Martin, Tom Armstrong, Charles Beasley, Lindsey Nesbitt, Rich Faith

From: Tom Bouillion and John Boren

Re: Port of Portland Comments on 2025 TAZ Gamma Forecast in Multnomah County

The following are comments from the Port of Portland regarding TAZ employment forecasts by Port operating area in Multnomah County.

Portland International Airport (PDX)

The TAZs that mainly comprise PDX include 138-140, 142, 145 and 146, which Metro estimates to have 9,528 employees. This has been previously identified as understating actual numbers by approximately 1,000-2,000 employees. Metro projects total employment to be 10,168 in 2025, representing a modest growth of only 6%. Last year 13.6 million passengers came through PDX. The median (50th percentile) forecast for 2025 is 22.6 million passengers based upon aviation demand forecast data from the Airport Futures Master Plan Update.[2] This represents a growth of 66% from 2010 to 2025.

Using PDX passengers as a proxy for growth, and higher starting base employment of 10,000 to 11,000 employees, total employment should be approximately 16,000 to 18,000 in 2025.

[2]Aviation Demand Forecast, PDF page 72,
http://www.pdxairportfutures.com/Documents/PDX_Airport_Ftrs_Avtn_Dmnd_Frcst.pdf

* TAZ 140 – Air Trans Center (741 total employment). Until recently the Horizon Maintenance Facility had over 1,000 employees. While Horizon announced the elimination of 100 positions in September 2010 due to reorganization with Alaska Air, the TAZ also includes FedEx, UPS and other air cargo related businesses. As a result, the total employment for TAZ 140 should be more than 741, likely over 1,000.
The 2025 total employment number of 748 represents no growth over a 15 year period which is not in line with cargo demand forecasts. Recent aviation demand forecasts show growth from approximately 280,000 tons of short tons of air cargo in 2010 to 560,000 tons in 2025 based upon the median (50th percentile) numbers.[3] This doubling of air cargo should result in a significant increase in employment, notwithstanding advances in automated cargo handling technology. Total employment in 2025 of about 1,500 would be more in line with the increased air cargo movement.

Portland International Center/Cascade Station (PIC/CS)

Overall the employment numbers for PIC/CS seem somewhat low given the current amount of retail activity. The TAZs that comprise PIC/CS include 143-144, and 147-152.

* TAZ 144 – West of Cascade Station (464 total employment). Major uses on this TAZ include Embassy Suites, the Military Entrance Processing Station and a new FBI facility that will be completed in late 2012. In the next two to three years it is anticipated that a small hotel will also be built. The 2010 employment total is probably accurate however the 2025 employment total of 564 is too low given the estimated 400 employees that will eventually staff the FBI facility and new hotel staff. Thus, the 2025 employment total should be approximately 1,000 employees.

* TAZ 147 – Cascade Station west of Mt. Hood Ave. (147 total employment including 58 retail). This site includes Target, Subway and the Residence Inn. Given that Target is a large format store of 130,000+ square feet there are likely more than 58 retail employees in this TAZ. Using the industry standard 470 square feet per employee in retail, there should be approximately 275 retail employees for Target alone now.[4] The total employment for the TAZ is probably closer to 300-400. Approximately 6500 sq ft of retail is anticipated to be developed in the next 18 months adding approximately 15 employees, so the 2025 employment figure of 280 is too low by about 100-200 employees.

* TAZ 151 Subdistrict B south of Cascade Station, north of PDX employee parking lot (122 total employment). Except for the light rail station platform, this TAZ has no structures. There should be no employees within this TAZ for 2010. As it lies in the same Ezone, 112, as the other TAZs in PDX and PIC/CS, these numbers could be shifted over to the TAZs which have been identified as being low.
Though the TAZ is zoned for development, EG2hx and IG2hx, the forecasted total employment of 1,704 seems high. Nearby TAZs of similar size and zoning range from 600-800. This is also a good place to pull employment from in 2025 to make up for TAZs that are deemed to be too low.

[3] Aviation Demand Forecast, PDF page 79,
http://www.pdxairportfutures.com/Documents/PDX_Airport_Ftrs_Avtn_Dmnd_Frcst.pdf
[4] Portland Plan Economic Opportunities Analysis PDF page 38,
http://www.portlandonline.com/portlandplan/index.cfm?&a=270872&c=51427

* TAZ 149- Cascade Station east of Mt. St. Helens Avenue (368 total employment). The major tenant is IKEA with approximately 400 employees in a 180,000 square foot building. However this TAZ also includes a substantial number of other retail stores including Golfsmith, Marshalls, Staples and Carhartt. As a result it seems likely there are over 600 employees in the TAZ.

The remaining undeveloped part of this TAZ is under either an Environmental Protection or Environmental Conservation overlay, limiting the amount of future development and employment. Thus, the 824 employees forecasted for 2025 may be reasonably accurate.

Troutdale Reynolds Industrial Park (TRIP)

The TAZs that comprise TRIP include 626-627 and 607.

* TAZ 626 – West of Sundial Rd/North of BPA Substation (68 employees). Aside from an extension of the BPA substation, this TAZ is not currently developed. There should be no employees here and they could be moved over to TAZ 627 which is also within Ezone 121.

Phase II of TRIP will add three industrial lots totaling 42 acres to this TAZ which should be built out by 2025. Based upon a Port of Portland EI, there should be approximately 874 jobs as a result of this development. Thus the estimate of 209 jobs is far too low.

* TAZ 627 – East of Sundial Road (107 total employees). This TAZ includes the 440,000 square foot FedEx Ground regional distribution hub which opened in August 2010. At the time of opening there were over 550 employees at the facility. In addition, other employers adjacent to TRIP but within the TAZ include Walsh Trucking, Schwann's Ice Cream and the City of Troutdale wastewater treatment facility. As a result, it seems likely that that there were over 700 employees in this TAZ in 2010.

Phase II of the TRIP will add six lots for employment totaling 102 acres. Based upon a Port of Portland economic impact analysis, there should be approximately 2,123 jobs as a result of this development. Thus the total estimate including TRIP employment, FedEx, and other employers should be over 2,800.

West Hayden Island (WHI)

WHI is entirely within TAZ 124.

* TAZ 124 (0 total employees). By 2025, WHI should be built out and thus employment will be greater than 0. The Portland Bureau of Transportation has estimated that there will be 650 onsite jobs as a result of their West Hayden Island Traffic Impact Assessment. As a result, 650 jobs is a reasonable estimate of total employment in 2025.

Gresham Vista Business Park (GVBP)

GVBP consists of TAZ 559-560.

The total employment figures for 2010 are 508, and for 2025 they are 1,497. Given that ON Semiconductor is the only major employer at present, the baseline employment figures are reasonably accurate.

A recent economic impact assessment assumes that all Port-owned properties will be sold by 2020 with full build out likely by 2025. The expected direct employment is 2,768 jobs – nearly double the existing estimate for TAZ 559-560.

CITY OF SHERWOOD

Distribution Review and Adjustments Completed (April 5, 2012)

From: Gerry Uba
Sent: Thursday, April 05, 2012 3:22 PM
To: 'Michelle Miller'
Cc: Dennis Yee
Subject: RE: Growth Allocation for Sherwood 2025 numbers

Hello Michelle,

Thanks for getting back to me and expressing your concerns with the distribution in TAZ 992. I am copying our chief economist, Dennis Yee, on this email. Since we are running behind on the project schedule, Dennis will call you soon to discuss your concerns so that we can wrap up Sherwood's distribution numbers. Thanks again.

Gerry

Regional Growth Distribution Coordinator
Metro
gerry.uba@oregonmetro.gov

From: Michelle Miller [mailto:MillerM@SherwoodOregon.gov]
Sent: Thursday, April 05, 2012 2:27 PM
To: Gerry Uba
Subject: Growth Allocation for Sherwood 2025 numbers

Hi Gerry,

Sorry I did not get back to you sooner.

For the area within Sherwood:

TAZ 992 is the only one I am having heartburn with as far as a little low for 2025. I would likely add at least another 150 du to the capacity for that area.

The problem is I don't see any other place to pull the number from as the other TAZ shows limited growth potential.

Thanks for letting me comment.

Michelle Miller, AICP
Associate Planner
City of Sherwood
millerm@sherwoodoregon.gov
503.625.4242

CITY OF TIGARD

Distribution Review and Adjustments Completed (April 3, 2012)

From: Dennis Yee
Sent: Tuesday, April 03, 2012 1:33 PM
To: Darren Wyss; Maribeth Todd
Cc: Steve Kelley; Gerry Uba
Subject: RE: Tigard 2025 TAZ Review

Darren:

Thank you for your submittal. In the next day or two, I will be incorporating your comments and blending them into a coherent county TAZ distribution. If we have questions, we will certainly confer with you and the county.

Regards,

Dennis Yee
Metro Economist

……

From: Darren Wyss [mailto:darren@tigard-or.gov]
Sent: Tuesday, April 03, 2012 11:31 AM
To: Maribeth Todd
Cc: Steve Kelley; Dennis Yee
Subject: Tigard 2025 TAZ Review

Maribeth,
Attached is Tigard's review of the 2025 TAZ for households and employment. We supplied household recommendations for the unincorporated TAZs that are inside Tigard's urban planning area. We were also unable to maintain the control totals for retail, service, and other employment. The total employment is still the same, but we added some retail and reduced some service jobs in certain TAZ. Sorry it is a couple days late. Let me know if you have any questions.

Darren Wyss
Senior Planner
Community Planning
City of Tigard
503-718-2442

CITY OF TROUTDALE

Distribution Review and Adjustments Completed (April 11, 2012)

From: Elizabeth McCallum [mailto:elizabeth.mccallum@troutdaleoregon.gov]
Sent: Wednesday, April 11, 2012 11:27 AM
To: Dennis Yee
Subject: RE: correction of Troutdale 2010 household numbers

Thank you.

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Wednesday, April 11, 2012 11:26 AM
To: Elizabeth McCallum
Cc: Maribeth Todd; Jim Cser
Subject: RE: correction of Troutdale 2010 household numbers

Thanks Elizabeth.

I will make these changes to the final TAZ spreadsheet for year 2010.

Regards,

Dennis

From: Dennis Yee
Sent: Tuesday, April 10, 2012 4:08 PM
To: Elizabeth McCallum
Cc: Rich Faith; Maribeth Todd; Gerry Uba; Charles BEASLEY
Subject: correction of Troutdale 2010 household numbers

Attachment: Metro Research Center Estimates portion of May 2011 excel table.docx (19kb)

Hi Elizabeth,

Based your most recent feedback/input for the year 2025 TAZ distribution, your comments identified incorrect base year household estimates for the following TAZ's. You said this in the comment lines: "**Existing HH more than shown in 2010"**

Accordingly, we want to fix this problem. Based on the attachment you sent us, we figure that what the base year 2010 household number for these TAZ's should be this….

TAZ	Metro 2010 est	Troutdale estimate
635	59	168
639	197	197
640	515	552
646	442	598
649	366	452

I couldn't find exactly what Troutdale's responses were for year 2010, but I think I was able to back into an estimate from the attachment you sent me many months ago. If the "Troutdale estimate" I cite above are incorrect, can you please send me what you have as the actual count of households in 2010 that you would like for us to use.

Please send me an email confirming the numbers. Thanks.

Thanks

Dennis Yee
Metro Chief Economist

From: Dennis Yee
Sent: Thursday, April 05, 2012 3:10 PM
To: Elizabeth McCallum; Gerry Uba; Charles BEASLEY
Subject: RE: Troutdale's Local Jurisdiction Review Comments and Edits to TAZ allocation Gamma_TAZ Forecast_report_2025 City of Troutdale HH comments.xlsx

Hi Elizabeth:

I am reviewing the city 's feedback on the year 2025 TAZ household forecast distribution.

I want to confirm with you that what you sent in to Metro are the proposed household TAZ changes for year 2025 and are indeed for a midterm projection as compared to an end year 2035 longer term forecast. Your numbers seem to me to be closer to "build out" estimates and thus closer to year 2035 and not 2025.

Am I reading this right?

Regards,

Dennis Yee

From: Dennis Yee
Sent: Wednesday, March 14, 2012 9:10 AM
To: Gerry Uba
Subject: FW: 2025 TAZ Forecast Distributions (Troutdale)

Reply by Troutdale to my reply to their set of questions…please add to your record files.

From: Elizabeth McCallum [mailto:elizabeth.mccallum@troutdaleoregon.gov]
Sent: Friday, March 09, 2012 3:11 PM
To: Dennis Yee
Subject: RE: 2025 TAZ Forecast Distributions (Troutdale)

I'm working on this.

Elizabeth

From: Elizabeth McCallum [mailto:elizabeth.mccallum@troutdaleoregon.gov]
Sent: Friday, March 09, 2012 4:48 PM
To: Dennis Yee; Gerry Uba; Charles BEASLEY
Subject: Troutdale's Local Jurisdication Review Comments and Edits to TAZ allocation Gamma_TAZ Forecast_report_2025 City of Troutdale HH comments.xlsx

March 9, 2012

Chuck, Dennis, Gerry,

Troutdale has comments on HH.

Also, for Employment, TAZ 632, this site is being rezoned from Light Industrial to General Commercial in the City's Town Center. In the GC zone in the Town Center, permitted uses include the following:

TDC 4.720 Permitted and Conditional Uses. Permitted and conditional uses are the same as those listed in the underlying zoning districts with the following exceptions:

E. General Commercial (GC).

1. Additional permitted uses: Single-family detached dwellings (except manufactured homes), duplex, triplex, attached, and multiple-family dwellings, provided the residential use is located above or behind a permitted commercial use, whether within the same building as the commercial use or in a separate building; and public parking lots**.**
2. Eliminated permitted uses: Automotive repairs, including painting and incidental body and fender work; automotive service stations; lumber yards (retail sales only); and tire shops.
3. Eliminated conditional uses: Automobile and trailer sales area, heliport landings, off-street parking and storage of truck tractors and/or semi-trailers, outdoor stadiums and racetracks, wholesale distribution outlets, including warehousing.

TDC 4.730 Town Center Residential Densities.

A. General Density Requirements. The residential density of the underlying zone shall apply except that the Central Business District (CBD) density standards shall apply in the CC and GC zoning districts and shall apply in the A-2 zoning district for duplex, triplex, and attached residential developments.

B. Minimum Density. Residential development is required to be built at 80% or more of the maximum number of dwelling units per net acre. For purposes of this standard, in computing the maximum number of dwelling units, if the total contains a fraction, then the number shall be rounded down to the next lower whole number. For computing the minimum number of dwelling units, if the total contains a fraction, then the number shall be rounded down to the next lower whole number.

CBD density standards THAT will apply to the subject site:

TDC 3.134 Dimensional Standards.

D. Residential Density.

1. Maximum residential density when the dwellings are all on one lot shall be one dwelling unit per 1,500 square feet of net land area, otherwise the maximum density shall be determined on the basis of the minimum lot area standards as established in subsection (A)(2) of this section.

3. Residential development is required to be built at 80% or more of the maximum number of dwelling units per net acre. For purposes of this standard, in computing the maximum number of dwelling units, if the total contains a fraction, then the number shall be rounded down to the next lower whole number. For computing the minimum number of dwelling units, if the total contains a fraction, then the number shall be rounded down to the next lower whole number.

[Example: Computing maximum and minimum dwelling units for a 5,000 square foot parcel:

- Allowed density is 1 dwelling per 1,500 square feet.
- A 5,000 square foot parcel yields 3.3 dwelling units; round down to 3 dwelling units for maximum number of units.
- Eighty percent minimum density is 0.8x3 which yields 2.4 dwelling units; rounded down to 2 dwelling unit for minimum number of units.]

4. Apartment units built in conjunction with a commercial use are not subject to the above maximum and minimum density standards.

Underlying zoning permitted uses in the General Commercial (GC) zoning district even if not in the Town Center.

TDC 3.122 Permitted Uses. The following uses and their accessory uses are permitted in the GC district:

A. Any use permitted in the NC or CC district except for single-family detached dwellings, duplex, triplex, attached, and multiple-family dwellings, and except that retail stores or businesses are not limited to 60,000 square feet of gross floor area.

B. Amusement enterprises, including pool halls, bowling alleys, and boxing arenas, theaters, auditoriums, printing, lithographing, or publishing.

C. The following uses, if conducted within a completely enclosed building with all outside storage of merchandise, supplies, or work areas screened from the public right-of-way and adjacent residential, apartment, and NC districts, are permitted: Automotive service stations, carpenter shops, cabinet shops, upholstering, plumbing shops, lumber yards (retail sales only), automotive repair, painting and

incidental body and fender work, sign painting shops, tire shops, animal hospitals, and boarding kennels.

D. Accessory uses customarily incidental to any of the above uses when located on the same lot, provided that such uses, operations, or products are not objectionable due to odor, dust, smoke, noise, vibration, or similar causes.

E. Utility facilities, minor.

F. Other uses similar in nature to those listed above.

AND

TDC 3.103 Permitted Uses. The following uses and their accessory uses are permitted in the NC district, provided they are conducted wholly within a completely enclosed building, except off-street parking and loading:

A. Retail establishments, not to exceed 60,000 square feet of gross floor area per building or business including, but not limited to, barber or beauty shops, shoe repair stores, dressmaking or tailoring shops, photography studios, florist shops, book or stationary stores, gift shops, and art supply stores.

B. Restaurants (excluding drive-through service).

C. Professional offices.

D. Day care centers.

E. Single-family detached dwellings (except manufactured homes), duplex, triplex, attached, and multiple-family dwellings.

F. Utility facilities, minor.

G. Other uses similar in nature to those listed above.

AND

3.113 Permitted Uses. The following uses and their accessory uses are permitted in the CC district:

A. Any use permitted in the Neighborhood Commercial (NC) district except for single-family detached dwellings, duplex, triplex, attached, and multiple-family dwellings.

B. Retail establishments, not to exceed 60,000 square feet of gross floor area per building or business including, but not limited to, barber or beauty shops, shoe repair stores, groceries, dressmaking or tailoring shops, photography studios, florist shops, book or stationary stores, gift shops, and art supply stores.

C. Banks or savings and loan associations.

D. Laundromat/dry cleaning establishments.

E. Medical or dental clinics or laboratories.

F. Motels or hotels.

G. Newsstands.

H. Restaurants (including drive-through) or taverns.

I. Studios for art, dance, etc.

J. Professional offices.

K. Utility facilities, minor.

L. Other uses similar in nature to those listed above.

From: Elizabeth McCallum [mailto:elizabeth.mccallum@troutdaleoregon.gov]
Sent: Tuesday, March 06, 2012 4:42 PM
To: Charles BEASLEY; Dennis Yee
Cc: Martin, Brian; Gerry Uba; Maribeth Todd
Subject: RE: TAZ 632 Adjustments to HH and Empl

March 6, 2012

All,

The HH TAZ # is 636 east of the Sandy River within the City limits of Troutdale. TAZ 632 is the agreed to receiving zone based upon a requested zone change of the majority of the lots in TAZ 632 (see attached maps) from Light Industrial to General Commercial Town Center. GC Town Center is a mixed use zone allowing apartments above commercial/retail. If apartments are built above the commercial component there is *neither* a minimum nor maximum density so moving all the excess HH units from TAZ 636 to 632 is logical to the City of Troutdale.

The zone change is pending but is expected to be approved before June 2012. Development of the land in TAZ 632 is constrained by wetlands and Zone A Special Flood Hazard Area (see attachment 4 of the attached document).

Elizabeth A. McCallum, Senior Planner
City of Troutdale
104 SE Kibling Ave.
Troutdale, OR 97060
elizabeth.mccallum@troutdaleoregon.gov
phone: 503-674-7228
fax 503-667-0524

From: Charles BEASLEY [mailto:charles.beasley@multco.us]
Sent: Tuesday, March 06, 2012 3:02 PM
To: Dennis Yee
Cc: Elizabeth McCallum; Martin, Brian; Gerry Uba; Maribeth Todd
Subject: Re: TAZ 632 Adjustments to HH and Empl

Dennis,
Getting back to this, please see my comments in red below.

On Fri, Mar 2, 2012 at 1:23 PM, Dennis Yee <Dennis.Yee@oregonmetro.gov> wrote:

Chuck,

Could you please confirm check which TAZ's you are referring to in which household units should be moved from and to?

Well you might ask. I have no idea how I came up with these TAZ numbers.

I'm not seeing the same things you are at this point…I don't disagree with the words and sentiment, but just having trouble finding the right TAZ's in question.

For example, our zoning coverage indicates all of TAZ 632 as industrial, no housing capacity. I'm fine moving jobs into TAZ 632, but households?

In reference to the scenic area zoning, are you referring to TAZ 651 which shows 48 units assigned? If you want to redistribute the households in TAZ 651, I suggest moving these households into TAZ 633 and 648, which seem to have spare capacity in 2025 to accommodate more.

Regarding NSA zoned area, today I'm reading it as TAZ 636 with 71 units. Elizabeth suggested moving 63 units to TAZ 637.

In general, we tend to assume a more aggressive capacity assumption in the rural zoned areas. The zoning may say R-20, but for modeling purposes we have assumed that "minor subdivisions" would eventually occur due to urban pressures, and this density increases to about 1 unit per 4 acres….also if there are M-49/37 claims, we assume up to 4 units per claim. This latter assumption on M-49 isn't quite accurate due to the unforeseen introduction of "slivers" into our measure 49 database. This is another reason why we tend to show more development / capacity than otherwise implied by zoning.

Regarding the assumption that density will increase in rural areas over time due to pressure. Note that counties can't amend zoning regs to increase density in either urban or rural reserves. This is per OAR 660-027-0070, and county adopting plans. Nearly all land near the UGB in Multnomah County was designated as reserves. My view is that for modeling purposes, the assumption should be conservative, although the number of units we're talking about isn't much in the grand scheme of things.

I'm not sure about whether 4 M49 units is reasonable because the state lists 79 for Mult Co. with an average of 1.7 dwellings per claim. http://www.oregon.gov/LCD/docs/publications/M49_2011-01-31.pdf

With regards to jobs, we can shift some of the over assigned number of jobs into the former LSI job site. (I recognize that it still is not enough to meet the requested increase by Gresham at the LSI site.)

I think moving the jobs there is ok with Mult Co as long as this works for Troutdale.

Dennis

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Monday, March 05, 2012 4:48 PM

To: Elizabeth McCallum
Cc: BEASLEY Charles; Maribeth Todd; Gerry Uba
Subject: RE: 2025 TAZ Forecast Distributions (Troutdale)

Elizabeth, thank you for your questions.

1. 2010 Jur Rev HH. What if this number disagrees with the actual HH count?

In theory, the "2010 Jur Rev HH" figure should not disagree with the Census estimate. However, it is conceivable that there may be errors in our computations of TAZ household 2010 estimates. We added together census blocks (year 2010 count) to arrive at the "2010 Jur Rev HH" estimate. We asked local jurisdictions to review and revise the TAZ number a year ago so that we can use the revised numbers for this TAZ forecast. Some jurisdictions did provide some changes because they claimed that the Census excluded some housing units from the basic census population count. We accepted those changes without question.

I would like to make additional changes even after that peer review. Is that possible? My two areas of concern are: errors in actual HH numbers (under or over counted) and errors in capacity: if all the lots are built there is no capacity—the City Council has stated to staff that it does not want to upzone any of the current residential zones to allow for more density.

2. 2010 Mscope HH. Is this figure suppose to be the maximum capacity? What if it is less than the actual HH count?

I think you mean "2025 Mscope HH". This figure represents the TAZ forecast allocation of households in year 2025. It is what we think should be the household forecast in year 2025.

Yes and OK.

3. 2010-2025 HH Chg. Is this figure suppose to be the difference between 2010 Mscope HH and 2010 Jur Rev HH?

This figure is the difference (or household growth increment) between 2010 and 2025. It is the arithmetic difference between "2010 Jur Rev HH" and "2025 Mscope HH".

OK.

4. Why is 2025 Capacity more than the difference for my question #3?

"2025 Capacity" is a projection we make in a 2010 base year regarding how much housing capacity exists (by our estimate) to accommodate the increment of growth between 2010 and 2025 (and beyond if the capacity is not totally exhausted in year 2025). You can think of it as the year 2025 build out capacity, but because over this period, we generally do not think that every last inch of capacity can or will fully develop, and therefore any difference between "2025 Capacity" and the figure "2025 Mscope HH" is due to the expectation that not all housing unit supplies will fully develop between 2010 and 2025. There may still be capacity left over in 2025. We differentiate housing capacity, whether it is denoted as 2025 or 2045 from projections of households which occupy the housing capacity. We believe that not all identified housing capacity will all get developed. Some of it may remain vacant but most of the undeveloped capacity remains vacant or has yet to redevelop. This brings us to our overall definition

of capacity which is composed of or derived from vacant buildable land inventories + residential (net) redevelopment + subsidized urban redevelopment capacity + urban reserves for the Metro UGB.

5. Why is 2045 Capacity the same as the 2025 Capacity?

This may be confusing, but here the explanation. There two numbers are the same because from the perspective of looking at capacity nowadays, i.e., in year 2010, the capacity for additional housing is the same whether the future year is 2025 or 2045. Here's an example which may help.

Looking into the future from today (year 2010), suppose we estimate that TAZ 9999 has a capacity to accommodate 100 new homes. But, we make no assumption at this time about how many of those home sites will develop nor do we guess when those 100 home sites will become developed., then from this perspective, the capacity is the same whether our endpoint time frame is 2015, 2020, 2025 or even 2045.

In the rare instances that we did estimate 2045 capacity larger than 2025, what is assumed in these instances are more capacity that comes from assumed subsidized redevelopment as additional unit capacity when urban reinvestments are programmed in or TAZ which are adjacent to an urban reserve is added to the Metro UGB. In these 2 cases, the 2045 capacity will be larger than the 2025 number.

6. Capacity used columns: again, why is there no different between 2025 and 2045?

The calculation of %Cap Used is based on dividing the "2010-25 HH Chg." number by the respective "Capacity" estimate. If the capacity estimates in 2025 and 2045 are the same, then the arithmetic for "%2025 Cap Used" and "%2045 Cap Used" are identical. Only in the smaller set of TAZ's that have urban reinvestment assumptions programmed into the forecast or the TAZ is adjacent to an urban reserve does these 2 set of numbers differ.

Thank you for your questions. Give me a call if any of this explanation is confusing or unclear. I'm sorry you weren't able to attend the county TAZ meeting in which we went over some of these cryptic labels. My apologies. Feel free to contact me anytime. I look forward to your edits and revisions no later than March 31, 2012. We greatly appreciate your past and present assistance in developing TAZ projections.

Regards,

Dennis Yee
Metro Economist
503-797-1578

……

From: Dennis Yee
Sent: Monday, March 05, 2012 4:48 PM
To: Elizabeth McCallum
Cc: BEASLEY Charles; Maribeth Todd; Gerry Uba
Subject: RE: 2025 TAZ Forecast Distributions (Troutdale)

Elizabeth, thank you for your questions.

1. 2010 Jur Rev HH. What if this number disagrees with the actual HH count?

In theory, the "2010 Jur Rev HH" figure should not disagree with the Census estimate. However, it is conceivable that there may be errors in our computations of TAZ household 2010 estimates. We added together census blocks (year 2010 count) to arrive at the "2010 Jur Rev HH" estimate. We asked local jurisdictions to review and revise the TAZ number a year ago so that we can use the revised numbers for this TAZ forecast. Some jurisdictions did provide some changes because they claimed that the Census excluded some housing units from the basic census population count. We accepted those changes without question.

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This may be confusing, but here the explanation. There two numbers are the same because from the perspective of looking at capacity nowadays, i.e., in year 2010, the capacity for additional housing is the same whether the future year is 2025 or 2045. Here's an example which may help.

Looking into the future from today (year 2010), suppose we estimate that TAZ 9999 has a capacity to accommodate 100 new homes. But, we make no assumption at this time about how many of those home sites will develop nor do we guess when those 100 home sites will become developed., then from

this perspective, the capacity is the same whether our endpoint time frame is 2015, 2020, 2025 or even 2045.

In the rare instances that we did estimate 2045 capacity larger than 2025, what is assumed in these instances are more capacity that comes from assumed subsidized redevelopment as additional unit capacity when urban reinvestments are programmed in or TAZ which are adjacent to an urban reserve is added to the Metro UGB. In these 2 cases, the 2045 capacity will be larger than the 2025 number.

6. Capacity used columns: again, why is there no different between 2025 and 2045?

The calculation of %Cap Used is based on dividing the "2010-25 HH Chg." number by the respective "Capacity" estimate. If the capacity estimates in 2025 and 2045 are the same, then the arithmetic for "%2025 Cap Used" and "%2045 Cap Used" are identical. Only in the smaller set of TAZ's that have urban reinvestment assumptions programmed into the forecast or the TAZ is adjacent to an urban reserve does these 2 set of numbers differ.

Thank you for your questions. Give me a call if any of this explanation is confusing or unclear. I'm sorry you weren't able to attend the county TAZ meeting in which we went over some of these cryptic labels. My apologies. Feel free to contact me anytime. I look forward to your edits and revisions no later than March 31, 2012. We greatly appreciate your past and present assistance in developing TAZ projections.

Regards,

Dennis Yee
Metro Economist
503-797-1578

From: Elizabeth McCallum [mailto:elizabeth.mccallum@troutdaleoregon.gov]
Sent: Monday, March 05, 2012 3:03 PM
To: Dennis Yee
Cc: BEASLEY Charles
Subject: January 2012 Gamma Taz

March 5, 2012

Dennis,

I'm beginning my review of the tables and have a couple of questions:

1. 2010 Jur Rev HH. What if this number disagrees with the actual HH count?
2. 2010 Mscope HH. Is this figure suppose to be the maximum capacity? What if it is less than the actual HH count?
3. 2010-2025 HH Chg. Is this figure suppose to be the difference between 2010 Mscope HH and 2010 Jur Rev HH?
4. Why is 2025 Capacity more than the difference for my question #3?
5. Why is 2045 Capacity the same as the 2025 Capacity?

6. Capacity used columns: again, why is there no different between 2025 and 2045?

Those are my questions for now.

Elizabeth A. McCallum, Senior Planner
City of Troutdale
104 SE Kibling Ave.
Troutdale, OR 97060
elizabeth.mccallum@troutdaleoregon.gov
phone: 503-674-7228
fax 503-667-0524

From: Dennis Yee
Sent: Friday, March 02, 2012 1:24 PM
To: Charles BEASLEY
Cc: Elizabeth McCallum; Martin, Brian; Gerry Uba; Maribeth Todd
Subject: RE: TAZ 632 Adjustments to HH and Empl

Chuck,
Could you please confirm check which TAZ's you are referring to in which household units should be moved from and to?

I'm not seeing the same things you are at this point…I don't disagree with the words and sentiment, but just having trouble finding the right TAZ's in question.

For example, our zoning coverage indicates all of TAZ 632 as industrial, no housing capacity. I'm fine moving jobs into TAZ 632, but households?

In reference to the scenic area zoning, are you referring to TAZ 651 which shows 48 units assigned? If you want to redistribute the households in TAZ 651, I suggest moving these households into TAZ 633 and 648, which seem to have spare capacity in 2025 to accommodate more.

In general, we tend to assume a more aggressive capacity assumption in the rural zoned areas. The zoning may say R-20, but for modeling purposes we have assumed that "minor subdivisions" would eventually occur due to urban pressures, and this density increases to about 1 unit per 4 acres….also if there are M-49/37 claims, we assume up to 4 units per claim. This latter assumption on M-49 isn't quite accurate due to the unforeseen introduction of "slivers" into our measure 49 database. This is another reason why we tend to show more development / capacity than otherwise implied by zoning.

With regards to jobs, we can shift some of the over assigned number of jobs into the former LSI job site. (I recognize that it still is not enough to meet the requested increase by Gresham at the LSI site.)

Dennis

From: Charles BEASLEY [mailto:charles.beasley@multco.us]
Sent: Friday, March 02, 2012 11:53 AM
To: Dennis Yee
Cc: Elizabeth McCallum; Martin, Brian
Subject: TAZ 632 Adjustments to HH and Empl

Dennis,

This TAZ is in City of Troutdale, but with National Scenic Area zoning. Neither Elizabeth nor I see any meaningful employment of any kind going into this area. I'm not sure where you want to put that.

Re households, Elizabeth had been assuming 34 units under then Troutdale zoning - R20. Under Gorge zoning, it is one unit per 2 acres. We both think that one quarter of the 34 units or 8 might show up out there, but even this is unclear. Elizabeth suggests moving the 63 units to TAZ 632.

Regarding TAZ 653, adjacent to Troutdale on the north and Gresham on the west, assume one unit is possible there. The zoning is 5 acre minimum, and the lots are bisected by Beaver Creek canyon.

Chuck Beasley, Senior Planner
Multnomah County Land Use Planning
1600 SE 190th Avenue, Suite 116
Portland, Oregon 97233
charles.beasley@multco.us

503-988-3043 ext 22610
FAX 503-988-3389

CITY OF TUALATIN

Distribution Review and Adjustments Completed (April 5, 2012)

From: Dennis Yee
Sent: Thursday, April 05, 2012 4:44 PM
To: Colin Cortes
Cc: Conrad, Larry; Steve Kelley; AQUILLA HURD-RAVICH; Maribeth Todd; Gerry Uba
Subject: RE: Tualatin Comments on Metro 2025 Forecast

Hi Colin:

I refer to your memo (attached) regarding the review and feedback for the city of Tualatin TAZ year 2025 forecast of jobs and housing units. Thank you for your feedback. Enclosed are point-by-point answers to your concerns and our evaluations for the 2025 TAZ forecast.

Households in TAZ 999:

We presently show the following forecast details:
2010 HH = 3
2025 HH = 6
2010-25 HH growth = 3
2025 HH Capacity = 4
% capacity used = 75%

Resolution: concur with Tualatin opinion; change 2010-25 growth = 0; 2025 HH capacity = 0

Households in TAZ 1053

2010 HH = 227
2025 HH = 228
2010-25 HH growth = 1
2025 HH Capacity = 1
% capacity used = 100%

Resolution: concur with Tualatin opinion; change 2010-25 growth = 0; 2025 HH capacity = 0

Additional Questions answered:
Why is there a difference between the city's BLI (843 units) and MetroScope modeled BLI (828)?

There is a 15 unit difference in BLI figures because the city's BLI number's are based on your city limit estimate while Metro's estimates are TAZ based and our numbers are totaled up by TAZ whose boundaries are not co-terminus with the city limits.

Why is there a difference between 2025 and 2045 capacity estimates.

In some locations, the model recognizes the "metering in" of urban reinvestment capacity between forecast years. Therefore some TAZ's with identified urban renewal areas, for example, get additional capacity in years subsequent to 2025 as the urban renewal action is assumed to stimulate redevelopment above and beyond expected market assumptions. In other words, public interventions are modeled through this term to simulate additional growth parameters in the future years.

In other locations, most notably in TAZ's adjacent and intersecting with Urban Reserves, the capacity of reserves is also "metered in" at designated time intervals. This metering process is done for both employment and land for housing. Hence these are the 2 reasons why capacity estimates differ between 2025 and 2045. The perspective of capacity is based on the prospective amount we estimate as of 2010.

Employment in TAZ 1119

According to our modeling data set, the following info was used in the 2025 MetroScope forecast:

2010 Total Jobs = 310; 23 retail, 91 service, 196 other jobs
2025 Total Jobs = 338
2010-25 growth = 28; projected increase of 34 service jobs, decrease of 6 other type of jobs

Note that the TAZ straddles Tualatin city limits in part and unincorporated Clackamas county. The figures model the entire TAZ, not just the city part. Regardless of agreements you have in place, the area also known as Wanker's corner includes a tavern/diner, feed lot store, other retail establishment, schools, and church jobs, for example. Through normal 15 years of growth, we expect employment levels in these firms to rise (or fall). The increase in jobs is therefore attributed to normal build up over time. Overall, I would actually suggest that 28 seems very low over a 15 year span, but as you note the area has a nonurbanization agreement which would limit the buildup of employment.

Resolution: no adjustment of Metro TAZ forecast

Please call me if you have more questions.

Regards,

Dennis Yee
Metro Economist.

From: Colin Cortes [mailto:CCortes@ci.tualatin.or.us]
Sent: Friday, March 30, 2012 4:22 PM
To: Dennis Yee
Cc: Conrad, Larry; Steve Kelley; AQUILLA HURD-RAVICH
Subject: Tualatin Comments on Metro 2025 Forecast

Attachment: Metro 2012-03-30 re Tualatin Comments on Metro 2025 Forecast with attachment.pdf (2MB)

Dear Dennis,

Please see the attached comments.

Sincerely,

Colin Cortes, AICP, CNU-A
Assistant Planner
City of Tualatin | Planning
503.691.3024 | Fax: 503.692.0147

CITY OF WEST LINN

Distribution review and Adjustments Completed (April 5, 2012)

From: Gerry Uba
Sent: Thursday, April 05, 2012 2:30 PM
To: 'Sonnen, John'
Cc: Dennis Yee; Conrad, Larry
Subject: RE: population allocation

Hello John,

Thanks very much for getting back to me with the City of West Linn comment on the 2025 mid-term growth distribution at the TAZ level. We will contact you and other jurisdictions later this summer to review and comment on the long-term (2030, 2035, 2040) distributions.

Best regards,

Gerry

Regional Growth Distribution Coordinator
Metro
gerry.uba@oregonmetro.gov

From: Sonnen, John [mailto:JSONNEN@westlinnoregon.gov]
Sent: Thursday, April 05, 2012 1:07 PM
To: Gerry Uba
Subject: population allocation

Hi Gerry. We are OK with the population allocation.

John

John Sonnen
JSONNEN@westlinnoregon.gov
Planning and Building Director
22500 Salamo Rd.
West Linn, OR 97068
P: (503) 723-2524
F: (503) 656-4106
Web: westlinnoregon.gov

CITY OF WILSONVILLE

Distribution Review and Adjustments Completed (April 2, 2012)

From: Pauly, Daniel [mailto:pauly@ci.wilsonville.or.us]
Sent: Monday, April 02, 2012 7:22 PM
To: Dennis Yee
Subject: RE: Wilsonville 2025 Gamma Forecast Feedback-Employment, Clackamas County

Increase in TAZ 975- A big question for this TAZ is a 30+ acre RSIA site, which seemed a reasonable recipient of over allocation elsewhere in the E-zone.

Increase in TAZ 970- Local understanding of TAZ made it a reasonable recipient of some of the over allocation elsewhere in the E-zone, especially TAZ 971

Decrease in TAZ 966- Local understanding of redevelopment probability, especially in the Town Center, leads to lower numbers, especially considering the number of housing units that are forecasted to come into this TAZ.

Decrease in TAZ 967- A large concrete plant where many jobs could go in a redevelopment scenario not likely to redevelop by 2025.

Increase in TAZ 976- A moderate increase of jobs reflects the potential for neighborhood commercial and other services within future residential development.

Decrease in TAZ 971- Jobs over allocated to the Villebois development based on mixed use zoning, which according to the master plan is mostly residential.

Increase in TAZ 974- The 27 service jobs seemed low, based on local knowledge reasonable place to transfer a small number of jobs over allocated to other TAZ's in the E Zone.

Daniel Pauly, AICP
Associate Planner

City of Wilsonville Planning Division
503-682-4960
pauly@ci.wilsonville.or.us

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Monday, April 02, 2012 1:55 PM

To: Pauly, Daniel
Subject: RE: Wilsonville 2025 Gamma Forecast Feedback-Employment, Clackamas County

Can you supply explanations for each change?

Thanks.

Dennis

From: Pauly, Daniel [mailto:pauly@ci.wilsonville.or.us]
Sent: Monday, March 26, 2012 2:23 PM
To: LarryC@co.clackamas.or.us; Dennis Yee
Cc: Gerry Uba; Neamtzu, Chris
Subject: Wilsonville 2025 Gamma Forecast Feedback-Employment, Clackamas County

Please see below

TAZ2162	Retail Chg	JUR_RetailChg	Service Chg	JUR_ServiceChg	Other Chg	JUR_other Chg	TotEmp Chg	JUR_TotEmpChg
1128	2	2	150	150	81	81	233	233
1123	0	0	6	6	0	0	6	
975	38	38	492	692	-74	325	456	1055
970	48	48	90	240	365	365	503	653
969	11	11	25	25	99	99	135	135
967	102	102	419	419	672	472	1193	993
966	279	259	778	678	601	401	1658	1338
965	6	6	156	156	21	21	183	183
972	5	5	30	30	26	26	61	61
976	0	20	3	50	1	102	4	172
971	91	91	465	118	321	221	877	430
968	1	1	9	9	4	4	14	14
974	33	33	27	77	188	188	248	298
985	0	0	5	5	9	9	14	14
984	0	0	10	10	15	15	25	25
	Increase							
	Decrease							

Daniel Pauly, AICP
Associate Planner

From: Pauly, Daniel [mailto:pauly@ci.wilsonville.or.us]
Sent: Monday, March 26, 2012 2:20 PM
To: LarryC@co.clackamas.or.us; Dennis Yee
Cc: Gerry Uba; Neamtzu, Chris
Subject: Wilsonville 2025 Gamma Forecast Feedback-Households, Clackamas County

Please see below

TAZ2162	HH2010	HH2025	JUR_HH2025	HHchg	JUR_HHchg	HHCap2025	HHCap2045	NOTES
1128	178	1304	**678**	1126	**500**	4026	4026	Our best guess for growth in UR 4H 50/50 MF-SF split
1123	198	250	250	52	52	52	5415	
975	557	582	582	25	25	36	36	
970	53	56	56	3	3	3	3	
969	459	1228	1228	769	769	769	769	
967	1655	2112	2112	457	457	646	646	
966	1945	2337	**2317**	392	**372**	392	392	
965	1570	1605	1605	35	35	68	68	
972	66	110	110	44	44	83	2130	
976	31	718	718	687	687	817	2635	
971	573	1423	**1854**	850	**1281**	1791	1791	331 HH from unallocated, 100 from 968 per 2/22/12 email
968	784	886	**806**	102	**22**	102	102	
974	0	0	0	0	0	0	0	
985	228	288	288	60	60	61	832	
984	299	385	385	86	86	87	87	
	Increase							
	Decrease							

Daniel Pauly, AICP
Associate Planner

City of Wilsonville Planning Division

From: Pauly, Daniel [mailto:pauly@ci.wilsonville.or.us]
Sent: Friday, March 23, 2012 10:15 AM
To: Steve Kelley (Steve_Kelley@co.washington.or.us)
Cc: Dennis Yee; Gerry Uba; Neamtzu, Chris
Subject: Wilsonville Washington County 2035 Gamma Forecast Feedback

Based on our review, we don't recommend changing the job allocation This feedback reflects Wilsonville's review of job growth in TAZ 982,973,979,978,977,1122,980, and 981.

Based on our review, we see no compelling reasons to change the job numbers for these TAZ's. Any questions let me know.

Daniel Pauly, AICP
Associate Planner

City of Wilsonville Planning Division

From: Pauly, Daniel [mailto:pauly@ci.wilsonville.or.us]
Sent: Wednesday, February 22, 2012 3:37 PM
To: Conrad, Larry; Dennis Yee
Cc: Neamtzu, Chris
Subject: RE: 2025 Households for Villebois (TAZ 971) and Advance (TAZ 1128)

To answer your question as to where the 100 units for TAZ 971 (Villebois) are coming from within the City of Wilsonville. 80 from TAZ 968 and 20 from TAZ 966.

Daniel Pauly, AICP
Associate Planner

City of Wilsonville Planning Division
503-682-4960
pauly@ci.wilsonville.or.us

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Wednesday, February 22, 2012 3:02 PM
To: Dennis Yee
Cc: Pauly, Daniel; Neamtzu, Chris
Subject: RE: 2025 Households for Villebois (TAZ 971) and Advance (TAZ 1128)

Dennis –

It make sense to me that Villebois will complete its development in the Mid Term Forecast time frame –

Let combine 331 of the unallocated units with the 100 units identified by Wilsonville and complete the development of Villebois.

I am assuming the Wilsonville will supply the information on the additional edits to move the other 100 units to both you and I.

We will leave TAZ 1128 alone for now and see what other issue come up during the next couple of weeks.

Larry Conrad

Principal Transportation Planner

(v) 503.742.4539

larrycon@co.clackamas.or.us

"It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so."

Mark Twain

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Wednesday, February 22, 2012 1:57 PM
To: Neamtzu, Chris
Cc: Conrad, Larry
Subject: RE: 2025 Households for Villebois (TAZ 971) and Advance (TAZ 1128)

Hi Chris

I didn't mean to not directly answer Dan's questions, but rather defer to Larry Conrad as he is the county coordinator. He and I have talked about this matter and he has a good suggestion on what to do about Villebois and the reserves area east of the city.

He should be contacting you today.

Regards,

Dennis
From: Neamtzu, Chris [mailto:neamtzu@ci.wilsonville.or.us]
Sent: Wednesday, February 22, 2012 12:27 PM
To: Dennis Yee
Subject: RE: 2025 Households for Villebois (TAZ 971) and Advance (TAZ 1128)

Good Afternoon Dennis,

I am wondering if you were going to answer Dan's question or give us some feedback on your thoughts about his comments.

Please let me know.

Thank you,

Chris Neamtzu, AICP
Planning Director
City of Wilsonville
29799 SW Town Center Loop E
Wilsonville, OR 97070
503.570.1574
neamtzu@ci.wilsonville.or.us

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Friday, February 17, 2012 2:51 PM
To: Conrad, Larry; Pauly, Daniel
Cc: Neamtzu, Chris; Fritzie, Martha; Pollack, Kay; Gerry Uba
Subject: RE: 2025 Households for Villebois (TAZ 971) and Advance (TAZ 1128)

All:

Here's the TOTAL net additional res. SUPPLY/CAPACITY (in net dwelling units) we model for TAZ 1128 per our land categories:

Urban Reserves:
1,530 SFR units
2,438 MFR units in mixed use zoning (forecast assertion since Reserves have no declared urban zoning yet)

Rural Capacity (from M-49 and limited development on farm land)
59 SFR units (our count of claims seems to slightly differ, but may also be due to the "density" we assume per claim)

Here's what we are forecasting as residential household DEMAND

Household forecast 1,304 (change = 1,126 from 2010 to 2025) modeled for TAZ 1128
895 SFR households
231 MFR households

/////

Larry:
I think it is theoretically plausible to shift about 500 out of TAZ 1128 (urban reserve) as we may conclude that it is too aggressive to assert the number of households that the preliminary TAZ allocation suggest. With corrections to Happy Valley "construction costs" in the model, it is less apt that TAZ 1128 would

build up as quickly. We also show an increase of about 2,500 more households should get assigned to Happy Valley TAZ's. We ran a second scenario with the correction and we find that TAZ 1128 is a strong candidate to reallocate housing from.

Regards,

Dennis Yee
Metro Economist
503-797-1578
From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Thursday, February 16, 2012 4:10 PM
To: Pauly, Daniel; Dennis Yee
Cc: Neamtzu, Chris; Fritzie, Martha; Pollack, Kay
Subject: RE: 2025 Households for Villebois (TAZ 971) and Advance (TAZ 1128)
Importance: High

Thank you for the information –

The portion of TAZ 1128 located outside of Urban Reserve Area 4H is almost entirely zoned EFU by the County –

There are less than 20 Measure 49 claims in this area -- with an estimated maximum rural capacity of 40 additional units –it is difficult to site new residential units on EFU lands

It seems to me that almost all of the forecast growth in this TAZ should be located within the urban reserve.

Larry Conrad
Principal Transportation Planner
(v) 503.742.4539
larrycon@co.clackamas.or.us

"It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so."

Mark Twain

From: Pauly, Daniel [mailto:pauly@ci.wilsonville.or.us]
Sent: Thursday, February 16, 2012 2:33 PM
To: dennis.yee@oregonmetro.gov
Cc: Neamtzu, Chris; Conrad, Larry
Subject: 2025 Households for Villebois (TAZ 971) and Advance (TAZ 1128)

Dennis

Thank you for discussing Villebois with me yesterday. This is what we know about housing in TAZ 971 (Villebois). The total unit capacity is good at 1791. Based on the adopted Master Plan and building permit data, this capacity should include 960 multi-family units and 831 single-family units. Based on

current development activity, availability of utilities, and general market demand shown in the 2025 gamma forecast for single family in and around Wilsonville (97.5% sf absorption rate) we would expect the vast majority, if not all of the 831 sf units in TAZ 971 to be absorbed by 2025. Assuming a similar mf absorption rate as the rest of the City, 46.8%, 450 of the 960 mf units would be absorbed by 2025. The total absorption rate for all units in TAZ 971 would be approximately 71.5% (1281 of 1791) rather than 47.5% (850 of 1791) currently shown. This is a difference of 431 units. A quick review of TAZ's around the City within the same EZone we can identify approximately 100 units to move to TAZ 971 (Villebois), still leaving Villebois short 331 units. It has been brought up in both county meetings that TAZ 1128 seems to have an over allocation. I am assuming that a vast majority of this allocation is to urban reserve area 4H, which is about 2 miles down the road from Villebois. It seems reasonable that units be transferred from TAZ 1128 to TAZ 971 before moving the over allocation elsewhere in the county.

In regards to TAZ 1128 (Urban Reserve Area 4H). Based on our knowledge of the planned school and infrastructure in the area Chris Neamtzu and my best guess by 2025 for this area is 500 units with a 50/50 sf, mf split.

Please note we haven't completed are complete housing review, but these are two items we wanted to raise right away as it likely plays into a broader discussion for Clackamas County.

Thanks for all your help understanding this data.

Regards

Daniel Pauly, AICP
Associate Planner

City of Wilsonville Planning Division
29799 SW Town Center Loop East
Wilsonville OR 97070
503-682-4960
pauly@ci.wilsonville.or.us

From: Dennis Yee
Sent: Friday, February 17, 2012 2:51 PM
To: Conrad, Larry; Pauly, Daniel
Cc: Neamtzu, Chris; Fritzie, Martha; Pollack, Kay; Gerry Uba
Subject: RE: 2025 Households for Villebois (TAZ 971) and Advance (TAZ 1128)

All:

Here's the TOTAL net additional res. SUPPLY/CAPACITY (in net dwelling units) we model for TAZ 1128 per our land categories:

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Regards,

Dennis Yee
Metro Economist
503-797-1578

……
From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Thursday, February 16, 2012 4:10 PM
To: Pauly, Daniel; Dennis Yee
Cc: Neamtzu, Chris; Fritzie, Martha; Pollack, Kay
Subject: RE: 2025 Households for Villebois (TAZ 971) and Advance (TAZ 1128)
Importance: High

Thank you for the information –

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There are less than 20 Measure 49 claims in this area -- with an estimated maximum rural capacity of 40 additional units –it is difficult to site new residential units on EFU lands

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Larry Conrad
Principal Transportation Planner
(v) 503.742.4539
larrycon@co.clackamas.or.us

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Mark Twain

From: Pauly, Daniel [mailto:pauly@ci.wilsonville.or.us]
Sent: Thursday, February 16, 2012 2:33 PM
To: dennis.yee@oregonmetro.gov
Cc: Neamtzu, Chris; Conrad, Larry
Subject: 2025 Households for Villebois (TAZ 971) and Advance (TAZ 1128)

Dennis

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Please note we haven't completed are complete housing review, but these are two items we wanted to raise right away as it likely plays into a broader discussion for Clackamas County.

Thanks for all your help understanding this data.

Regards

Dan

Daniel Pauly, AICP
Associate Planner

City of Wilsonville Planning Division
29799 SW Town Center Loop East
Wilsonville OR 97070
503-682-4960
pauly@ci.wilsonville.or.us

.....

From: Pauly, Daniel [mailto:pauly@ci.wilsonville.or.us]
Sent: Monday, February 13, 2012 4:08 PM
To: Dennis Yee
Cc: Gerry Uba; Neamtzu, Chris
Subject: 2025 Gamma Forecast, Housing Types in Mixed Housing Zones

Dennis

All of Wilsonville's residential zones are mixed residential zones, no exclusive multi-family and single-family districts. When doing the zoning cross walk, we were told to put the zones into SF and MF based on density. That worked fine for estimating the total household capacity, but when applying the different market demand for SF and MF over time we feel it is not accounting for mixed housing types in these zones, especially the higher density zones, significantly underestimates the number of small lot single family homes. In addition in the Villebois URA, which has the standardized zoning, MUR-1 we are also concerned the model assumed much more MF, while the Master Plan calls for mostly SF, attached and detached. Am I correct that there may be an underestimation of single family growth in these higher density area, or is this something already built into the model?

Thanks

Daniel Pauly, AICP
Associate Planner

City of Wilsonville Planning Division
29799 SW Town Center Loop East
Wilsonville OR 97070
503-682-4960
pauly@ci.wilsonville.or.us

From: Dennis Yee
Sent: Monday, February 13, 2012 5:55 PM
To: Pauly, Daniel

Cc: Gerry Uba; Neamtzu, Chris
Subject: RE: 2025 Gamma Forecast, Housing Types in Mixed Housing Zones

Hi Daniel:

For a city of Wilsonville's size, we show the following capacity in our modeling process:

Capacity based on city limits calculation using GIS parcel data.
SF: 1,383
MF: 1,887

Capacity tabulated based on TAZ (which don't match up precisely with city boundaries)
SF: 1,668
MF: 2,139

The capacity estimates are derived from the zone class cross walk and BLI datasets. The capacity data doesn't seem to be remarkably different as compared to other suburban cities. I refer to the spreadsheet handout titled MetroScope Residential Capacity Assumptions (attached file).

The capacity for Wilsonville is based in the review of zone classes (i.e., the crosswalk) and review of the Buildable Land Inventory. Here's what we have assumed as a crosswalk by zone class for Wilsonville:

				Local zone	Metro Zone
Class					
Wilsonville	1233	Residential agricultural - holding	RA-H	FUD	FUD
Wilsonville	1233	Planned development residential	PDR	SFR	SFR10
Wilsonville	1233	Planned development residential	PDR-1	SFR	SFR2
Wilsonville	1233	Planned development residential	PDR-2	SFR	SFR5
Wilsonville	1233	Planned development residential	PDR-3	SFR	SFR8
Wilsonville	1233	Planned development residential	PDR-4	SFR	SFR10
Wilsonville	1233	Planned development residential	PDR-5	MFR	MFR1
Wilsonville	1233	Planned development residential	PDR-6	MFR	MFR2
Wilsonville	1233	Planned development residential	PDR-7	MFR	MFR4
Wilsonville	1233	Village	V	MUR	MUR1
Wilsonville	1233	Planned development commercial	PDC	COM	GC
Wilsonville	1233	Town center commercial	PDC-TC	MUR	MUR2
Wilsonville	1233	Planned development industrial	PDI	IND	IL
Wilsonville	1233	Public facility	PF	COM	PF
Wilsonville	1233	Public facility - corrections	PF-C	COM	PF
Wilsonville	1233	Residential	R	SFR	SFR8

The highlighted zones were ones we changed after your feedback to us.

As you say, "[t]hat worked fine for estimating the total household capacity", consequently we assume that the allocation of households to capacity would respect the SF and MF capacity estimates. When we use the model to assign households to SF or MF dwelling unit types, it is the interaction between market demand and the supply capacity across the whole region that competes for the growth assigned to the TAZ allocations of which Wilsonville is a part of the regional market.

According to our forecast table, Wilsonville gets allocated 2,633 units in the city and absorbs a corresponding amount of dwelling capacity up to 69% of capacity in 2025. Wilsonville gets a further bump in capacity thru 2045 due to some part of urban reserves that makes its way into the UGB.

Wilsonville summary TAZ forecast allocation
SF growth assigned to TAZ = 1,627 households absorbed out of DU capacity of 1,668
MF growth assigned to TAZ = 1,001 households absorbed out of DU capacity of 2,139

Having outlined the household forecast for Wilsonville, I am confident that we have a reasonable assignment of households to dwelling unit. As far as I can determine, the amount of dwelling capacity split between SF and MF seems reasonable, and the amount of household growth assigned / absorbed to the SF and MF units doesn't exceed capacity.

Therefore, I am not seeing any underestimation of household growth assigned to the SF dwelling capacity for the city.

Please give me a call to discuss if you have more questions. I am scheduled to coordinate with Washington county jurisdictions this Wednesday, if you plan on also attending this meeting, we can talk about this information some more then.

Regards,

Dennis

WOOD VILLAGE

Distribution review and Adjustments Completed (march 22, 2012)

From: Dennis Yee
Sent: Thursday, March 22, 2012 11:40 AM
To: Charles BEASLEY
Cc: Gerry Uba
Subject: FW: Reminder: March 30 Deadline for Comment on the Mid-term Growth Distribution

Confirmation that Wood Village is satisfied with the 2025 TAZ allocation.

From: Paulette Copperstone
Sent: Thursday, March 22, 2012 11:39 AM
To: Gerry Uba; Dennis Yee
Subject: FW: Reminder: March 30 Deadline for Comment on the Mid-term Growth Distribution

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From: Bill Peterson [mailto:billp@ci.wood-village.or.us]
Sent: Wednesday, March 21, 2012 4:47 PM
To: Paulette Copperstone
Subject: RE: Reminder: March 30 Deadline for Comment on the Mid-term Growth Distribution

Gerry;

Our initial reviews do not indicate any predicted deviations from the forecasts.

Bill Peterson
Wood Village

From: Bill Peterson [mailto:billp@ci.wood-village.or.us]
To: Paulette Copperstone
Subject: RE: Reminder: March 30 Deadline for Comment on the Mid-term Growth Distribution

Gerry;

Our initial reviews do not indicate any predicted deviations from the forecasts.

Bill Peterson
Wood Village

CLACKAMAS COUNTY

Distribution Review and Adjustments Completed (April 12, 2012)

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Thursday, April 12, 2012 8:21 AM
To: Dennis Yee; Gerry Uba
Cc: Fritzie, Martha; Gilevich, Shari; Hughes, Jennifer; McCallister, Mike
Subject: 2025 Mid Term Forecast Problems
Importance: High

At this point in time we believe that the problems with the forecast in the unincorporated portion of the County have been address. This is based on the following information –

- The forecast population was based allocation of growth using the land supply methodology the was developed Metro and the local jurisdictions.
- There were some localized allocation problems which have been largely resolved.
    - The largest of these problems involved household allocations Happy Valley and Damascus.
    - There were also problems with the land supply assumption for the 5 rural cities in Clackamas County. Additional information was provide to Metro on this issue. The Canby land supply for employment was substantially underestimated. It is our understanding that Metro is working on a solution for this problem.
    - The rural household growth assumptions regarding Measure 49 claims were too high. This growth was reallocated to adjoining cities.
    - There was an assumption of some zoning changes on rural lands based on "development pressures" which were incorrect based on state land use regulations. This growth was reallocated to adjoining cities.

We anticipate that the larger scale policy issues related to the forecast will surface during the next round of forecast review – i.e. the 2035 forecast. We anticipate that these policy issues will general resolve around the following topics:

- Assumed growth in urban reserves in light of a substantially reduced assumptions for growth in Damascus by 2035.
- Assumed late addition (post 2040) to the regional land supply of any lands in the 5 Stafford area urban reserves.

It is noteworthy that these 2 issues have opposing impacts on the regions ability to meet the forecast need for future housing.

If you have any other questions please give me a call.

Lawrence M Conrad
Principal Transportation Planner
Department of Transportation and Development
Clackamas County

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Wednesday, April 11, 2012 1:45 PM
To: Gerry Uba
Cc: Dennis Yee
Subject: Re: Clackamas County Comment on 2025 Mid-tern Distribution

I do not represent Gladstone Contact Clay Glascow at Clackamas county

Last time I talked to him, he indicated that he did not have a problem with the forecast

Larry -

Sent from my iPhone

From: Gerry Uba
Sent: Wednesday, April 11, 2012 12:56 PM
To: 'Conrad, Larry'
Cc: Dennis Yee
Subject: Clackamas County Comment on 2025 Mid-tern Distribution

Hello Larry,

We discussed and addressed your concerns on the 2025 mid-term growth distribution in the unincorporated areas of Clackamas County. But, we need your email confirming that you are satisfied with the final outcome of the discussions and distributions so we can start working on the long-term distribution.

Please confirm also that the distribution in the City of Gladstone is satisfactory to you and the city.

I am looking forward to your email soon. Thanks very much.

Gerry

Growth Distribution Project Coordinator
503-797-1737
Gerry.uba@oregonmetro.gov

From: Dennis Yee
Sent: Thursday, March 22, 2012 10:42 AM

To: Gerry Uba
Cc: Maribeth Todd; Sonny Conder
Subject: FW: Damascus TSP

Gerry: Please add this to the record. The failure of ODOT to fund any Damascus TSP tasks seriously endangers the viability or believability of the TAZ forecast assigned to Damascus.

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Thursday, March 22, 2012 10:31 AM
To: Dennis Yee; Gerry Uba
Subject: FW: Damascus TSP (Attachment)

Larry Conrad

Principal Transportation Planner

[ATTACHMENT IS IN FILE]

Oregon
John A. Kitzhaber, MD, Governor

Department of Transportation
Region 1 Headquarters
123 NW Flanders Street
Portland, OR 97209
(503) 731.8200
FAX (503) 731.8531

March 20, 2012

Mayor Spinnett and Damascus City Council Members,

In June 2011, following a public vote that rejected a comprehensive land use plan the Damascus City Council had previously adopted, ODOT requested that the City postpone further work and spending of federal funds on the City's Transportation System Plan (TSP) until consensus could be reached among community leaders on a working land use map to be the basis for further comprehensive plan efforts. It was hoped a decision from the City Council could provide the necessary assurance that funding would not be spent developing a TSP for a comprehensive plan that would later change, requiring additional funds be spent revising the TSP.

ODOT very much appreciates efforts by the City Council and city staff (e.g. Steve Gaschler) to give ODOT the assurances requested (Resolution No. 12-295). However, with recent passage of a voter initiative in Damascus requiring voter approval of all comprehensive plan and zoning actions submitted to the Department of Land Conservation and Development and Metro it is unclear that the assurances as previously envisioned are sufficient for moving ahead to spend federal funds on planning work at this time. Over the next few weeks, with further consultation from the City, we will need to take some time to review our options. In the meantime, I'm afraid we need to put a hold on further development of the City's TSP.

ODOT looks forward to meeting with your staff over the next few weeks to lay out a plan for working through this new issue. Ross Kevlin, Region 1 Planner, will be in touch with your staff to schedule a meeting.

Regards,

Kirsten Pennington
ODOT Region 1 Planning Manager

CC: Dan O'Dell, Damascus City Manager
Steve Gaschler, Damascus Community Services Director
Penny Morrison, Damascus City Recorder
Rian Windsheimer, ODOT Region 1 Policy & Development Manager
Ross Kevlin, ODOT Region 1 Planner
Kelly Brooks, ODOT Region 1 Governmental Liaison

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Thursday, March 22, 2012 9:50 AM
To: Brian Brown; Fritzie, Martha; Glasgow, Clay; Hoelscher, Scott; Tracy Brown; Abbott, Sarah; AQUILLA HURD-RAVICH; Barth, Gary; Buehrig, Karen; Chris Neamtzu; Colin Cortes; Comer, Catherine; Egner, Dennis; Erica Rooney; Erika Palmer (epalmer@ci.damascus.or.us); Gilevich, Shari; Hughes, Jennifer; John Morgan; Kay Mordock; Kerr, Chris; Laura Terway; Li Alligood; manglek@ci.milwaukie.or.us; McCallister, Mike; Michael Walter; Pauly, Daniel; Pollack, Kay; Sonnen, John; Stephan Lashbrook; Steve Gaschler
Cc: Dennis Yee; Gerry Uba
Subject: 2035 Mid Term Forecast Comments Due March 30

Good Morning

Just a quick reminder that comments on the 2035 Mid Term Forecast are due to Metro next Friday.

We have one general issue that needs to be addressed – there are approximately 1,000 housing units that have not been allocated to individual TAZ.

If you have any suggested locations for a portion of this allocation please give me a call – if not I will work out an allocation plan for these units.

Please CC me on any comments

Thanks

Lawrence M Conrad
Principal Transportation Planner
Department of Transportation and Development
Clackamas County

From: Dennis Yee
Sent: Tuesday, March 20, 2012 3:27 PM
To: Conrad, Larry; Gerry Uba
Cc: Maribeth Todd
Subject: RE: Review of Mid-term Forecast Distribution

Do any of the cities in the UGB that I've yet to hear from (excludes Damascus, Happy Valley, and Wilsonville) have desire for added housing units? 1,000 is very much so we can "ignore" these as you see fit.

Regards,

Dennis

……

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Tuesday, March 20, 2012 2:02 PM
To: Gerry Uba

Cc: Christina Deffebach; Dennis Yee; Maribeth Todd; Jim Cser
Subject: RE: Review of Mid-term Forecast Distribution

I think that the County's major unresolved issue is a unallocated 1000 housing units

Larry Conrad
Principal Transportation Planner
(v) 503.742.4539
larrycon@co.clackamas.or.us

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Wednesday, March 14, 2012 10:31 AM
To: Dennis Yee; Gerry Uba
Cc: Jim Cser; Maribeth Todd; Fritzie, Martha; Brian Brown; Tracy Brown; Hoelscher, Scott; Glasgow, Clay; Neamtzu, Chris; Erika Palmer (epalmer@ci.damascus.or.us); Steve Gaschler; Pauly, Daniel; (lterway@ci.oregon-city.or.us); Nancy Kraushaar
Subject: Excess Rural Forecast Reallocation
Importance: High

Dennis –

We looked at the Mid Term forecast for the rural areas (outside Metro UGB or Urban Reserves) and suggest the following changes to the rural portion of the forecast:

2025 Mid Term Forecast – Excess Rural Allocations

Reallocation of the excess "rural" household forecasts for 2025 should result in household be shifted to urban TAZs in adjoining cities as listed below.

This correct the initial excess allocation that resulted from the following --

- A high forecast for the number of Measure 49 related new housing units and
- "Up Zoning" due to Urban Pressure resulting in additional new housing units,

This does not include any reallocations from urban reserves within a give TAZ that are assumed to be within the mid term forecast allocation.

In some cases where the "excess" rural allocation is small, less that 5 units in a TAZ, it will not be necessary to shift units to other TAZ's .

Source - Rural TAZ	Destination – Urban Area	City or Area
963, 964, 972, 976, 983, 984, 985, 988, 1123, 1124, and 1128	Wilsonville	Wilsonville or Wilsonville UR
1125, 1126, 1127	Stafford Urban Reserves ?	
848, 962, 911, 912, 914, and 915	Canby	Canby
722, 723, 724, 751, 752, 753,	Oregon City	Oregon City or Oregon City UR

754, 755, 756, 757, 758, 902, 903, 904, 905, 906. 907 and 927		
913, 916, 917, 918, 919, 920, 921 and 922	Molalla	Molalla
924, 929, 930, 934, 935, 936, 937 and	Estacada	Estacada
933, 938, 939, 940 957, 958, and 959	Sandy	Sandy
960 and 961	Mt Hood Corridor / Welches	
931, 932, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, and 956	Boring Urban Reserves?	?
813, 814, 826, 899, 900, 901, and 928	Damascus	Damascus

The remain question is what to do with the excess rural forecast to the south of the Stafford Urban Reserves and in the Boring Urban reserves – I think that we need to see a estimate of how large this excess is before we can suggest a solution.

I would also like to see and estimate for the Mt Hood Corridor.

Lawrence M Conrad
Principal Transportation Planner
Department of Transportation and Development

From: Steve Kelley [mailto:Steve_Kelley@co.washington.or.us]
Sent: Wednesday, March 07, 2012 1:22 PM
To: Charles BEASLEY; LarryC@co.clackamas.or.us
Cc: Dennis Yee
Subject: RE: Assumptions for Rural Areas

Chuck;

I agree with your message below.
For modeling purposes within either Urban or Rural Reserve areas, we should only assume what is allowed today under OAR-660-027 --- for lands outside of designated Reserve lands, we can assume buildout of whatever is permitted on those lands under current plan policies - unfortunately, at least within Washington County, the majority of those lands are Resource Lands and are restricted accordingly - (typically one dwelling unit (or less) per existing legal tax lot with limited exceptions).
===
That said, I don't think I am going to fuss over a few extra units in the Rural TAZ's (meaning if the technical capacity under today's rules would only allow an additional 3 units in the TAZ and the allocation shows 6, I will likely ignore it). However, if an allocation exceeds estimated capacity by 10 or more units, I will likely recommend an adjustment - especially in our Resource Districts.

Steve

From: Charles BEASLEY [mailto:charles.beasley@multco.us]
Sent: Wednesday, March 07, 2012 10:25 AM
To: Steve Kelley; LarryC@co.clackamas.or.us
Cc: Dennis Yee
Subject: Assumptions for Rural Areas

Larry, Steve, and Dennis,

I realize that I should have pulled both Washington and Clackamas counties in to this thread, and want to do so now. It seems the counties should all be on the same page with assumptions for rural areas because our rural lands are under similar legal limitations that affect change in households in the future, and our ability to change rural zoning to increase the number of lots in those areas. So please let me know if I've missed something here. Dennis included his capacity assumption for rural lands below, and it helps me understand where some of what I believe are high change in HH numbers in some rural TAZ are coming from. The blue language is from Dennis, the red is me.

Note that I generally try to not advance "reserves" as the reason for all things good and bad. Density in rural areas is already quite encumbered by state law, and reserves just further limits our ability to make changes should state rules become more flexible over the next 50 years.

In general, we tend to assume a more aggressive capacity assumption in the rural zoned areas. The zoning may say R-20, but for modeling purposes we have assumed that “minor subdivisions” would eventually occur due to urban pressures, and this density increases to about 1 unit per 4 acres….also if there are M-49/37 claims, we assume up to 4 units per claim. This latter assumption on M-49 isn’t quite accurate due to the unforeseen introduction of “slivers” into our measure 49 database. This is another reason why we tend to show more development / capacity than otherwise implied by zoning.

Regarding the assumption that density will increase in rural areas over time due to pressure. Note that counties can't amend zoning regs to increase density in either urban or rural reserves. This is per OAR 660-027-0070, and county adopting plans. Nearly all land near the UGB in Multnomah County was designated as reserves. My view is that for modeling purposes, the assumption should be conservative, although the number of units we're talking about isn't much in the grand scheme of things.

I'm not sure about whether 4 M49 units is reasonable because the state lists 79 for Mult Co. with an average of 1.7 dwellings per claim. http://www.oregon.gov/LCD/docs/publications/M49_2011-01-31.pdf

regards,

--
Chuck Beasley, Senior Planner
Multnomah County Land Use Planning
1600 SE 190th Avenue, Suite 116
Portland, Oregon 97233
charles.beasley@multco.us
503-988-3043 ext 22610
FAX 503-988-3389

Stafford

……
From: Dennis Yee
Sent: Monday, April 02, 2012 9:36 AM
To: Conrad, Larry; Colin Cortes; Neamtzu, Chris; AQUILLA HURD-RAVICH; Egner, Dennis; Erica Rooney; Kerr, Chris
Cc: Donnelly, Jennifer; Gerry Uba; McCallister, Mike; Chandler, Daniel; CINDY HAHN; Pauly, Daniel; Dennis Wright; Gerry Uba
Subject: RE: Metro Forecast Single Family Issue

All:

Metro will NOT change the TAZ forecast assumptions for 2025 or later years with respect to the timing and capacity we have already outlined for urban reserves. We concur with Larry's statement: "to see what results come out of the 2035 forecast before making a recommendation" at this time.

The assumption on how we will treat urban reserves for purposes of the TAZ forecast was outlined and described at our last set of county TAZ forecast meetings.

Regards,

Dennis Yee

……
From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Monday, April 02, 2012 8:21 AM
To: Colin Cortes; Neamtzu, Chris; AQUILLA HURD-RAVICH; Egner, Dennis; Erica Rooney; Kerr, Chris
Cc: Donnelly, Jennifer; Dennis Yee; Gerry Uba; McCallister, Mike; Chandler, Daniel; CINDY HAHN; Pauly, Daniel; Dennis Wright
Subject: RE: Metro Forecast Single Family Issue

Thank you for your comments on this issue –

I will not be pursuing this issue any farther at this point in time –

Instead I will wait to see what results come out of the 2035 forecast before making a recommendation to the County as to what course of action the County should pursue.

Larry Conrad
Principal Transportation Planner
(v) 503.742.4539
larrycon@co.clackamas.or.us

……
From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Monday, April 02, 2012 8:13 AM
To: Dennis Yee; Gerry Uba

Cc: Donnelly, Jennifer
Subject: FW: Metro Forecast Single Family Issue

Dennis and Gerry

While I still think that there is a problem with the current assumptions for the Stafford Area Urban Reserves – I will wait until I see the results of the 2035 forecast before deciding what course of action to recommend to the County.

LARRY CONRAD

PRINCIPAL TRANSPORTATION PLANNER

(V) 503.742.4539

LARRYCON@CO.CLACKAMAS.OR.US

……

From: Colin Cortes [mailto:CCortes@ci.tualatin.or.us]
Sent: Friday, March 30, 2012 9:38 AM
To: Conrad, Larry; Neamtzu, Chris; AQUILLA HURD-RAVICH; Egner, Dennis; Erica Rooney; Kerr, Chris
Cc: Donnelly, Jennifer; Dennis Yee; Gerry Uba; McCallister, Mike; Chandler, Daniel; CINDY HAHN; Pauly, Daniel; Dennis Wright
Subject: RE: Metro Forecast Single Family Issue

Dear Mr. Conrad:

The City of Tualatin disagrees with the idea of the Stafford Borland area urban reserves (4A South and 4C through 4F) entering the urban land supply prior to 2045.

Colin Cortes, AICP, CNU-A
Assistant Planner
City of Tualatin | Planning
503.691.3024 | Fax: 503.692.0147

……

From: Dennis Yee
Sent: Thursday, February 23, 2012 2:15 PM
To: Mike Hoglund
Cc: Gerry Uba
Subject: FW: Metro Forecast Single Family Issue
Importance: High

Mike: this email summarizes a conversation I had with Larry Conrad concerning the Stafford Reserves. As you can see, Larry is broaching the topic with local jurisdictions to feel out their acceptance of this idea. It is fortuitous that we stopped midstream in the allocation to allow reviewers to comment on the forecast before we complete 2035/45. This may be the accommodating assumption we need to satisfy forecast concerns, i.e., push out the problem to the next forecast cycle.

Dennis

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Wednesday, February 22, 2012 4:24 PM
To: Neamtzu, Chris; AQUILLA HURD-RAVICH; Egner, Dennis; Erica Rooney; Kerr, Chris
Cc: Donnelly, Jennifer; Dennis Yee; Gerry Uba; McCallister, Mike; Chandler, Daniel; chahn@ci.tualatin.or.us; Colin Cortes; Pauly, Daniel; Dennis Wright
Subject: Metro Forecast Single Family Issue
Importance: High

Good Afternoon

As part of the presentation on the Metro Midterm Forecast (2025) – see attached, a problem was identified with the supply of single family housing which is expected to substantially increase cost of single family housing in the Metro region.

This problem is at least in part related to the supply of single family land at the regional level.

I suggest that an adjustment of one of the main assumptions of the Metroscope model could partially mitigate this problem.

This change would be as follows:

- Presently the Stafford Borland area urban reserves (4A South and 4C through 4F) are not assumed to enter the urban land supply prior to 2045.
- If portions of this area were assumed to begin entering this land market starting in 2030 and continuing to enter the market every 5 year until they were completely included by 2045, some the supply problems could be partially mitigated.

I would like to talk to about the acceptability of this approach to the issue of rapidly increasing SF housing prices at the regional level.

I will be giving you a call in a couple of days to see what you think of this idea.

If you have any questions – please feel free to give me a call

Lawrence M Conrad
Principal Transportation Planner
Department of Transportation and Development
Clackamas County

Canby

From: Matilda Deas [mailto:DeasM@ci.canby.or.us]
Sent: Tuesday, April 03, 2012 2:09 PM
To: Dennis Yee; Bryan Brown
Cc: Conrad, Larry; Fritzie, Martha; Maribeth Todd; Gerry Uba; Jim Cser
Subject: RE: Canby employment information

Thank you Dennis.

From: Dennis Yee
Sent: Tuesday, April 03, 2012 1:13 PM
To: Matilda Deas; Bryan Brown (brownb@ci.canby.or.us)
Cc: Conrad, Larry; Fritzie, Martha; Maribeth Todd; Gerry Uba; Jim Cser
Subject: RE: Canby employment information

Matilda:

Thank you for the TSP information. I am comparing the new information we received from you with the Canby TSP report (particularly Table 1) and Metro's 2025 TAZ "GAMMA" Forecast Distribution. I realize our TAZ's are not the same as your TAZ's. Nevertheless, the household land use totals/ assumptions between Metro's 2025 figure of 4,034 household unit growth appears comparable to the city's 4,403 projected growth to 2030. The base years seem reasonably comparable too.

You've identified where we differ the greatest and that appears to be in the assumption of commercial and industrial land capacity. As a result of the difference in buildable land capacity, there is a significant difference between the TSP's projected growth of 8,588 jobs through 2030 versus Metro's estimate of 551 job growth. You are correct in noting that we show less than 1 acre of commercial land in 2025 and under 4 acres of commercial land supply through 2045 for the city. And zero industrial land capacity.

Our estimate of Canby employment capacity is apparently based on outdated assumptions in light of the TSP information. We will confer with Clackamas county on what approach they would like to take to rectify a change in the TAZ employment forecast. Please stay tuned.

Regards,

Dennis Yee
Metro Economist

……

From: Matilda Deas [mailto:DeasM@ci.canby.or.us]
Sent: Tuesday, March 27, 2012 11:11 AM
To: Dennis Yee
Subject: Canby employment information

Hello Dennis,

Our Planning Director, Bryan Brown, has asked me to be involved in the 2012 coordinated population forecasting project. Larry Conrad noted that we should send you any information which we think pertinent to project. I was looking on the FTP site at the city employment projections and am not sure I understand the employment capacity acres column. You list 0 acres for canby except for 2 commercial acres in 2045. I have attached the future forecasting memo from our adopted 2010 TSP. It may be easier for me to chat with you via phone to better understand the commercial/industrial employment capacity columns. Just want to make sure we are understanding your numbers. Thanks Dennis.

Matilda Deas, AICP, Senior Planner
City of Canby Planning and Development
111 NW 2nd Ave
Canby,OR 97013
p 503-266-7001 x223
F 503-266-1574
deasm@ci.canby.or.us

From: Charles BEASLEY [mailto:charles.beasley@multco.us]
Sent: Wednesday, March 28, 2012 11:51 AM
To: Maribeth Todd
Cc: Dennis Yee
Subject: Re: revised rural Multnomah capacity estimates

Maribeth,
Re rural employment, I don't see large changes because the uses are primarily resource based, eg. forest management and farming. Largest potential is on the farm side, and I think that would be due to any changes in ag labor needs in the future. The other possibility for increase is home occupations. The potential for increase in those is why I think it is ok to keep most of the rural employment numbers as you have them. I've made a change in the employment number for one ezone on the east side.

Ezone 124 - includes Springwater RSIA, Pleasant Valley, and SE Gresham as well as rural land out to Sandy River. Defer to Gresham re employment change by taz within the urban and urbanizable areas of this ezone. Re rural taz 660, I can't see a 56% increase here since it is primarily developed farmland, plus Camp Collins and Oxbow Park. Neither of those are large employment uses, and fairly seasonal as well. The other taz employment increases are in the 20%, so adjusting 660 down closer to that level is appropriate. Also, taz 656 includes Orient Rural Center which has jobs zoning, and two schools, and that increase is showing 44%. Taz 660 should be substantially less than that. See the table attached.

thanks much for your help explaining how the model works!

Chuck

…….
On Fri, Mar 23, 2012 at 12:47 PM, Maribeth Todd <Maribeth.Todd@oregonmetro.gov> wrote:

Hi Chuck,

In order to get model results at the TAZ level from MetroScope, we have to apply a mapback routine that takes the model outputs from the larger ezone level down to the TAZ level. The method that we settled on for the employment mapback takes the growth increment in employment by sector (which could be negative) and assigns half of it to where existing employment is located and half of it to where estimated new capacity exists. This split helps account for areas and sectors where employment is declining and reduces the chances for radical shifts in the employment distribution within an ezone.

We don't actually have any additional employment capacity going into the model in rural Multnomah County, but I think there are two reasons for the growth that you're seeing out there. The first reason, which I think applies in the northwestern portion of the county (TAZ 51 & 52) is intensification of employment in existing locations. We may or may not think this is reasonable but the model seems to think this area would be attractive for employment, and it is pretty accessible and close to downtown. It's also not a huge change in employment.

The second reason is the overlap of ezones across the urban and rural portions of the region. I think this is the case for ezone 124 on the eastern edge of the UGB. The ezone is showing employment growth and we're distributing half of that growth across the TAZs to where existing employment is, so that's why you're seeing growth in TAZs 656 and 660. You will see variation in the % change because the assignment also takes into consideration the employment sector. If you have concerns about the employment growth in that area, I think it would be reasonable to shift some of that growth to TAZs inside the UGB in ezone 124.

I hope that helps rather than confuses the situation even more! Let me know if you still have questions or concerns, and do let us know if you decide you want to adjust some of that employment.

Maribeth

……

From: Charles BEASLEY [mailto:charles.beasley@multco.us]
Sent: Friday, March 23, 2012 11:55 AM
To: Maribeth Todd

Subject: Re: revised rural Multnomah capacity estimates

Maribeth,

Just sent my employment reply. I see quite a bit of variance between % increase in employment by 2025. The zoning doesn't vary much, so I don't understand what is driving the difference. But I'm not saying it necessarily should be reduced. As with the households, we are not talking about that much impact.

thanks

C.

…….

On Fri, Mar 23, 2012 at 11:48 AM, Maribeth Todd <Maribeth.Todd@oregonmetro.gov> wrote:

Hi Chuck,

Dennis mentioned that you may have some questions or concerns about the employment projections in Multnomah County. I'm happy to look at the data with you if there's anything that you'd like to talk about. I should be at my desk for most of the afternoon if you want to give me a call, or we can set something up for next week.

Maribeth

Maribeth Todd

Research Center

Metro

……
From: Gerry Uba
Sent: Wednesday, April 04, 2012 11:50 AM
To: Maribeth Todd
Cc: Dennis Yee
Subject: FW: revised rural Multnomah capacity estimates

Hello Maribeth,

Please forward your response to Chuck as Dennis requested so I can add it to our records. Thanks

Gerry
……
From: Dennis Yee
Sent: Friday, March 23, 2012 11:52 AM
To: Charles BEASLEY
Cc: Gerry Uba; Maribeth Todd
Subject: RE: revised rural Multnomah capacity estimates

Maribeth:

Can you follow up with Chuck as to the quantity of employment BLI we are showing the model? That ought to explain what's going on in the rural areas.

Thanks

Dennis

From: Charles BEASLEY [mailto:charles.beasley@multco.us]
Sent: Friday, March 23, 2012 11:51 AM
To: Dennis Yee
Cc: Gerry Uba; Maribeth Todd
Subject: Re: revised rural Multnomah capacity estimates

Dennis,
This email regarding rural employment follows my response of 3/21 re households.
I don't recall what assumptions for rural employment went into the Metroscope model. I don't understand how the rural areas will generate 60% increase in the number of jobs, but I don't have a method to refine those estimates.

Regarding TAZ 46, I think you can add employment based on that area being developed by 2025. While we have an approved 10 year extension from Metro to Title 11 planning, it is possible for this area to be developed by that time.

The draft plan for the urban portion of TAZ 46 indicates a .5 acre neighborhood employment area. Not many jobs, but perhaps more change than presently indicated for this TAZ.

Chuck

……

On Thu, Mar 8, 2012 at 3:53 PM, Dennis Yee <Dennis.Yee@oregonmetro.gov> wrote:

Hi Chuck:

As promised, here is a table outlining the revised capacity we are recommending for rural part of the TAZ's in the county. Also, please see attached maps illustrating the GIS location of the capacity shown in the table below. This table clears up the GIS sliver problems, gross to net and oversize lots method that yielded an the prior capacity assessment. The "RRFU Add Lots" correspond to the green polygons in the attached pdf maps and are calculated based on the minimum lot size allowed per actual Multnomah county zoning (not the zone class crosswalks).

Please note, we continue to assume for the M-49 assumption the calculation of 3 units per claim. We would like to maintain the 3 unit assumption to be consistent with the other 2 counties. I consulted with Dick Benner, Metro Legal Counsel, and he feels that 3 units is legally justifiable.

So here's a summary table of what we currently have in the rural residential supply for Multnomah County:

TAZ2162	Total RRFU Add Lots	Total M49 Add Lots	Current total supply
42		3	3
44	11		11
45	5	6	11
46	26		26
47		3	3
48		3	3
49	46	3	49
50	3	12	15
51	132	54	186
52		30	30
649	2		2
651	17	21	38
652	3		3
653	11		11
654	1		1
656		9	9
657		3	3
658		3	3
659	18	6	24
660	4	9	13

661	33	21	54
Grand Total	312	186	498

I hope this computation fits more in line with your own capacity assessments.

Dennis Yee

Metro Chief Economist

From: Charles BEASLEY [mailto:charles.beasley@multco.us]
Sent: Wednesday, March 21, 2012 9:04 AM
To: Dennis Yee
Cc: Gerry Uba; Maribeth Todd
Subject: Re: revised rural Multnomah capacity estimates

Dennis,
Thanks to you and Maribeth for putting this together, and for the maps. I've attached the Gamma_2025 file with my revisions to HH, and copies of the maps with my mark up showing were I've made adjustments. In the table, I just filled in the change based on the adjusted numbers in your email of 3.8.12. The net effect is a reduction of 46 HH from your 312 total of non M49 HH capacity. Not a big deal. I continue to think that you should use the actual number of approved M49 lots instead of the 3 that the legislation would have allowed. It seems this is just more accurate. Multnomah County has 79 approved claims, and I think you could allocate these by TAZ.

I used the TAZ layers you sent, the revised rural capacity maps you sent, county tax lot data, and aerial photos to make these adjustments.

I assumed all RRFU lots were both lawful parcels and buildable except for 3 or 4. That said, the lots that are irregular shape and less than an acre are questionable due to need for on-site sanitation, uncertain legality, and access, but it think we should include them because there are likely to be a handful of new dwellings on farm/forest lands.

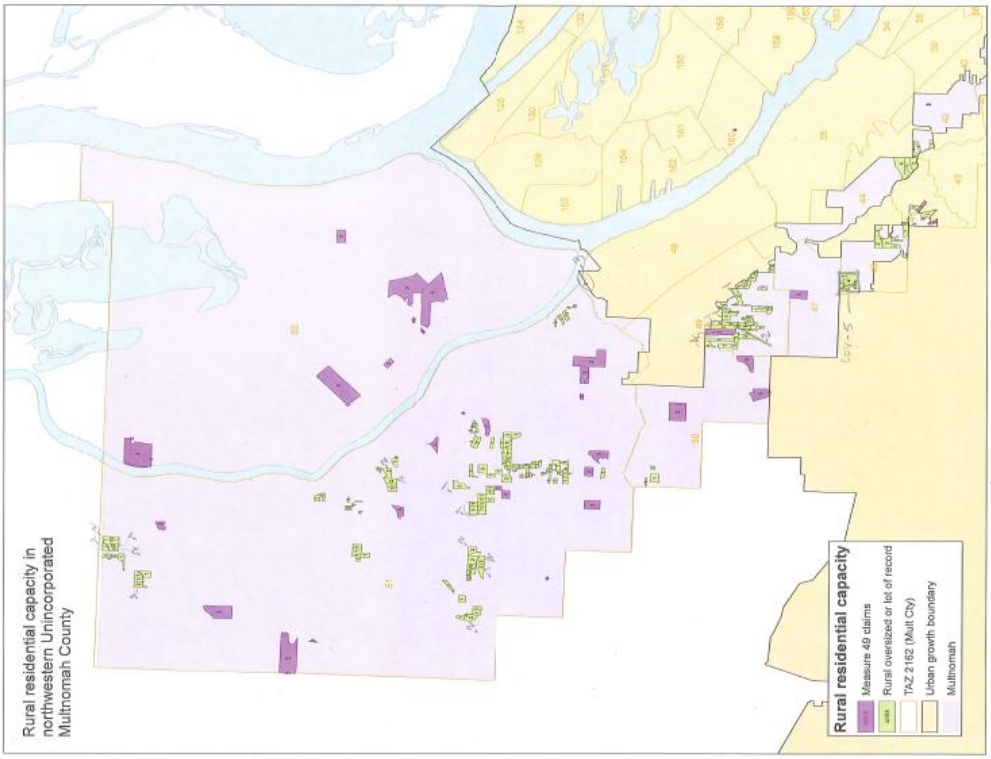
A parcel needs to be twice the size of the minimum acreage in order to divide - we don't have a lot size variance.

Including all RRFU lots for the 2025 allocation means that the rural capacity in Multnomah County is all committed by that time. You could also use the lower number I provided earlier for 2025 and the balance in the final allocation if you want.

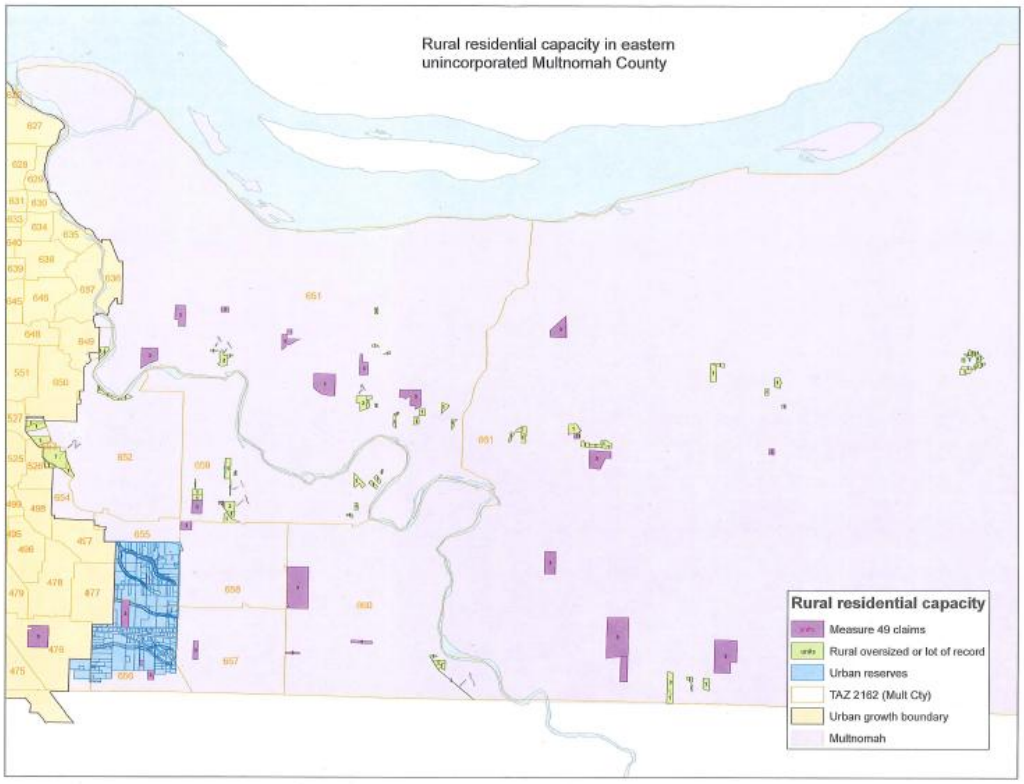
I will look at the employment asap and reply to you by separate email.

thanks again for you efforts to get this right.

C.


Rural residential capacity in
northwestern Unincorporated
Multnomah County
Rural residential capacity
Measure 49 claims
Rural oversized or lot of record
TAZ 2162 (Mult City)
Urban growth boundary
Multnomah

[redacted]



[redacted]

……

From: Dennis Yee
Sent: Thursday, March 08, 2012 3:54 PM
To: Charles BEASLEY
Cc: Gerry Uba; Maribeth Todd
Subject: revised rural Multnomah capacity estimates

Hi Chuck:

As promised, here is a table outlining the revised capacity we are recommending for rural part of the TAZ's in the county. Also, please see attached maps illustrating the GIS location of the capacity shown in the table below. This table clears up the GIS sliver problems, gross to net and oversize lots method that yielded an the prior capacity assessment. The "RRFU Add Lots" correspond to the green polygons in the attached pdf maps and are calculated based on the minimum lot size allowed per actual Multnomah county zoning (not the zone class crosswalks).

Please note, we continue to assume for the M-49 assumption the calculation of 3 units per claim. We would like to maintain the 3 unit assumption to be consistent with the other 2 counties. I consulted with Dick Benner, Metro Legal Counsel, and he feels that 3 units is legally justifiable.

So here's a summary table of what we currently have in the rural residential supply for Multnomah County:

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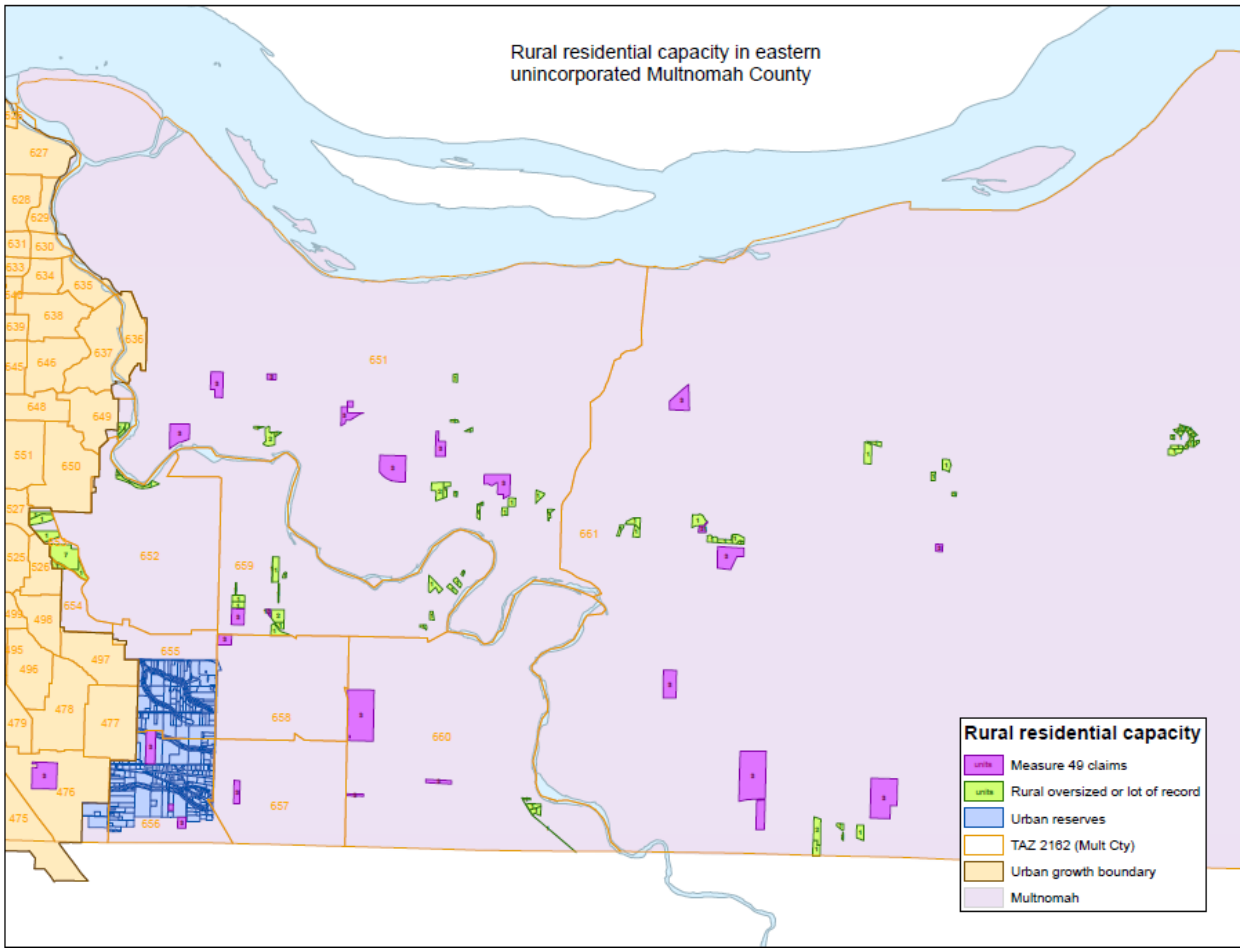
657		3	3
658		3	3
659	18	6	24
660	4	9	13
661	33	21	54
Grand Total	312	186	498

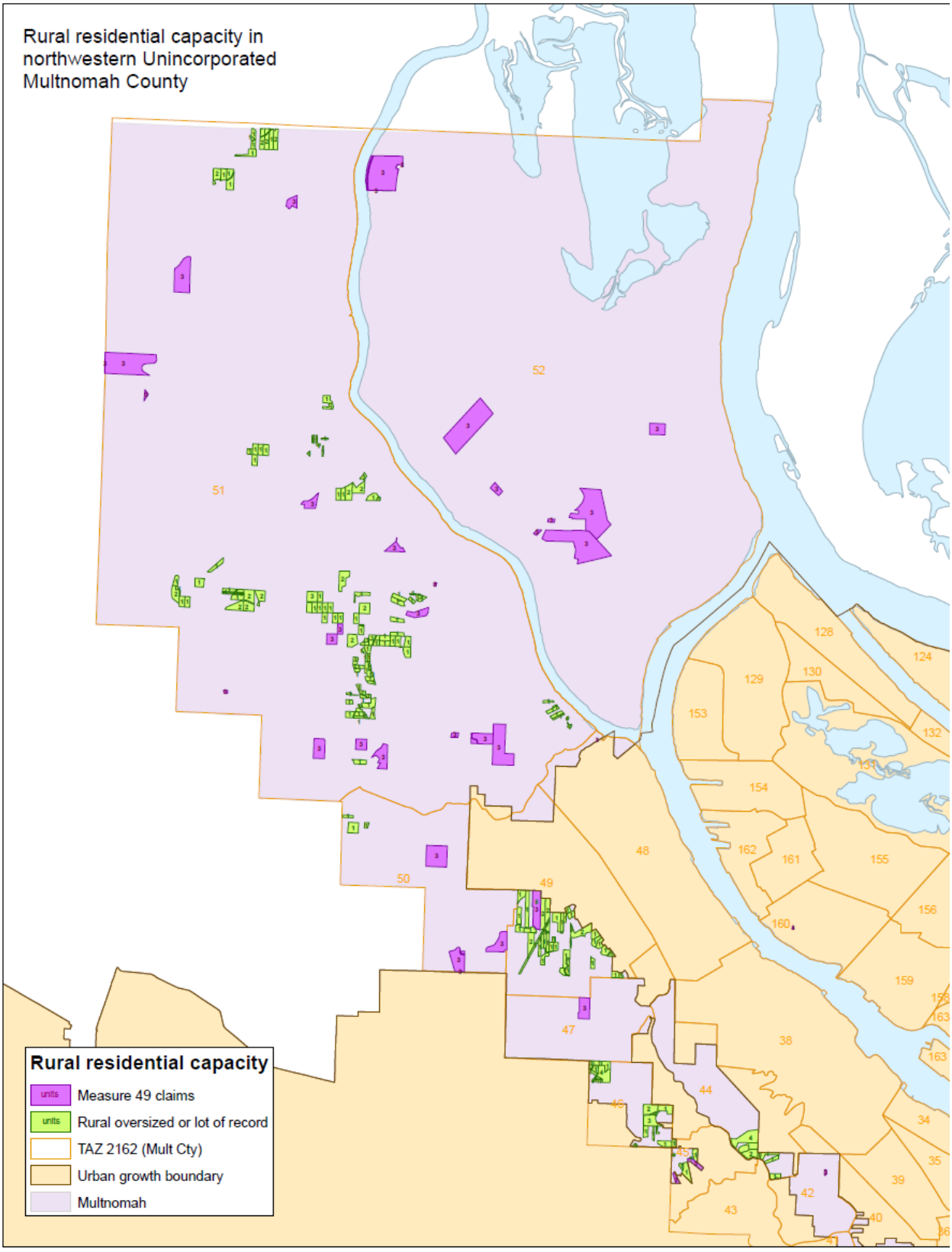
I hope this computation fits more in line with your own capacity assessments.

Dennis Yee
Metro Chief Economist

Metro
600 NE Grand Av.

……


Rural residential capacity in eastern
unincorporated Multnomah County
Rural residential capacity
Measure 49 claims
Rural oversized or lot of record
Urban reserves
TAZ 2162 (Mult Cty)
Urban growth boundary
Multnomah


Rural residential capacity in northwestern Unincorporated Multnomah County
Rural residential capacity
units Measure 49 claims
units Rural oversized or lot of record
TAZ 2162 (Mult Cty)
Urban growth boundary
Multnomah
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From: Steve Kelley [mailto:Steve_Kelley@co.washington.or.us]
Sent: Wednesday, March 07, 2012 1:22 PM
To: Charles BEASLEY; LarryC@co.clackamas.or.us
Cc: Dennis Yee
Subject: RE: Assumptions for Rural Areas

Chuck;

I agree with your message below.
For modeling purposes within either Urban or Rural Reserve areas, we should only assume what is allowed today under OAR-660-027 --- for lands outside of designated Reserve lands, we can assume buildout of whatever is permitted on those lands under current plan policies - unfortunately, at least within Washington County, the majority of those lands are Resource Lands and are restricted accordingly - (typically one dwelling unit (or less) per existing legal tax lot with limited exceptions).
===
That said, I don't think I am going to fuss over a few extra units in the Rural TAZ's (meaning if the technical capacity under today's rules would only allow an additional 3 units in the TAZ and the allocation shows 6, I will likely ignore it). However, if an allocation exceeds estimated capacity by 10 or more units, I will likely recommend an adjustment - especially in our Resource Districts.

Steve

From: Charles BEASLEY [mailto:charles.beasley@multco.us]
Sent: Wednesday, March 07, 2012 10:25 AM
To: Steve Kelley; LarryC@co.clackamas.or.us
Cc: Dennis Yee
Subject: Assumptions for Rural Areas

Larry, Steve, and Dennis,

I realize that I should have pulled both Washington and Clackamas counties in to this thread, and want to do so now. It seems the counties should all be on the same page with assumptions for rural areas because our rural lands are under similar legal limitations that affect change in households in the future, and our ability to change rural zoning to increase the number of lots in those areas. So please let me know if I've missed something here. Dennis included his capacity assumption for rural lands below, and it helps me understand where some of what I believe are high change in HH numbers in some rural TAZ are coming from. The blue language is from Dennis, the red is me.

Note that I generally try to not advance "reserves" as the reason for all things good and bad. Density in rural areas is already quite encumbered by state law, and reserves just further limits our ability to make changes should state rules become more flexible over the next 50 years.

In general, we tend to assume a more aggressive capacity assumption in the rural zoned areas. The zoning may say R-20, but for modeling purposes we have assumed that "minor subdivisions" would eventually occur due to urban pressures, and this density increases to about 1 unit per 4 acres….also if there are M-49/37 claims, we assume up to 4 units per claim. This latter assumption on M-49 isn't quite accurate due to the unforeseen introduction of "slivers" into our measure 49 database. This is another reason why we tend to show more development / capacity than otherwise implied by zoning.

Regarding the assumption that density will increase in rural areas over time due to pressure. Note that counties can't amend zoning regs to increase density in either urban or rural reserves. This is per OAR 660-027-0070, and county adopting plans. Nearly all land near the UGB in Multnomah County was designated as reserves. My view is that for modeling purposes, the assumption should be conservative, although the number of units we're talking about isn't much in the grand scheme of things.

I'm not sure about whether 4 M49 units is reasonable because the state lists 79 for Mult Co. with an average of 1.7 dwellings per claim. http://www.oregon.gov/LCD/docs/publications/M49_2011-01-31.pdf

regards,

--
Chuck Beasley, Senior Planner
Multnomah County Land Use Planning
1600 SE 190th Avenue, Suite 116
Portland, Oregon 97233
charles.beasley@multco.us
503-988-3043 ext 22610
FAX 503-988-3389

From: Dennis Yee
Sent: Friday, March 02, 2012 2:41 PM
To: Charles BEASLEY
Cc: Armstrong, Tom; Maribeth Todd; Gerry Uba
Subject: RE: TAZ Mult Co Rural

Chuck,

I understand your capacity claims, so whatever capacity is reduced, the assigned households need to be re-assigned elsewhere. We'll need to come to some final conclusions as what the capacities should be for each TAZ to limit how much growth can be assigned to these in the future.. I've included a couple of maps Maribeth prepared for the two areas in question.

Please go ahead and prepare final numbers for us and we will fix those numbers to the TAZ projections in the rural areas, and so, if you can work with Steve Kelley and others to relocate the household units elsewhere, I will go along with the collective wisdom of the group.

Also, see comments below:

Regards,

Dennis

NOTE: SEE MAPS IN FILE

1. *Rural residential capacity in northwestern unincorporated Multnomah County*
2. *Rural residential capacity in eastern unincorporated Multnomah County*

From: Charles BEASLEY [mailto:charles.beasley@multco.us]
Sent: Friday, March 02, 2012 1:34 PM
To: Dennis Yee
Cc: Armstrong, Tom
Subject: TAZ Mult Co Rural

Dennis,

Looking at the rural TAZ, my general comment is that the 2010 - 2025 number of new dwellings should be closer to 100 vs the 423 currently in the TAZ zones. In the rural areas, include Measure 49 claims in overall capacity, but do not assume one dwelling per tax lot. Ownership as a unit of land for dwelling purposes is a better fit.

I would agree with your assessment if we mutually decide that Metro's estimate of rural capacity (including M-49 claims) is too aggressive an assumption. I can concede the logic of your request if we can figure out where to re-assign the displaced household units in the various rural TAZ areas.

I spoke with Maribeth re TAZ 51 which has 225 HH. She agreed to look at it again, and we'll adjust it downward.

Yes, I have seen Maribeth's new maps that adjust down the capacity in the rural areas. There appear to be the following number of M-49 claims on the east side based on "ownership as a unit of land":

TAZ 651 = 7 claims
TAZ 657 = 4 claims
TAZ 658 = 1 claim
TAZ 659 = 2 claims
TAZ 660 = 3 claims
TAZ 661 = 7 claims

This list isn't exhaustive, but I think it verifies your request regarding too much capacity assigned to rural areas. I'm attaching some maps, but please ignore the numbers inside as they are based on our assumption of units.

I've talked with Steve Kelley, and those units might be able to go to him - but need to circle back with him on this.

This is ok and makes sense if the household units assigned near Forest Park / west side suffer from a similarly aggressive capacity assumption. Again, as you note the overage should be re-assigned to other TAZ in Washington County.

On the east side of the county, TAZ 659 and 651 appear to be high unless most of those are M49 claims.

There is really very little capacity if we constrain it to "ownership as a unit of land". See list of TAZ's above.

Along Skyline, TAZ 42 and 44 look high for HH. Roughly 2/3 of TAZ 42 is in rural reserve, so there should not be anything except M49 claims reflected there.

Again, if we clamp down on M-49 capacity by using "ownership as unit of land" to measure capacity and also throw out any capacity from rural non-M-49 land, we get very little in the way of residential capacity in the greater Skyline rural area. I've attached Maribeth's pdf maps showing the polygons that have been identified. Again ignore the number inside each tax lot as that's our estimate of capacity.

I'm not seeing the boundary between TAZ 44, 47, and 49. But note that the south part of 44 is also rural reserve. HH can be moved to TAZ 212.

Since it's rural reserve, does that mean the number of units we estimated in TAZ 44, 47 and 49 cannot have capacity assigned until the rural reserve designation is lifted?

--
Chuck Beasley, Senior Planner
Multnomah County Land Use Planning

WASHINGTON COUNTY

Distribution Review and Adjustments Completed (May 2, 2012)

From: Steve Kelley [mailto:Steve_Kelley@co.washington.or.us]
Sent: Wednesday, May 02, 2012 1:04 PM
To: Dennis Yee
Subject: RE: ftp location of 2025 gamma spreadsheet

yes !!!
Thanks ---- again!!!

[Also note that the opportunity to whine about our ancient software (with a specific example) was good for me.]

Steve

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Wednesday, May 02, 2012 12:51 PM
To: Steve Kelley
Subject: RE: ftp location of 2025 gamma spreadsheet

Can you read the clean version I just sent out?

From: Steve Kelley [mailto:Steve_Kelley@co.washington.or.us]
Sent: Wednesday, May 02, 2012 12:50 PM
To: Dennis Yee
Cc: Andy Back; Brian Hanes
Subject: RE: ftp location of 2025 gamma spreadsheet

Dennis;

Thanks for trying to get the final allocations distribution file to me !

Unfortunately, my work version of Excel (2003) is forced to convert xlsx files and (from both distributions you sent) this 'conversion' process results in the following error message:

* This file was created with a newer version of Microsoft Excel, The file has been converted to a format you can work with, but the following issues were encountered. The file has been opened in read-only mode to protect the original file.
- This workbook uses more rows and/or columns than are supported in this version of Excel. Any data outside 256 columns by 65,536 rows will not be opened. Any formula references to data in this region will return #Ref! errors.
- Some cells have more conditional formats that are allowed in this version of Excel. Only the first three conditions will be displayed.
- Some cells contain multiple conditional formatting rules that should all be evaluated and shown. This version of Excel does not have this option and will stop evaluation after the first true condition.

The end product that I see after opening the file is a blank Excel window (no worksheet elements).

Although we are often confronted with a 'Version' issue in Excel, this is the first time I have not been able to at least 'view' a worksheet.

My best option at this point will likely be to download the file and review it at home.

Steve

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Wednesday, May 02, 2012 11:44 AM
To: Steve Kelley
Subject: ftp location of 2025 gamma spreadsheet

ftp://ftp.oregonmetro.gov/pub/gm/drc/dennis/forSteveKelley/

Dennis Yee
Metro Chief Economist

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600 NE Grand Av.
Portland, OR 97232-2736
(503) 797-1578
(503) 797-1909 (FAX)
dennis.yee@oregonmetro.gov

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From: Steve Kelley [mailto:Steve_Kelley@co.washington.or.us]
Sent: Tuesday, April 10, 2012 9:52 AM
To: Dennis Yee
Cc: Doug Miller; Brian Hanes; Gerry Uba
Subject: RE: TAZ Allocation Meeting

Dennis;

Attached is an updated version of the Household Allocations Review Table (filtered) for unincorporated Washington County.

As discussed with Beaverton last week, I will wait until we talk with Hillsboro tomorrow before I begin redistribution of over-allocated households to TAZ's with remaining capacity for 2025.

I remain concerned about the 2045 capacity estimates for many areas of Washington County - especially Urban Reserves. In many cases, there are significant amounts of unbuildable lands and averaging 15 units per acre in some of these areas simply does not make sense. Even so, I used 15 in conjunction with a reasonable estimate of 'net buildable' in all of my estimates - which may therefore still be too high.

See you tomorrow here in Hillsboro;

Give me a call if you wish to discuss ongoing housing capacity issues before our meeting

Steve

Steven D. Kelley, Senior Planner
Washington County - Dept. of Land Use and Transportation
155 N. First Ave. - Suite 350-14
Hillsboro, OR. 97124
Phone: (503) 846-3593
E-Mail: steve_kelley@co.washington.or.us

From: Steve Kelley [mailto:Steve_Kelley@co.washington.or.us]
Sent: Friday, April 06, 2012 10:58 AM
To: Dennis Yee; Gerry Uba
Subject: FW: REGIONAL GROWTH ALLOCATIONS

Dennis & Gerry;

Last Thursday, I sent the e-mail below along with the attached file to the Washington County Allocations Review Team (reps from each city).

As you will note in this table, I have recommended a reduction in housing capacity for a significant percentage of the unincorporated area TAZ's (just over 50%). As well, there are a number of TAZ's where total capacity was underestimated and I have recommended increases. For 2025 the net difference may not be important, however, the key message may be that for subsequent model runs, unincorporated Washington County could hit a housing capacity threshold much sooner than expected.

There are still a few outstanding issues to resolve prior to finalizing this table and summarizing final household allocations to Washington County TAZ's:
1) Discussions with the City of Beaverton re: request for increased allocations; (Mtg. scheduled for today at 2:00 pm)
2) Discussions with the City of Hillsboro re: request for increased allocations to the Tanasbourne / Amberglen Regional Center and South Hillsboro planning areas; (Mtg. scheduled for Wednesday, April 11th)
3) Following discussions with Beaverton and Hillsboro, (if feasible) redistribute remaining households from over allocated TAZ's in unincorporated area to TAZ's with adequate remaining capacity. <- this step may need to be coordinated with potentially affected cities.

Steve

From: Steve Kelley
Sent: Thursday, March 29, 2012 4:58 PM
To: Ali Turiel; Chris Neamtzu - City of Wilsonville; Cindy Hahn - City of Tualatin; Colin Cortes - City of

Tualatin; Dan Pauly - City of Wilsonville; Dan Riordan - Forest Grove; Darren Wyss - City of Tigard; David Wells - King City; 'Dick Reynolds - Cornelius'; Don Odermott - City of Hillsboro; Doug Miller - City of Hillsboro; Hal Bergsma (hbergsma@thprd.org); Jeff Salvon; John Floyd - City of Tigard; Michelle Miller - City of Sherwood; Steven Sparks
Subject: REGIONAL GROWTH ALLOCATIONS

TO: Washington County Growth Allocations Review Team
Metro Allocations Project Staff

From: Steve Kelley, Senior Planner

Subject: **Completing Review of 2025 Growth Allocations / TAZ housing capacity**
- I need your help -

As you know, Metro has requested completion of the mid-term (2025) allocations review by Friday, March 30th (tomorrow). Based upon recent conversations with many of you, I believe that most cities in Washington County will have completed that review and submitted comments and recommendations to Metro by this deadline. Please forward a copy of your submittal to me as well - - at some point, I want to make sure that we have a well coordinated final county-wide product that will become a valuable product for future analyses.
That said, please note that there are 225 TAZ's in unincorporated Washington County and completing a detailed review of remaining capacity for just the housing allocations in these TAZ's has been a daunting task (still not quite complete).

As mentioned at our project coordination meeting with Metro on February 15th, many unincorporated TAZ's lie within existing or future city service areas and it is logical that the respective cities review both the Metro and County capacity estimates in those TAZ's. I have completed a 'County' review of remaining housing capacity in most of these areas and it would be great to have comments and recommended changes from applicable cities prior to submitting them to Metro early next week (yes, a few days late but I would like to be comfortable with the entire end product before 'we' deliver final capacity estimates). I will only be 'comfortable' with this table when each affected city either agrees with or makes adjustments to the capacity estimates in each TAZ within their respective future service areas.
[Many of you will already have completed an analysis of your surrounding Urban Unincorporated TAZ's shown in this table; others (with the exception of Beaverton and Hillsboro) will only have a few / small handful of TAZ's to review]

Please (if possible) provide your comments in the CITY COMMENTS field (orange headers) in the attached table and include any recommendations you may have for adjustments to the estimates shown in the 'County Comments' field and the respective 'County Capacity Estimates' fields for 2025 and 2045.
Hopefully, you can insert your comments and return a copy to me by next Tuesday (April 3rd).

Finally; typical findings for a majority of the unincorporated TAZ's indicate that overall housing capacity in unincorporated Washington County may be significantly lower than shown in the Metro estimates. Once I have received final comments from each of you, I will be able to run a final summary of housing capacity to determine where we stand county-wide with respect to overall housing capacity.

THANKS VERY MUCH FOR YOUR PARTICIPATION AND ASSISTANCE WITH THIS PROJECT !

Please don't hesitate to call if you have any questions about this e-mail or the attached data table.

Steve

Steven D. Kelley, Senior Planner
Washington County - Dept. of Land Use and Transportation
155 N. First Ave. - Suite 350-14
Hillsboro, OR. 97124
Phone: (503) 846-3593
E-Mail: steve_kelley@co.washington.or.us

From: Steve Kelley [mailto:Steve_Kelley@co.washington.or.us]
Sent: Wednesday, March 07, 2012 1:22 PM
To: Charles BEASLEY; LarryC@co.clackamas.or.us
Cc: Dennis Yee
Subject: RE: Assumptions for Rural Areas

Chuck;

I agree with your message below.
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===
That said, I don't think I am going to fuss over a few extra units in the Rural TAZ's (meaning if the technical capacity under today's rules would only allow an additional 3 units in the TAZ and the allocation shows 6, I will likely ignore it). However, if an allocation exceeds estimated capacity by 10 or more units, I will likely recommend an adjustment - especially in our Resource Districts.

Steve

From: Charles BEASLEY [mailto:charles.beasley@multco.us]
Sent: Wednesday, March 07, 2012 10:25 AM
To: Steve Kelley; LarryC@co.clackamas.or.us
Cc: Dennis Yee
Subject: Assumptions for Rural Areas

Larry, Steve, and Dennis,

I realize that I should have pulled both Washington and Clackamas counties in to this thread, and want to do so now. It seems the counties should all be on the same page with assumptions for rural areas because our rural lands are under similar legal limitations that affect change in households in the future, and our ability to change rural zoning to increase the number of lots in those areas. So please let me know if I've missed something here. Dennis included his capacity assumption for rural lands below, and it helps me understand where some of what I believe are high change in HH numbers in some rural TAZ are coming from. The blue language is from Dennis, the red is me.

Note that I generally try to not advance "reserves" as the reason for all things good and bad. Density in rural areas is already quite encumbered by state law, and reserves just further limits our ability to make changes should state rules become more flexible over the next 50 years.

In general, we tend to assume a more aggressive capacity assumption in the rural zoned areas. The zoning may say R-20, but for modeling purposes we have assumed that "minor subdivisions" would eventually occur due to urban pressures, and this density increases to about 1 unit per 4 acres….also if there are M-49/37 claims, we assume up to 4 units per claim. This latter assumption on M-49 isn't quite accurate due to the unforeseen introduction of "slivers" into our measure 49 database. This is another reason why we tend to show more development / capacity than otherwise implied by zoning.

Regarding the assumption that density will increase in rural areas over time due to pressure. Note that counties can't amend zoning regs to increase density in either urban or rural reserves. This is per OAR 660-027-0070, and county adopting plans. Nearly all land near the UGB in Multnomah County was designated as reserves. My view is that for modeling purposes, the assumption should be conservative, although the number of units we're talking about isn't much in the grand scheme of things.

I'm not sure about whether 4 M49 units is reasonable because the state lists 79 for Mult Co. with an average of 1.7 dwellings per claim. http://www.oregon.gov/LCD/docs/publications/M49_2011-01-31.pdf

regards,

--
Chuck Beasley, Senior Planner
Multnomah County Land Use Planning
1600 SE 190th Avenue, Suite 116
Portland, Oregon 97233
charles.beasley@multco.us
503-988-3043 ext 22610
FAX 503-988-3389

From: Gerry Uba
Sent: Tuesday, February 21, 2012 5:05 PM
To: Mike Hoglund; John Williams; Christina Deffebach
Cc: Dennis Yee; Maribeth Todd; Ted Reid; Richard Benner
Subject: FW: Review of Mid-term Forecast Distribution

Hello All,

I am forwarding this email from Steve Kelley for your information. Attached is the document he distributed at last week's Washington County coordination meeting on 2025 TAZ forecast. I expect him/them to be active participants in the fall meetings of MTAC, MPAC and Metro Council on growth distribution adoption.

Gerry

……

From: Steve Kelley [mailto:Steve_Kelley@co.washington.or.us]
Sent: Wednesday, February 15, 2012 1:34 PM
To: Gerry Uba
Cc: Dennis Yee; Andy Back; Brian Hanes
Subject: RE: Review of Mid-term Forecast Distribution

Gerry;

Thanks for the response !

---Please note that since a number of unresolved issues related to the allocations process still remain, I am concerned that the long-term allocations review schedule may slip.
As you will recall from our ongoing conversations over the past year+, I firmly believe that the main goal of our current efforts to distribute forecast growth should be to ASSURE that the end products: REASONABLY REFLECT LIKELY REALITIES OF THIS REGION'S FUTURE REAL ESTATE MARKETPLACE. We cannot simply assume that areas of this region that currently lack urban services (i.e. Damascus and surrounding Urban Reserve lands), will have those services 'magically appear'. Further, we cannot assume that broad scale **redevelopment** in the City of Portland can compete in the marketplace with buildable lands in Washington County, Clackamas County, Marion County, Clark County, Skamania County ...etc.
--- (How will CRC construction affect business development north of the River, and, in turn, how will that development affect demand for housing in Portland?).
As the Growth Allocations effort progresses, further analysis needs to be done to determine the financial feasibility of and likely demand for high density housing. As well, this region needs to be fully engaged in discussions about the likelihood of future growth scenarios and whether or not the assumptions in those scenarios "REASONABLY REFLECT .....". I think that these discussions could easily lead to delays in the allocations sanctioning process.

Steve

From: Gerry Uba [mailto:Gerry.Uba@oregonmetro.gov]
Sent: Wednesday, February 15, 2012 11:13 AM
To: Steve Kelley
Cc: Dennis Yee; Andy Back
Subject: RE: Review of Mid-term Forecast Distribution

Good morning Steve,

As I told you on the phone, I could not answer your schedule-related questions until we fixed the code problem in MetroScope and completed the distribution operation. I am in a better position now to respond to your request, as follows:

a) How was the 'August 2012' Council Adoption schedule determined and are there related critical deadlines that would prohibit moving that adoption date toward December?

My response: The Metro Council adoption date has changed. It will happen in the fall (see attached updated draft schedule). By the way, the date is based on completion of the review and comments by local governments' TAZ staff, Planning Directors, MTAC, and MPAC.

b) The original schedule discussed and distributed by Metro has been delayed by approximately 3 weeks. Given that city and county staff is typically 'buried' in ongoing local work program activities and may therefore have difficulty scheduling adequate resources to the Allocations Review process, Metro should add an additional 3 weeks to the project schedule.

My response: In the "original schedule" you mentioned, we budgeted two weeks for local governments' review and comments on three 5-years mid-term data (2015, 2020, 2025). As you know and agreed to (among others), the mid-term data has been scaled down to only 2025. Despite the scaling down, we have budgeted about six weeks for local governments to review the mid-term data. The reason for extending the review and comment time was based on our feeling that you and others, especially local staff new to this process, need this time to familiarize yourselves with the TAZ forecast distribution data format, the instructions and "ground rules" for reviewing the data and submitting comments. The familiarization will shorten the review and comments period for the long-term distribution.

c) Brent would like a letter from Metro :
- Explaining the delay of the allocations distribution;
- Recommending that the review timeframe be adjusted to reflect the time lost to the delay; and
- Agreeing to future schedule adjustments to address unforeseen delays.

My response: Please accept this email as the letter. As I stated above and shown in the attached draft schedule, we feel that with your cooperation and the cooperation of other jurisdictions, the deadlines in the draft schedule can be accomplished by the region.

Thanks very much for all your support and leadership. Denis, Maribeth and I are available anytime between this week and middle of next month (March) to answers questions you may have that will help you provide your comments to us before or by the March deadline.

Gerry
Regional Growth Distribution Project Coordinator
Gerry.uba@oregonmetro.gov
503-797-1737

From: Steve Kelley [mailto:Steve_Kelley@co.washington.or.us]
Sent: Wednesday, January 25, 2012 7:49 PM
To: Gerry Uba
Cc: Dennis Yee; Andy Back
Subject: RE: Review of Mid-term Forecast Distribution

Gerry:

I met this afternoon with Brent, Andy Back and our GIS staff lead - Brian Hanes, to discuss our draft work program (attached) for a County level coordinated review of the regional Forecast Growth Allocations. Our discussions at this meeting led to the following conclusions and related requests:
a) How was the 'August 2012' Council Adoption schedule determined and are there related critical deadlines that would prohibit moving that adoption date toward December?

b) The original schedule discussed and distributed by Metro has been delayed by approximately 3 weeks. Given that city and county staff is typically 'buried' in ongoing local work program activities and may therefore have difficulty scheduling adequate resources to the Allocations Review process, Metro should add an additional 3 weeks to the project schedule.

c) Brent would like a letter from Metro :
- Explaining the delay of the allocations distribution;
- Recommending that the review timeframe be adjusted to reflect the time lost to the delay; and
- Agreeing to future schedule adjustments to address unforeseen delays.

(I think this letter should be sent to the County leads on the Allocations Review work)
Thanks for your ongoing support on this project - it's one of the more valuable activities this region gets engaged in!

Steve

Steven D. Kelley, Senior Planner
Washington County - Dept. of Land Use and Transportation
155 N. First Ave. - Suite 350-14
Hillsboro, OR. 97124
Phone: (503) 846-3593
E-Mail: steve_kelley@co.washington.or.us

NEIGHBORING CITIES IN OREGON

City of Canby:

From: Dennis Yee
Sent: Wednesday, February 29, 2012 10:29 AM
To: Conrad, Larry
Cc: Jim Cser; Gerry Uba; Fritzie, Martha; Maribeth Todd
Subject: RE: City Forecast Capacity

Larry, et al:

I have traced out our capacity assumptions/assertion for the external Clackamas cities. The first problem is the TAZ boundaries don't match up very closely with the cities of Sandy, Estacada, Molalla and Canby. But the imputed GIS numbers (highlighted in yellow) are closer for each city by ignoring TAZ boundaries.

In the Metro spreadsheet, I retabulated the uninc. Clack county TAZ estimates to include missing cities in my earlier city table using TAZ totals. See attached. These numbers are expressed in columns #4 and #6.

I used LC's email info as guidance to estimate residential capacity from the TSP reports, displayed in column #1

Here's what we summarize as residential DU capacity:

RESIDENTIAL CAPACITY ASSUMPTIONS

	(1) per Larry Conrad email	(2) Dennis' 2045 cap assertion	(3) 2025/35 Mscope GIS	(4) 2025/35 Mscope by TAZ	(5) 2045+ Mscope GIS	(6) 2045+ Mscope by TAZ
Canby	4400	5000	2878	6061	5756	6541
Estacada	700	1000	584	1352	1168	1352
Molalla	450	2000	1158	2491	2315	2491
Sandy	3114	N/A	2768	3151	5535	6392

(1) This is my estimate of the capacity/forecast data sent to me by Larry Conrad per city TSP info
(2) This is the rough 2045+ estimate / guide given as potential capacity asserted by Dennis for each city

(3) This is the GIS interpretation of Dennis' 2035 capacity assertion. (I start with a round number and Jim tries to generate GIS capacity points that approximate my given assertion.)
(4) This is the 2035 estimate of capacity by summing together TAZ's that were assigned by Dennis to each city for general review purposes. Comingled in this capacity figure are the city capacity estimates, outside city capacity (i.e., rural and measure 49 capacity estimates by Metro)
(5) This is the 2045+ GIS interpretation of Dennis' capacity assertion found in column #2
(6) This is the 2045 estimate of the capacity by summing together TAZ's assigned to each city

Canby Cap Conclusion: looks a bit short through 2035, but bracketed by the 2025/35 capacity and Metro's 2045+ capacity assertions.

Estacada Cap Conclusion: looks a bit light through 2035, but again we bracket the city's capacity with our Metro 2025/35 and 2045+ capacity assertions.

Molalla Cap Conclusion: looks like we are too aggressive in assessing capacity estimates per the city's TSP info

Sandy Cap Conclusion: looks like we are a tad light through 2035, but again bracket the capacity through our Metro 2045 cap estimate.

It's not like we can't change the TAZ allocation/residential distribution around a bit, but for guesses going into the forecast, I think we are doing reasonably well and leave it to Clackamas county to re-distribute the TAZ allocations as you see fit. I think whatever the final forecasts in 2035 and 2045 may be, there will be sufficient allocation for you all to make re-distributions in 2045, but 2035 may be a bit constrained due to the lower cap estimates going into the 2035 TAZ distributions.

That's all for now. Hopefully not too confusing, but is helpful.

[ATTACHMENT: Gamma_TAZ Forecast_report_2025.xlsx (1 MB)]

Dennis
Metro Economist

……

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Wednesday, February 29, 2012 8:04 AM
To: Dennis Yee
Cc: Jim Cser; Gerry Uba; Fritzie, Martha
Subject: RE: City Forecast Capacity

Thanks for the update –

Please keep us informed

Larry Conrad

From: Dennis Yee
Sent: Tuesday, February 28, 2012 3:30 PM
To: Conrad, Larry
Cc: Jim Cser; Gerry Uba
Subject: RE: City Forecast Capacity

Thanks Larry.

We will get back to you in regards to how this data compare. We got something potentially squirrely going with ex-urban city capacity assumption. We are investigating.

Dennis

……
From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Tuesday, February 28, 2012 3:06 PM
To: Dennis Yee; Gerry Uba
Cc: Fritzie, Martha
Subject: City Forecast Capacity

Here is an update of this table

Larry Conrad
Principal Transportation Planner

City Forecast Capacity

Canby – Canby TSP Dec 2010

Table 4-1: Canby UGB Land Use Summary			
Land Use	**Existing 2009 Land Use**	**Projected Growth from 2009 to 2030**	**Projected 2030 Land Use**
Households			
Total Households	**6,127**	**4,403 (+72%)**	**10,530**
Employees			
Retail Employees	624	715 (+115%)	1,339
Service Employees	1,004	644 (+64%)	1,648
Educational Employees	409	257 (+63%)	666

Other Employees	1,928	3,007 (+156%)	4,935
Total Employees	**3,965**	**4,623 (+117%)**	**8,588**
The Future Forecasting Memorandum (see Appendix G)			

From - Canby TSP Dec 2010

An existing 2009 land use inventory and a future 2030 land use projection were performed for every parcel within the Canby UGB and aggregated into each of the 72 transportation analysis zones (TAZs), which represent the sources of vehicle trip generation within the city. A map of the Canby TAZs is provided in the Future Forecasting Memorandum (see Appendix G).

The existing 2009 land use inventory approximated the number of households and the amount of retail employment, service employment, educational employment, and other employment that currently exist in each TAZ. These land uses correspond to a population of approximately 15,165 residents.

The future 2030 land use projection is an estimate of the amount of development each parcel could accommodate at expected build-out of vacant or underdeveloped lands assuming Comprehensive Plan zoning (shown in Figure 4-1). The one exception is within the Northeast Canby Concept Plan area, which is located in northeast Canby between OR 99E, Territorial Road, Haines Road, and SE 1st Avenue, where land uses consistent with the Northeast Canby Concept Plan[22] were assumed.

City of Sandy – Urbanization Study, 2009

Sandy has an estimate surplus of capacity of 1,952 Dwelling Units (beyond their safe harbor forecast) or a ***total residential capacity inside their UGB of 3,114 Units***

Table S- 1. Population and employment forecasts Sandy UGB, 2009-2029,			
Year	**Population**	**Employment**	***Pop/Emp***
2009	8,034	4,394	*1.83*
2014	8,718	4,757	*1.83*
2019	9,451	5,150	*1.84*
2024	10,228	5,575	*1.83*
2029	11,023	6,036	*1.83*
Change 2007-2027	2,989	1,642	
Percent Change	37%	37%	
AAGR	1.6%	1.6%	
Source: City of Sandy; ECONorthwest			

Table S- 4. Residential capacity for needed dwelling units by plan designation, Sandy UGB, 2009-2029					
		Capacity		**Surplus**	**Gross Acres**

Plan Designation	Title	(Dwelling Units)	Needed Units	(Deficit) DU	Surplus (Deficit)
LDR	Low Density Residential	1,311	416	**895**	179.7
MDR	Medium Density Residential	316	220	**96**	16.6
HDR	High Density Residential	388	196	**192**	19.1
V	Village	1,099	324		
	Village - R-1	889	167	**722**	144.9
	Village - R-2	143	39	**104**	18.0
	Village - R-3	61	118	**(57)**	(5.7)
Total		**3,114**	**1,156**	**1,952**	**372.6**
Source: ECONorthwest					

Table S-5. Forecast of land needed for employment, Sandy UGB, 2009-2029 (gross acres) Land Supply Surplus			
Plan Designation	**Demand**	***2007 Supply***	**Surplus or (deficit)**
Village Commercial	9.4	10.4	1.0
Commercial	84.6	134.2	49.6
Industrial	14.4	83.6	69.2
Total	**108.4**	**228.2**	**119.8**
Source: ECONorthwest			

Molalla -- Buildable Lands Inventory – 2008

Residential	Lots	Total Acres	Developed Acres	Nat Constraints Acres	**Vacant Acres**	**Infill Acres Acres**	**Gross Buildable Acres**
R-1	1387	436	361	22	**20**	**34**	**53**
R-2	264	66	58	2	**3**	**2**	**5**
R-3	648	187	171	4	**4**	**9**	**13**
Total	2299	690	590	28	**26**	**45**	**71**
Commercial	Lots	Total Acres	Developed Acres	Nat Constraints Acres	**Vacant Acres**	**Infill Acres Acres**	**Gross Buildable Acres**
C-1	196	55	52	0	**2**	**1**	**3**
C-2	75	127	74	5	**27**	**21**	**48**
Total	271	182	126	5	**29**	**23**	**52**
Industrial	Lots	Total Acres	Developed Acres	Nat Constraints Acres	**Vacant Acres**	**Infill Acres Acres**	**Gross Buildable Acres**

M-1	45	159	104	5	**22**	**29**	**51**
M-2	87	329	147	73	**79**	**30**	**109**
Total	132	488	251	78	**101**	**59**	**160**

Estacada – Economic Opportunities Analysis - 2009

Safe Harbor	POPULATION PROJECTIONS Through 2029			
	City of Estacada and Clackamas County			
	2007 Est. Population	2020 Est. Population	2029 Est. Population	Average Annual Growth Rate
City of Estacada	2,695	3,332	3,826	1.91%
Clackamas County	372,270	460,323	528,484	1.91%
Estacada Share of Clackamas	0.72%	0.72%	*0.72%*	
Source: PSU Population Research Center; Oregon Office of Economic Analysis				

Estimated at 450 new households – however this is substantially less that the estimated capacity – per city staff

Table 13
Adjusted Gross Inventory of Buildable Industrial and Commercial Lands in Estacada

	Industrial		Commercial		Total	
	Parcels	Acres	Parcels	Acres	Parcels	Acres
Vacant	54	211.14	38	59.81	92	270.95
Potential Infill	14	62.67	24	26.43	38	89.10
Potentially Redevelopable	18	55.56	57	29.98	75	85.54
Total	86	329.36	119	116.23	205	445.59

From: Dennis Yee
Sent: Wednesday, February 22, 2012 1:47 PM
To: Conrad, Larry; Gerry Uba
Cc: Donnelly, Jennifer; Maribeth Todd; Jim Cser
Subject: RE: City Forecast Capacity

For Canby TAZ modeling purposes, we assumed a residential capacity of 3,445 by 2025 and 3,685 by 2045 (refer to MetroScope Gamma 2025 Forecast – CITY control totals handout).

I would argue that this is close enough for modeling purposes, but if we need to add more we can.

The provisional 2025 TAZ forecast calls for a growth of 2,409 households from 2010 to 2025, an absorption rate of 70% for Canby through 2025 based on our data. Therefore, it looks like the Canby household forecast is in line with the Canby TSP capacity estimates through 2030.

There probably, then, not much need to shift growth out of the Canby TAZ's. I rescind my earlier suggests to lower the Canby forecast in light of confirmation that Canby has much more capacity (ie up to 4400 units) than expected.

Regards,

Dennis

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Wednesday, February 22, 2012 9:07 AM
To: Dennis Yee; Gerry Uba
Cc: Donnelly, Jennifer
Subject: City Forecast Capacity

We were talking about the capacity of Canby yesterday –

Their capacity estimate for 2030 from the Canby TSP is **4,400 new housing units and 4500 new employees** based on current zoning – see attached

Larry Conrad

Principal Transportation Planner

(v) 503.742.4539

larrycon@co.clackamas.or.us

''It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so.''

Mark Twain

CLARK COUNTY

From: Dennis Yee
Sent: Thursday, March 22, 2012 11:25 AM
To: Michael.Mabrey@clark.wa.gov; Orjiako, Oliver; Snodgrass, Bryan
Cc: Harrington, Mark (RTC); Pearrow, Ken; Gerry Uba
Subject: Metro TAZ forecast

We are planning to re-run the TAZ forecast to get new growth allocations from MetroScope based on revised rural residential capacity for Clark county. This will reduce the household allocations in rural unincorporated Clark county by several thousand for the 2025 distributions.

Before we begin finalizing 2025 TAZ figures, are you seeing anything else that might cause technical concerns for the cities? We would like to incorporate anything else at the same time as we correct for the rural piece.

Regards,

Dennis Yee
Metro Chief Economist

Metro

From: Mabrey, Michael [mailto:Michael.Mabrey@clark.wa.gov]
Sent: Friday, March 23, 2012 1:07 PM
To: Dennis Yee; Orjiako, Oliver; Snodgrass, Bryan
Cc: Harrington, Mark (RTC); Pearrow, Ken; Gerry Uba
Subject: RE: Metro TAZ forecast

Dennis -

I am not aware of any other changes that need to be made. We have several sub-area plans that are still in process, so they won't be final until the end of the year.

Mike Mabrey
Clark County
Community Planner III
360-397-2280 x4343

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Thursday, March 22, 2012 11:25 AM
To: Mabrey, Michael; Orjiako, Oliver; Snodgrass, Bryan
Cc: Harrington, Mark (RTC); Pearrow, Ken; Gerry Uba
Subject: Metro TAZ forecast

We are planning to re-run the TAZ forecast to get new growth allocations from MetroScope based on revised rural residential capacity for Clark county. This will reduce the household allocations in rural unincorporated Clark county by several thousand for the 2025 distributions.

Before we begin finalizing 2025 TAZ figures, are you seeing anything else that might cause technical concerns for the cities? We would like to incorporate anything else at the same time as we correct for the rural piece.

Regards,

Dennis Yee

……

From: Dennis Yee
Sent: Wednesday, March 21, 2012 10:17 AM
To: Pearrow, Ken
Cc: Jim Cser; Maribeth Todd; Orjiako, Oliver; Gerry Uba
Subject: RE: RE: Clark County Rural Residential Capacity

Tomorrow would be great! A shapefile with parcel level detail of rural capacity is best. We can then summarize as we need into census geographies.

Regards,

Dennis

……

From: Pearrow, Ken [mailto:Ken.Pearrow@clark.wa.gov]
Sent: Wednesday, March 21, 2012 7:48 AM
To: Dennis Yee
Cc: Jim Cser; Maribeth Todd; Orjiako, Oliver; Gerry Uba
Subject: RE: RE: Clark County Rural Residential Capacity

Dennis,

I did a quick review of the numbers and it would probably be best for me to send the numbers we have by TAZ along with a data layer with the numbers by parcel.

I am pretty booked today and will try to get the data to you by tomorrow.

Thanks,

Ken

……

From: Dennis Yee
Sent: Tuesday, March 20, 2012 1:48 PM
To: Pearrow, Ken

Cc: Jim Cser; Maribeth Todd; Orjiako, Oliver; Gerry Uba
Subject: FW: RE: Clark County Rural Residential Capacity

Hi Ken:

As I said in my voice mail, I'd like to get a final confirmation from Clark county as to the disposition of rural residential capacity. We'll need this information so we can reset MetroScope to figure out what the allocations for future years. I've attached Jim's spreadsheet which show the change and our provisional estimates of rural residential capacity by TAZ.

I glanced at these numbers and the total adds up to just under 8,000 dwelling units. This seems to comport with our last face-to-face discussion of this matter. We don't have a thorough handle on Clark capacity, so we're seeking your final approval.

Can you confirm with us regarding the totals and by TAZ are good enough for representing Clark's rural capacity and if not, please send us at the soonest a shapefile with appropriate capacity estimates.

Thanks,

Dennis Yee

……
From: Jim Cser
Sent: Tuesday, March 20, 2012 1:38 PM
To: Maribeth Todd; Dennis Yee
Subject: RE: Clark County Rural Residential Capacity

Attached is my accounting for changing the Clark County rural residential capacity by TAZ. After the TAZ changes are rounded, the total capacity goes down from 21,559 to 7,694 , a decrease of 13,865. Most individual zones go down, but a few go up. These numbers do not take into account any other residential capacity from other sources.

My determination of the new capacity is as follows: from Ken Pearrow I received their criteria for determining residential capacity, as well as an out-of-date shapefile of which lands to exclude. I applied these rules to the latest version of the Clark County taxlots as best I could, and came up with 6,893. I have asked Ken for a shapefile of the capacity, but have not heard from him. To move ahead, I scaled up the capacity for each parcel so that the total matched the previously quoted Clark County number of 7,700. This means that each parcel has a non-integer capacity, with the assumption that the TAZ aggregations would be reasonable accurate.

……
From: Jim Cser
Sent: Thursday, March 15, 2012 4:44 PM
To: Pearrow, Ken
Cc: Dennis Yee; Gerry Uba
Subject: RE: Clark County Rural Residential Capacity

Hi Ken,
Thanks for clarifying. Please send us your custom layer, too.
-Jim

……
From: Pearrow, Ken [mailto:Ken.Pearrow@clark.wa.gov]
Sent: Thursday, March 15, 2012 3:52 PM
To: Jim Cser
Subject: RE: Clark County Rural Residential Capacity

Jim,

We use a custom layer for identifying parcels to exclude. The custom layer includes public lands from a number of sources and protected forest lands. It is probably a little out of date. Using the exempt status ("X" in TXSTAT field in our taxlots layer) would probably work for public lands or I could send the custom layer. Exempt properties will also exclude churches and other nonprofit parcels.

Just to clarify, we do all of our calculations at the parcel level.

Vacant (> min. lot area) = int(lot area / min. lot area) - # of existing units - note: We define vacant as having a building value less than $13,000 and assume there are no built residential structures. Vacant (> min. lot area) = int(lot area / min. lot area)

Vacant (< min. lot area) = 1 , or 0 if it had existing units - Note: Vacant lots < 4 acres are excluded (calculated to 0) with the **exception** of parcels with rural center designations they have a 1 acre minimum. Vacant (> 4 acres and < min. lot area) = 1

Underutilized = int(lot area / min. lot area) - # of existing units – Note: int(lot area / min. lot area) – 1 would match our methodology (again at the parcel level).

Hope this helps. Let me know if you have any further questions.

Ken

……
From: Jim Cser [mailto:Jim.Cser@oregonmetro.gov]
Sent: Tuesday, March 13, 2012 2:09 PM
To: Pearrow, Ken
Subject: RE: Clark County Rural Residential Capacity

Hi Ken,
Just to follow up- I applied the criteria that you sent on the March 2012 Clark County taxlots, and got a result of 8,150 units, which seems pretty close. However, there are a couple of things I wasn't sure of, so I wanted to check to see if I replicated your methodology.

First, for the Public Land categories, I chose:

'Clark County Owned (Exclude Roads)'
'Roads (County)'
'Roads (County)'
State Owned (Exclude Roads)'
'Washougal Owned'
'Water'

Also, once I had my taxlot selection, I calculated the units of capacity for each taxlot as follows:

Vacant (> min. lot area) = int(lot area / min. lot area) - # of existing units
Vacant (< min. lot area) = 1 , or 0 if it had existing units
Underutilized = int(lot area / min. lot area) - # of existing units

Are these steps correct?

Thanks,
Jim

……
From: Jim Cser
Sent: Monday, March 12, 2012 9:42 AM
To: 'Pearrow, Ken'
Subject: RE: Clark County Rural Residential Capacity

Hi Ken,
Thanks. I'll apply it to the taxlots I have an see if I get the same capacity. Would you have an "official" shapefile, just in case?

Jim

……
From: Pearrow, Ken [mailto:Ken.Pearrow@clark.wa.gov]
Sent: Friday, March 09, 2012 2:26 PM
To: Jim Cser
Cc: Dennis Yee; Maribeth Todd; Orjiako, Oliver
Subject: RE: Clark County Rural Residential Capacity

Hi Jim,

Clark County's rural lands residential capacity is approximately 7,700 based on our current model run. The attached document provides an explanation of our methodology.

Let me know if you need anything else or if you need further clarification on our methodology.

Thanks,

Ken

ATTACHMENT:

Draft

Process for Estimating Rural Land Capacity
Clark County, Washington

A formal Vacant Buildable Lands Model (VBLM) for determining future urban residential and employment land use capacity has been in place since the beginning of Clark County's Growth Management Planning process. However, the VBLM excludes rural areas outside of urban growth areas. Since rural capacity is a component of the overall capacity a simplified less formal process has been created to account for rural capacity. The rural process is run separate from the urban VBLM and has not been incorporated into the main model at this time. There are some similarities in determining land capacity in the urban and rural areas but there are also many differences between them. This document provides a description of the rural land capacity process. A description of the urban VBLM is available at: http://gis.clark.wa.gov/applications/gishome/reports/?pid=vblm

Rural land uses allow for less dense larger residential lot sizes with an emphasis on resource lands while urban lands allow for higher density smaller residential lot sizes and locating of intensive job producing lands. Due to the differences in development intensity the rural model is less complex than the urban model.

Rural Vacant Lands Process

Residential

Rural residential lands have minimum lot sizes of 5 acres or more with the exception of rural centers which have minimum lot sizes of 1 acre. Rural residential and resource lands are classified as built, vacant, or underutilized lands.

Classifications are based on the following criteria:

- Residential vacant lands are defined as having a building value less than $13,000 in the current year Assessor's database. (same as urban model)
- Underutilized is defined as having a building value of $13,000 or more and sufficient land to be further divided based on minimum lot sizes determined by land use designations.
- Known public lands (Federal, State, and local) and Western Forest Protected Lands are excluded.
- Vacant lots 4 acres or larger but less than minimum lot area are considered buildable. This is based on the potential of lots qualifying for legal lot determinations.
- No reductions for critical areas. It is assumed that a building envelope would be available on larger rural lots.
- Land use based on comprehensive plan designations and densities considered in the residential analysis include:

COMPLAN	DESCRIPTION	Minimum Lot Area (Acres)
16	Urban Reserve	10
18	Rural-5	5
19	Forest Tier 1	80
20	Forest Tier 2	40
21	Agriculture	20
23	Agri-Wildlife	160
49	Rural-10	10
50	Rural-20	20
60	Gorge SMA Agriculture	20
61	Gorge SMA Non-federal Forest	10
66	Gorge Large-scale Ag 80	80
67	Gorge Large-scale Ag 40	40
68	Gorge Small-scale Agriculture	20
69	Gorge Small Woodland 40	40
70	Gorge Small Woodland 20	20
71	Gorge Residential 5	5
72	Gorge Residential 10	10
91	Rural Center Residential	1

Commercial and Industrial

There are very few commercial and industrial designated lands in the rural area. Most are located within rural centers. Jobs producing lands are classified based on the below criteria.

- Commercial and Industrial vacant lands are defined as having a building value less than $67,500 in the current year Assessor's database.
- Commercial underutilized lands are defined as having a building value of $67,500 or higher and the land value is a minimum four times higher than the building value in the current year Assessor's database.
- Industrial underutilized lands are defined as having a building value of $67,500 or higher in the current year Assessor's database.
- No exclusions for critical lands
- Tax Exempt properties are excluded
- Rural Commercial and Industrial Comprehensive Plan Designations and employees per acre

COMPLAN	DESCRIPTION	Employee per Acre Factor
35	Rural Commercial	20
25	Rural Industrial	1

This process outputs an estimated rural vacant and underutilized lands housing and employment capacity based on adopted or proposed UGA's for determining overall capacity.

……
From: Jim Cser [mailto:Jim.Cser@oregonmetro.gov]
Sent: Monday, March 05, 2012 4:22 PM
To: Pearrow, Ken
Cc: Dennis Yee; Maribeth Todd
Subject: RE: Clark County Rural Residential Capacity

Hi Ken,
That would be fine, thank you.
-Jim

……..
From: Pearrow, Ken [mailto:Ken.Pearrow@clark.wa.gov]
Sent: Monday, March 05, 2012 4:20 PM
To: Jim Cser
Cc: Dennis Yee; Maribeth Todd
Subject: RE: Clark County Rural Residential Capacity

Jim,

I will provide you with the details for our methodology and our current rural capacity numbers. I am currently working on a 2012 rural capacity number and will forward it to you when it is complete and has been reviewed by our planning staff.

Rural capacity numbers should be ready by the end of this week. Does that work?

Thanks,

Ken Pearrow
GIS Coordinator
Clark County GIS
PO Box 5000
Vancouver, WA 98666-5000
tel: (360) 397-2002 x.4937
fax: (360) 397-2046
www.clark.wa.gov

……
From: Jim Cser [mailto:Jim.Cser@oregonmetro.gov]
Sent: Monday, March 05, 2012 4:12 PM
To: Pearrow, Ken
Cc: Dennis Yee; Maribeth Todd
Subject: Clark County Rural Residential Capacity

Hello Ken,
For our current TAZ forecast, we need to determine the Clark County rural residential capacity. Do you have any GIS data or methodology that you can share? Our original estimate started with selecting the

taxlots that fell into the rural residential designations of the comp plan, but then it was difficult to determine how many of those acres were buildable or how to convert buildable acres to capacity.

Thanks,
Jim

This e-mail and related attachments and any response may be subject to public disclosure under state law.
This e-mail and related attachments and any response may be subject to public disclosure under state law.

From: Dennis Yee
Sent: Friday, March 02, 2012 1:47 PM
To: Harrington, Mark (RTC); Orjiako, Oliver; Snodgrass, Bryan
Cc: Maribeth Todd; Gerry Uba
Subject: RE: Clark County forecast

As follow-up to our discussion yesterday, I thought it germane to have the different set of forecasts compared side-by-side. Here's what we have. Do you concur?

We compare 3 forecasts:

1. MetroScope Scenario #1203 (the GAMMA TAZ forecast of reflecting Metro council's "lower-middle third forecast")
2. MetroScope Scenario #1204 (a test run of the gamma forecast, which does not use the JOAN travel model, but an internal simplified mini-travel demand model that replaces the travel times of the JOAN model)
3. RTC forecasts from the 2022 interim and MTP forecast

Households:

- Comparisons look comparable in 2035 (aka year 5).
- RTC interim forecast comes in a bit lower, but 3 years less with a 2022 endpoint instead of 2025. 3 more years adds about another 15,000 households to 193,500 = 208,500 or so households in 2025
- Slower economy equates to slower population growth makes sense to me given recent economic doldrums…thus delaying growth

Employment:

- Both Metro forecasts ring in higher than the interim 2022 number, but adjusting for 3 more years, brings the interim number up to about 174,000 jobs for a 2025 estimate….closer to the Metro scen #1203 projection
- MTP forecasts rings in higher in the year 2035 (in table noted as year 5) by a big margin

- Both Metro forecast and MTP forecast seem to be too aggressive in estimating employment growth given the continued weakness in both Clark county and overall slow job recovery in the US as a whole.

The problem seems to be how to try and reconcile aggressive employment projections in light of known economic weakness that we expect will persist up through 2015 and perhaps later as some economic pundits have claimed.

Have I framed this properly?

Regards,

Dennis Yee
Metro Economist

From: Dennis Yee
Sent: Thursday, March 01, 2012 3:28 PM
To: Orjiako, Oliver; Pearrow, Ken; Harrington, Mark (RTC); Snodgrass, Bryan; Wuest, Phil
Cc: Gerry Uba; Jim Cser; Maribeth Todd
Subject: RE: TAZ 2025 Forecast Allocation

All:

We will be posting to our ftp server the following information (probably by Monday or Tuesday):

- All pdf maps discussed today. (it will take a day or 2 before our IT department uploads the files to our ftp server – I'll send out a new email with the ftp link soon)
- Updated excel file of TAZ forecast – revised the crosswalk affiliations from TAZ to cities for Clackamas county only - (the excel file is found here: ftp://ftp.oregonmetro.gov/dist/gm/TazAlloc2010/Midterm_review/TAZ_2025/ ; filename: Gamma_TAZ Forecast_report_2025.xlsx)
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- Map showing the timing of Clark county urban reserves (and zoning and capacity assumptions for each urban reserve) as assumed for modeling and forecasting purposes.

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Mark: will you need to see gamma 2020 numbers so you can eyeball some sort of interpolation for year 2024? Let Maribeth or I know of your needs.

I think this summarizes Metro's to do list after the meeting today.

Regards,

Dennis Yee
Metro Economist

From: Orjiako, Oliver [mailto:Oliver.Orjiako@clark.wa.gov]
Sent: Thursday, March 01, 2012 3:00 PM
To: Dennis Yee; Harrington, Mark (RTC); Pearrow, Ken
Cc: Bill Stein; Gerry Uba; Maribeth Todd
Subject: RE: Clark county QCEW dataset

Hello Dennis:

Thank you.

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Thursday, March 01, 2012 1:32 PM
To: Harrington, Mark (RTC); Orjiako, Oliver; Pearrow, Ken
Cc: Bill Stein; Gerry Uba; Maribeth Todd
Subject: Clark county QCEW dataset

Mark, Oliver and Ken:

Thanks for a very informative meeting today.

Here's the reply I received today from Baba Moussa regarding the covered employment data:

…I will reply to him by citing that we want to be able to have Clark county GIS department share its employment geocode with us for modeling and forecasting…limiting access to 3 people (myself, Maribeth and TBD person in TRMS).

Ken, was there some specific description you used in referring to the data you got from ESD? I'll use that in reply to Baba if you have it handy and can send it to me.

Thanks

Dennis

From: "Moussa, Baba (ESD)" <BMoussa@esd.wa.gov>
To: "Thomas Yee" <Thomas.Yee@oregonmetro.gov>
Cc: "Forbord, Tim (ESD)" <TForbord@ESD.WA.GOV>
Subject: request QCEW data for 2009
Date: Thu, Mar 1, 2012 09:36

Good morning Yee:

My name is Baba Moussa and I manage data sharing agreements for the labor market and economic analysis branch of WA ESD. I am writing to confirm that your email has been received and I will be getting back to you soon for more questions and details. From you email, my understanding regarding what your needs is:

"we seek 2009 employment point data for Clark County, Washington.
We seek authority for Clark County GIS to provide Metro and Resource Systems Group with employment data for Clark County which include number of employees in each employment parcel by employment type (retail, service, total)". Is this correct? Could you give us additional details if possible?

Could you also elaborate on how many employees will have access to the data, where these employees work, how long will metro need the data?

Thank you.
Tihamiyou Baba Moussa
Economic Analyst
WA Employment Security Department
Labor market and economic analysis
(360) 407 4594

Here's the email I sent yesterday to T. Forbord at ESD:

Mr. Forbord,

I am writing you to request access to QCEW employer payroll records for use in the region's economic/land use and transportation modeling development & forecasting. These modeling & forecasting requirements are rooted in federal transportation mandates and state land use and transportation rules which both Metro and Clark County/Regional Transportation Council adhere to. We have had the need in the past to work with Oregon and Washington confidential covered employment datasets. Confidential employment data provides local government planners and policymakers the accurate information needed for planning urban growth areas and building roads and bridges. Metro's efforts to update and revise regional forecasts serve the interests of both Oregon and Washington residents.

Metro is the regional government with statutory jurisdiction over Clackamas, Multnomah, and Washington counties in Oregon. Metro's land use and travel modelers have a long standing (over 25 year) collaboration with Clark County, Washington and the Southwest Washington Regional Transportation Council (RTC) built upon data and model sharing. In fact, Metro and RTC planners routinely share forecast information, historical data, and model developments.

Clark County, Washington is an integrated part of the Portland-Vancouver-Hillsboro Metropolitan Statistical Area. The county shares close economic and social ties with the Portland area economy, which is reflected in our economic planning and transportation models.

Metro and RTC travel modelers apply land use data from Oregon and Washington to bi-state transportation networks to provide technical analysis for transportation decision makers. Metro's suite of recent model enhancements (which include airport passenger demand, bicycle modeling tools, dynamic traffic assignment, park-and-ride lot choice, household survey design, and transit traveler preferences) are being shared with RTC, so that Clark County has the same modeling capabilities as the areas under Metro's jurisdiction. These bi-state models rely on employment data from both Oregon and Washington to operate correctly.

The impetus for our current employment data request is the development of our new activity-based model, the Dynamic Activity Simulator for Households (DASH), which is led by our consultant Dr. John Gliebe of Resource Systems Group in Vermont. Dr. Gliebe has expressed a desire to test the statistical significance to auto ownership, mode choice, and/or park-and-ride lot choice, of ¼ mile and ½ mile employment buffers around transit stops. We have 2009 employment point data for Oregon, and we seek 2009 employment point data for Clark County, Washington.

We seek authority for Clark County GIS to provide Metro and Resource Systems Group with employment data for Clark County which include number of employees in each employment parcel by employment type (retail, service, total).

Please let us know what you need from us to move ahead with acquiring the needed covered employment data. I look forward to hearing from you soon.

Dennis Yee
Metro Chief Economist

Metro
600 NE Grand Av.
Portland, OR 97232-2736
(503) 797-1578
(503) 797-1909 (FAX)
dennis.yee@oregonmetro.gov

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www.oregonmetro.gov/connect

From: Dennis Yee
Sent: Thursday, March 22, 2012 11:25 AM
To: Michael.Mabrey@clark.wa.gov; Orjiako, Oliver; Snodgrass, Bryan
Cc: Harrington, Mark (RTC); Pearrow, Ken; Gerry Uba
Subject: Metro TAZ forecast

We are planning to re-run the TAZ forecast to get new growth allocations from MetroScope based on revised rural residential capacity for Clark county. This will reduce the household allocations in rural unincorporated Clark county by several thousand for the 2025 distributions.

Before we begin finalizing 2025 TAZ figures, are you seeing anything else that might cause technical concerns for the cities? We would like to incorporate anything else at the same time as we correct for the rural piece.

Regards,

Dennis Yee
Metro Chief Economist

Metro

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To: Harrington, Mark (RTC); Orjiako, Oliver; Snodgrass, Bryan
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Metro Economist

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Regards,

Dennis Yee
Metro Chief Economist

Metro

From: Harrington, Mark (RTC) [mailto:Mark.Harrington@rtc.wa.gov]
Sent: Wednesday, March 14, 2012 10:56 AM
To: Dennis Yee
Subject: RE: Clark County forecast

Sorry for the delayed response, but yes Dennis, I think you have framed it appropriately. I knew you would.

Mark

From: Dennis Yee
Sent: Friday, March 02, 2012 1:47 PM
To: Harrington, Mark (RTC); Orjiako, Oliver; Snodgrass, Bryan
Cc: Maribeth Todd; Gerry Uba
Subject: RE: Clark County forecast

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Metro Economist

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Regards,

Dennis Yee
Metro Economist

2035 comments and responses

August 1 to August 31, 2012

2035/2040 TAZ Forecast Distribution Review, Key comments and Accepted Adjustments

Introduction

Metro is required to coordinate population forecasts with local jurisdictions within the Metro UGB. This requirement is carried out by Metro's Research Center and Planning & Development Departments. The process for completing the coordination of population is necessarily a joint effort among Metro and local governments of this region. The process has been collaborative and mutually agreeable, but at times, there have been key forecast issues that the region has not fully come to an agreement. These forecast concerns have been "tabled" and listed as additional research items that will be tackled in coming research projects for the next Urban Growth Report cycle.

The forecast distribution comes to its conclusion with the completion of jurisdiction reviews of the year 2035 and 2040 TAZ distributions for households and employment. The growth distributions derive from the MetroScope growth allocation model, but undergo revisions from local input. The process of coordinating population and growth in the region included a planned series of official opportunities to review the forecast distributions, make comments, and accept local review adjustments to the TAZ projections and amend capacity assumptions. Metro Council will move to adopt the forecast distribution in late-2012. This review of 2035 and 2040 TAZ distributions marks the last stage of technical challenges and revisions that can be made to the forecast distribution.

At the beginning (2 years ago), local governments were solicited for their feedback of the population coordination process and afforded the chance to review and revise the technical assumptions that would materially impact the growth distribution. Here is a short list of these key forecast factors:

- Base year 2010 employment and population (i.e., households) estimates
- Contribute in defining procedures and methods to account for the buildable land inventory
- Review and amend the buildable land inventory and capacity estimates for housing and employment needs
- Revise the crosswalk table between local zoning and the RLIS standardized zone class designations
- Revise TAZ boundaries
- Provide direction and input into key land use, capacity, and policy assumptions (e.g., urban reserves, urban reinvestment subsidies – urban renewal, economic-based redevelopment filter factors, mixed-use residential development factor rates, etc.)

Metro staff consulted with local jurisdictions concerning land development policies and growth projections. These consults were to solicit feedback from local jurisdictions. The feedback provided information that ultimately improved the forecast distribution. Meetings with local governments helped to coordinate the population distribution analysis in accord with state mandates.
At a halfway point, local reviewers were asked to assess the mid-term TAZ forecast, so as to provide a critical time-path dependent assessment for the growth distribution . This review was completed for the year 2025 growth distributions and review comments incorporated into the long-term growth distribution forecast.
The long-term growth projections reflects the local review inputs for 2025. For the mid-term growth distributions, local government s provided feedback on 1) adjusting the 2025 household demand distributions (or employment) and 2) amending the long-term supply / capacity assumptions. These mid-term adjustments were folded into the 2035 and 2040 growth distributions and therefore should be consistent with capacity estimates and any mid-course adjustments to household and employment projections in the long-term.

2035 and 2040 TAZ Distribution Adjustments

The general nature of the final review for the TAZ growth distribution were fairly routine adjustments that redistributed growth projections form one TAZ to another TAZ, mainly within the same city.
No major shifts in employment growth were provided. Many of the shifts that would have happened occurred in 2025 and shifting in growth trends carried forward into 2035 and 2040, negating any need to make adjustments in the long-term.

- A few thousand jobs were traded from TAZ's located in Lake Oswego and reassigned to unincorporated Clackamas county
- City of Portland adjusted some of its TAZ allocations to reflect focus on corridors and main street development consistent with the Portland Plan. These amendments were entirely within the city and therefore did not affect the county total or other cities' growth distributions.

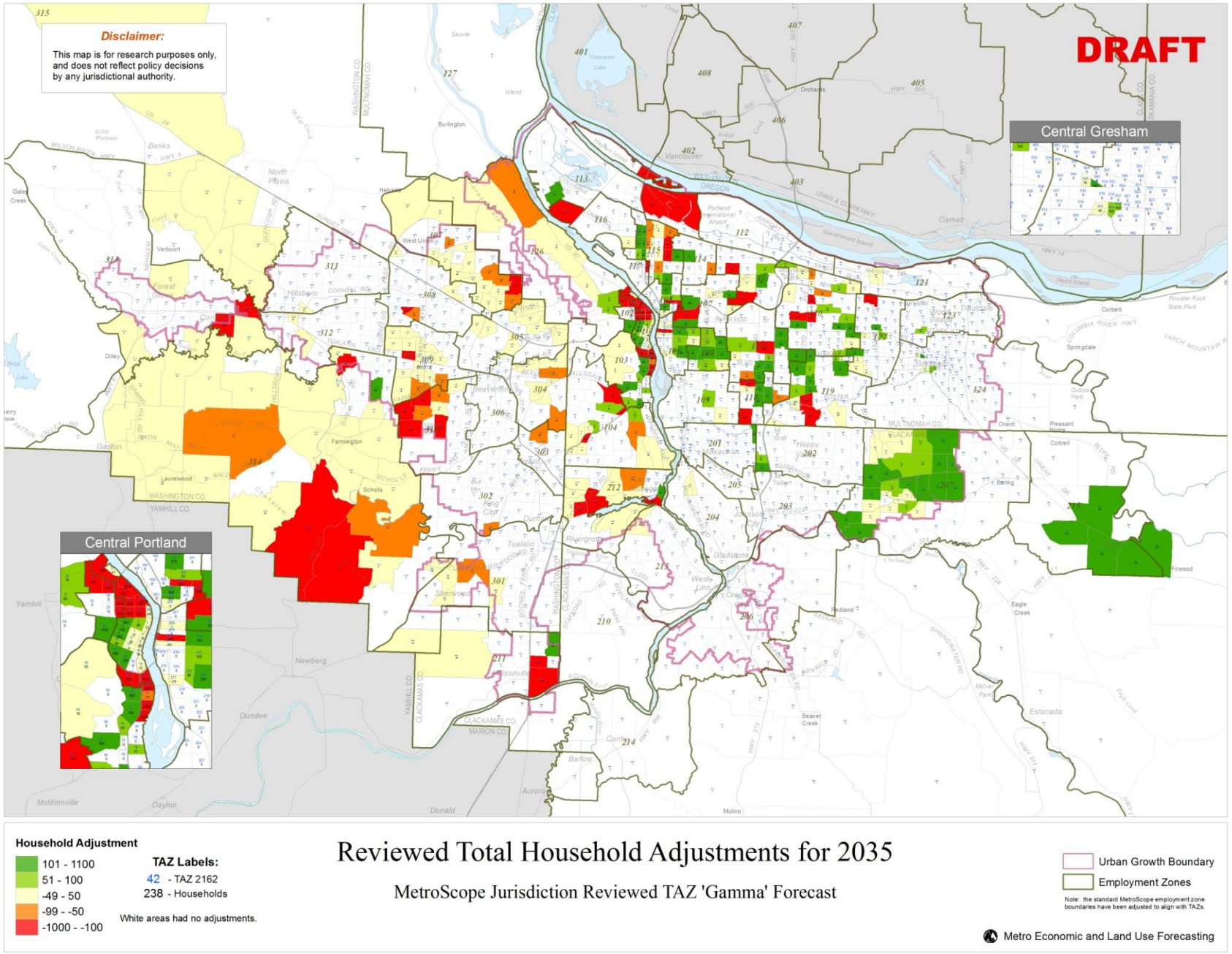
The local review for the 2035 and 2040 household distributions yielded more changes, but again the amount of revisions were less than the mid-term review. This reflects the completeness of the review undertaken by local jurisdictions for the 2025 mid-term review. A few jurisdictions had changes to offer, but were not very significant. A map illustrating the changes in household distributions recommended by local jurisdictions is attached.

- Portland remapped its TAZ household growth projections to forecast relatively more growth (as compared to the MetroScope pre-review allocation estimates) in corridors and main streets found in the inner and outer southeast portions of the city. These adjustments were accepted without challenge because the redistributions did not impact the county total or other cities' growth distributions.
- Washington county requested (and accepted) a reduction in household growth assigned to rural unincorporated areas of the county (outside the Metro UGB). Upon more review, it was determined that the residential capacity county for rural Washington county had supply assumptions that were too aggressive. Several thousand households were redistributed to elsewhere in the region (see Damascus).

- Due to the initial rural nature of the city of Damascus, the 2025 mid-term residential growth rate projections were deemed too aggressive and were thus reduced in the 2025 mid-term growth distributions in accord with the Damascus review comments. By 2035, the residential growth that had been shifted out of Damascus (about 2,500 units) was shifted back into Damascus in the 2035 allocations. This effectively delays for 10 years the 2025 growth projection for Damascus to year 2035. We estimate marginal capacity (based on a now defunct Damascus concept plan) for the city of about 11,000 more SF unit capacity and 10,000 more MF unit capacity. Total absorption between 2010 and 2035 of about 8,400 units – mostly SF and virtually no MF development. After 2040, we estimate 9,700 units of SF absorbed, leaving about 1,300 SF units of capacity remaining.

Damascus Household Forecast Summary

	TAZ allocation	Growth	APR%
2010	3,527		
2025	9,251	5,724	6.6%
2035	11,916	2,665	2.4%


Disclaimer:
This map is for research purposes only, and does not reflect policy decisions by any jurisdictional authority.
DRAFT
Central Gresham
Central Portland
Household Adjustment
101 - 1100
51 - 100
-49 - 50
-99 - -50
-1000 - -100
TAZ Labels:
42 - TAZ 2162
238 - Households
White areas had no adjustments.
Reviewed Total Household Adjustments for 2035
MetroScope Jurisdiction Reviewed TAZ 'Gamma' Forecast
Urban Growth Boundary
Employment Zones
Note: the standard MetroScope employment zone boundaries have been adjusted to align with TAZs.
Metro Economic and Land Use Forecasting

2035 comments and responses

#	Local Government	Comment and response completed
1	Beaverton	Yes
2	Cornelius	No comment/No TAZ staff
3	Damascus	Yes
4	Durham	No comment
5	Fairview	No comment/No TAZ staff
6	Forest Grove	Yes
7	Gladstone	No comment/No TAZ staff
8	Gresham	Yes
9	Happy Valley	Yes
10	Hillsboro	Yes
11	Johnson City	No comment/No TAZ staff
12	King City	Yes
13	Lake Oswego	Yes
14	Maywood Park	No comment/No TAZ staff
15	Milwaukie	No comment
16	Oregon City	No comment
17	Portland (& POP)	Yes
18	Rivergrove	No comment/No TAZ staff
19	Sherwood	Yes
20	Tigard	Yes
21	Troutdale	Yes
22	Tualatin	Yes
23	West Linn	Yes
24	Wilsonville	Yes
25	Wood Village	Yes
26	Clackamas County	Yes
27	Multnomah County	Yes
28	Washington County	Yes

Following are the actual correspondences between local governments and Metro leading up to the completion of the comments and response.

CITY OF BEAVERTON

Distribution Adjustments completed (August 20, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

From: Laura Kelly [mailto:lkelly@beavertonoregon.gov]
Sent: Monday, August 20, 2012 3:39 PM
To: Gerry Uba; Dennis Yee
Cc: Jeff Salvon
Subject: FW: 2025-2040ResidentialTAZReview7-27.xlsx

Hi Gerry,
As far as I can tell, the comments we sent last week are our final comments. Please see Jeff's email below and attachment.
Please let me know if there is anything else we need to do here.
Thanks,

Laura Kelly
Senior Planner| Community and Economic Development Department
City of Beaverton | P.O. Box 4755 | Beaverton, OR 97076
503.526.2548 | lkelly@BeavertonOregon.gov

Beaverton
OREGON

……

From: Jeff Salvon
Sent: Tuesday, August 14, 2012 7:56 AM
To: yeed@metro.dst.or.us; steve_kelley@co.washington.or.us
Cc: Robert McCracken; Laura Kelly; Steven Sparks
Subject: 2025-2040ResidentialTAZReview7-27.xlsx

Dennis and Steve.

Attached please find are our comments on the 2040 TAZ review.

In our review, we basically shifted some of the residential dwelling units around between TAZ areas as instructed to compensate for areas were growth exceeded the 2045 capacities highlighting areas where growth exceeded a certain margin. In doing so, we found that the 3 TAZ areas for 6b and Cooper Mountain were once again not in keeping with what we thought we had agreed upon. We indicated so in our comments and recommended adjustments accordingly.

Apart from that, we found the Employment numbers to be acceptable but recognized that we still fall short of our estimates by about 2,000 jobs. Given the constraints of our task there's not much we can

do about that except to advocate that should County surpluses exist within the proper control totals, we'd be happy to accept them.

Thanks again for helping us perform our review and call if you have any questions.

Jeff
PUBLIC RECORDS LAW DISCLOSURE

This e-mail is a public record of the City of Beaverton and is subject to public disclosure unless exempt from disclosure under Oregon Public Records Law. This email is subject to the State Retention Schedule.

From: Dennis Yee
Sent: Tuesday, August 14, 2012 8:52 AM
To: Gerry Uba
Subject: FW: 2025-2040ResidentialTAZReview7-27.xlsx

For the record.

From: Jeff Salvon [mailto:jsalvon@beavertonoregon.gov]
Sent: Tuesday, August 14, 2012 7:56 AM
To: Dennis Yee; steve_kelley@co.washington.or.us
Cc: Robert McCracken; Laura Kelly; Steven Sparks
Subject: 2025-2040ResidentialTAZReview7-27.xlsx

Dennis and Steve.

Attached please find are our comments on the 2040 TAZ review.

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CITY OF DAMASCUS (and Happy Valley)

Distribution Adjustments completed (August 28, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

Metro and City staff meeting summary (September 19, 2012): City staff expressed concern on the forecasted single family and multifamily residential split. Metro staff told city staff that the forecast split is an expression of how economic activity and zoning policy might deliver development by 2035.

From: Gerry Uba [mailto:Gerry.Uba@oregonmetro.gov]
Sent: Tuesday, August 28, 2012 1:38 PM
To: Erika Palmer
Cc: Conrad, Larry; Dennis Yee; 'John Morgan (john@morgancps.com)'
Subject: RE: 2035 Forecast Comments

Hello Erika,

I am aware that Robin is working on setting up a meeting to discuss related matter, and it is very likely that Larry may not be invited to that meeting. I requested the meeting with the County Coordinator, Larry, in line with the established process for discussing and resolving comments on the mid-term and long-term forecast distributions. You will recollect that we had County coordination meeting last spring with Larry, you, Steve Gaschler, Happy Valley staff and us during the 2025 mid-term distributions.

The County coordination meeting will inform the meeting that Robin is setting up. Please let me know your availability for the County coordination meeting. Thanks

Gerry

From: Erika Palmer [mailto:epalmer@damascusoregon.gov]
Sent: Tuesday, August 28, 2012 8:02 AM
To: Gerry Uba
Cc: Conrad, Larry; Dennis Yee; 'John Morgan (john@morgancps.com)'
Subject: RE: 2035 Forecast Comments

Hi Gerry,

I did talk to Larry about the numbers. I also know that Robin McAuthor is working on setting up a meeting with folks at Metro to discuss the pop/employment numbers. We are working on deadlines on this end and need to come to some sort of consensus on how to move forward with what we need for our planning work.

Thanks!

Best Regards,

Erika Palmer

Senior Planner

Address: 19920 SE Highway 212 | Damascus, OR 97089
Telephone: 503.658.8545 ● **Email:** epalmer@damascusoregon.gov
think green... please don't print this e-mail if you don't have to

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From: Gerry Uba [mailto:Gerry.Uba@oregonmetro.gov]
Sent: Monday, August 27, 2012 5:40 PM
To: Erika Palmer
Cc: Conrad, Larry; Dennis Yee; 'John Morgan (john@morgancps.com)'
Subject: RE: 2035 Forecast Comments

Hello Erika,

Thanks for your comments on the 2035 forecast distribution for your city –Damascus. Have you meet with Larry as you suggested in your email to him? If not, maybe you, Larry, Dennis and myself should have a teleconference, unless you prefer a face to face meeting.

Please let me know your preference and availability in the next two to three days and I will check with Larry and Dennis tomorrow.

Thanks

Gerry

From: Erika Palmer [mailto:epalmer@damascusoregon.gov]
Sent: Monday, August 20, 2012 4:43 PM
To: Gerry Uba
Subject: FW: 2035 Forecast Comments

Our comments, see below.

Best Regards,

Erika Palmer

Senior Planner

Address: 19920 SE Highway 212 | Damascus, OR 97089
Telephone: 503.658.8545 ● **Email:** epalmer@damascusoregon.gov

---

From: Erika Palmer
Sent: Thursday, August 16, 2012 11:14 AM
To: Conrad, Larry
Cc: Dennis Yee (Dennis.Yee@oregonmetro.gov); John Morgan
Subject: 2035 Forecast Comments

Thank you for giving us the opportunity to comment on the 2035 TAZ Gamma Forecast. In reviewing the distribution our planning staff have highlighted the following concern:

Between 2010 and 2025 there is a 5,724 increase in households for a total of 9,251 households. Between 2025 and 2035 there is an increase of 98 households for a total of 9,349 households. Between 2035 and 2040 the modeling projects only 86 new households between this five year period.

The numbers indicate a significant amount of new growth in the first fifteen years (until 2025) – 5,724 households. Three years has almost past and that means 5,724 new households in 12 years with no comp plan, no infrastructure and a down market without a clear sign of when recovery will begin. Between 2025 and 2035 the model shows an increase of 98 households and between 2035 and 2040 and increase of 86 households. The model indicates a decrease in households as it projects into the future. The City at this time does not expect full adoption of a Comprehensive Plan and all its implementing ordinances completed until the fall of 2014. The increase in new growth in the short term (2025) is highly unlikely. The employment numbers also seem high especially if growth slows after 2025.

Dennis, let me know if you would like to meet and discuss concerns. Thank you.

Best Regards,

Erika Palmer

Senior Planner
Address: 19920 SE Highway 212 | Damascus, OR 97089
Telephone: 503.658.8545 ● **Email:** epalmer@damascusoregon.gov

---

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Thursday, July 19, 2012 1:58 PM
To: Brian Brown; Fritzie, Martha; Gilevich, Shari; Glasgow, Clay; Hoelscher, Scott; Tracy Brown; (lterway@ci.oregon-city.or.us); Abbott, Sarah; AQUILLA HURD-RAVICH; Barth, Gary; Buehrig, Karen;

Chris Neamtzu; Colin Cortes; Comer, Catherine; Egner, Dennis; Erica Rooney; Erika Palmer; Hughes, Jennifer; John Morgan; John Sonnen; Kay Mordock; Kelver, Brett; Marquardt, Ryan; McCallister, Mike; Michael Walter; Pauly, Daniel; Pollack, Kay; Stephan Lashbrook; Steve Gaschler; Will Harper
Subject: 2035 Forecast Comments

Good Afternoon --

Just a quick reminder that comments on the Metro 2035 / 2040 Gamma Forecast numbers are due to Metro on August 17th.

If you want your comment include in a consolidated set of comments please send them to me by August 10th.

I will be out of the office until August 6th.

If you have any questions or comments in the next two weeks -- please contact Martha Fritzie

Thanks

Lawrence M Conrad
Principal Transportation Planner
Department of Transportation and Development
Clackamas County
150 Beavercreek Road
Oregon City, OR 97045

(v) 503.742.4539

larrycon@co.clackamas.or.us

In keeping with the County's sustainability goals our Department is open Monday – Thursday and is closed on Fridays.

From: Erika Palmer [mailto:epalmer@damascusoregon.gov]
Sent: Thursday, August 16, 2012 11:14 AM
To: Conrad, Larry
Cc: Dennis Yee; John Morgan
Subject: 2035 Forecast Comments

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Best Regards,

Erika Palmer
Senior Planner
Address: 19920 SE Highway 212 | Damascus, OR 97089
Telephone: 503.658.8545 ● **Email:** epalmer@damascusoregon.gov
think green... please don't print this e-mail if you don't have to

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Thursday, July 19, 2012 1:58 PM
To: Brian Brown; Fritzie, Martha; Gilevich, Shari; Glasgow, Clay; Hoelscher, Scott; Tracy Brown; (lterway@ci.oregon-city.or.us); Abbott, Sarah; AQUILLA HURD-RAVICH; Barth, Gary; Buehrig, Karen; Chris Neamtzu; Colin Cortes; Comer, Catherine; Egner, Dennis; Erica Rooney; Erika Palmer; Hughes, Jennifer; John Morgan; John Sonnen; Kay Mordock; Kelver, Brett; Marquardt, Ryan; McCallister, Mike; Michael Walter; Pauly, Daniel; Pollack, Kay; Stephan Lashbrook; Steve Gaschler; Will Harper
Subject: 2035 Forecast Comments

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If you want your comment include in a consolidated set of comments please send them to me by August 10th.

I will be out of the office until August 6th.

If you have any questions or comments in the next two weeks -- please contact Martha Fritzie

Thanks

Lawrence M Conrad

Principal Transportation Planner
Department of Transportation and Development
Clackamas County
150 Beavercreek Road
Oregon City, OR 97045

(v) 503.742.4539

larrycon@co.clackamas.or.us

In keeping with the County's sustainability goals our Department is open Monday – Thursday and is closed on Fridays.

CITY OF FOREST GROVE

Distribution Adjustments completed (August 15, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

From: Dennis Yee
Sent: Wednesday, August 15, 2012 3:15 PM
To: Daniel Riordan; Gerry Uba
Cc: Paulette Copperstone; Steve Kelley
Subject: RE: GAMMA TAZ Forecast Distribution

Message received. I want to thank you Dan for your assistance during this TAZ forecast process.

Best

Dennis

From: Daniel Riordan [mailto:driordan@forestgrove-or.gov]
Sent: Wednesday, August 15, 2012 11:05 AM
To: Dennis Yee; Gerry Uba
Cc: Paulette Copperstone; Steve Kelley
Subject: GAMMA TAZ Forecast Distribution

Hello All,

Thank you for the opportunity to review the latest household and employment forecast distribution. The long term TAZ allocations for 2035 -2040 seems fine. Forest Grove won't be recommending any changes to the TAZ allocations within our planning area.

Best Regards,

Dan

Dan Riordan
Senior Planner
City of Forest Grove

Phone: (503) 992-3226
www.forestgrove-or.gov

CITY OF GRESAHM

Distribution Adjustments completed (August 17, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

From: Dennis Yee
Sent: Friday, August 17, 2012 11:30 AM
To: Martin, Brian
Cc: Gerry Uba; Jim Cser
Subject: RE: Gresham comments

Thanks Brian!

This sounds fine and I'll look at the actual re-distributions next week. If I have question then, I give you a ring.

Best,
Dennis

From: Martin, Brian [mailto:Brian.Martin@greshamoregon.gov]
Sent: Friday, August 17, 2012 9:54 AM
To: Dennis Yee
Subject: Gresham comments

Dennis:

I moved most of the units out of that TAZ we talked about and put them in our Regional Center and Town Center.

See attached.

Let me know if you have questions.

Thanks.

Brian Martin, AICP, LEED AP
Associate Planner - Comprehensive Planning
City of Gresham
1333 N.W. Eastman Parkway
Gresham, OR 97030

v 503-618-2266
f 503-669-1376
brian.martin@GreshamOregon.gov
www.greshamoregon.gov

CITY OF HAPPY VALLEY (and Damascus)

Distribution Adjustments completed (August 29, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

From: Dennis Yee
Sent: Wednesday, August 29, 2012 8:30 AM
To: Michael Walter; Gerry Uba; 'Conrad, Larry'
Subject: RE: Reminder: August 17th Deadline for Comment on the Long-term Growth Distribution

Thanks Mike for your assistance and participation.

Best

Dennis

From: Michael Walter [mailto:MichaelW@ci.happy-valley.or.us]
Sent: Tuesday, August 28, 2012 4:48 PM
To: Gerry Uba; 'Conrad, Larry'
Cc: Dennis Yee
Subject: RE: Reminder: August 17th Deadline for Comment on the Long-term Growth Distribution

Sorry for the delay in our response – we are satisfied with the distribution information (for modeling purposes) and the process that has been followed for coordination with municipalities.

Thank you, for all of your hard work.

Michael D. Walter, AICP
ECONOMIC & COMMUNITY DEVELOPMENT DIRECTOR
503-783-3839
MICHAELW@CI.HAPPY-VALLEY.OR.US
Preserve. Serve. Enrich.

From: Paulette Copperstone [mailto:Paulette.Copperstone@oregonmetro.gov]
Sent: Thursday, August 16, 2012 12:50 PM
To: tom.armstrong@portlandoregon.gov; dtaylor@beavertonoregon.gov; erin.aigner@greshamoregon.gov; kaha@westlinnoregon.gov; randygra@co.clackamas.or.us;

jsalvon@beavertonoregon.gov; lkelly@beavertonoregon.gov; tfranz@ci.cornelius.or.us; epalmer@ci.damascus.or.us; driordan@forestgrove-or.gov; jonathan.harker@greshamoregon.gov; ann.pytynia@greshamoregon.gov; brian.martin@greshamoregon.gov; Michael Walter; vickiew@ci.hillsboro.or.us; dono@ci.hillsboro.or.us; dougm@ci.hillsboro.or.us; degner@ci.oswego.or.us; rossonk@ci.milwaukie.or.us; cdunlop@ci.oregon-city.or.us; kevin.martin@portlandoregon.gov; ortizp@ci.sherwood.or.us; preston@tigard-or.gov; elizabeth.mccallum@troutdaleoregon.gov; camedzake@ci.troutdale.or.us; chahn@ci.tualatin.or.us; tscott@ci.tualatin.or.us; ckerr@westlinnoregon.gov; jsonnen@westlinnoregon.gov; stark@ci.wilsonville.or.us; pauly@ci.wilsonville.or.us; neamtzu@ci.wilsonville.or.us; mangle@ci.wilsonville.or.us; billp@ci.wood-village.or.us; mikem@co.clackamas.or.us; jenniferh@co.clackamas.or.us; larrycon@co.clackamas.or.us; mfritzie@co.clackamas.or.us; jennifer.donnelly@state.or.us; anne.debbaut@state.or.us; Richard Benner; Jim Cser; Dennis Yee; charles.beasley@multco.us; Maribeth Todd; Paulette Copperstone; Gerry Uba; tom.bouillion@portofportland.com; steve.iwata@portlandoregon.gov; mark@rtc.wa.gov; nels_mickaelson@co.washington.or.us; steve_kelley@co.washington.or.us; ssparks@beavertonoregon.gov; rreynolds@ci.cornelius.or.us; darren@tigard-or.gov; Michelle Miller; ahurd-ravich@ci.tualatin.or.us; ccortes@ci.tualatin.or.us; liden@pbworld.com; bshort@damascusoregon.gov; sjavoronok@westlinnoregon.gov
Cc: John Williams; Mike Hoglund; Dennis Yee; Gerry Uba; Jim Cser; Maribeth Todd; Ken Ray
Subject: Reminder: August 17th Deadline for Comment on the Long-term Growth Distribution
Importance: High

Hello All,

The purpose of this e-mail is to remind you that the deadline for cities and counties to send their comments on the 2035 and 2040 long-term forecast distribution is tomorrow, August 17. Some local governments sent their comments and we talked with some to address their concerns on the data we posted on the Metro FTP site and on the information we presented at the county coordination meetings in Multnomah County on July 10, Clackamas County on July 11 and Washington County on July 19. Please contact Dennis Yee if you would like to discuss any concerns that may be holding you from finalizing your comments and sending them to us. Dennis can be reached at 503-797-1578 or Dennis.Yee@oregonmetro.gov. You may also call me.

We want to hear also from those of you who are satisfied with the distribution information posted on the Metro FTP site. It is important that we record your satisfaction with the coordination of the long-term distribution.

We are looking forward to receiving your comments by tomorrow's August 17 deadline. Thank you again for your cooperation and collaboration to produce this valuable information that will help our collective efforts to support good jobs and promote safe and healthy communities.

Gerry

Regional Growth Distribution Coordinator
Metro
gerry.uba@oregonmetro.gov

CITY OF HILLSBORO

Distribution Adjustments completed (August 17, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

From: Doug Miller [mailto:dougm@ci.hillsboro.or.us]
Sent: Friday, August 17, 2012 3:05 PM
To: Gerry Uba; Dennis Yee
Cc: Steve Kelley (steve_kelley@co.washington.or.us); Alwin Turiel
Subject: 2040 Household Allocation Review Comments

Hi Gerry and Dennis,

Attached is Hillsboro's comments on the Metroscope Gamma 2.0 2040 Household allocations. I've completed the employment review and comments but I'd like to have a few key people review it before it goes out the door, so I'll get it to you early next week.

Doug Miller
Urban Planner II - GIS
City of Hillsboro
503-681-6231

From: Doug Miller [mailto:dougm@ci.hillsboro.or.us]
Sent: Wednesday, August 22, 2012 2:51 PM
To: Gerry Uba; Dennis Yee
Cc: 'Steve Kelley (steve_kelley@co.washington.or.us)'
Subject: 2040 Employment Allocation Review Comments

Hi Gerry and Dennis,

The attached spreadsheet has Hillsboro's changes and comments for the Metroscope Gamma 2.0 2040 Employment allocations. Let me know if you have any questions.

Doug Miller
Urban Planner II - GIS
City of Hillsboro
503-681-6231

From: Dennis Yee
Sent: Friday, August 17, 2012 3:07 PM
To: Doug Miller; Gerry Uba
Cc: Steve Kelley (steve_kelley@co.washington.or.us); Alwin Turiel
Subject: RE: 2040 Household Allocation Review Comments

Thanks Doug.

We will look forward to the final installment of employment comments early next week.

Best,

Dennis Yee
Metro Economist

From: Doug Miller [mailto:dougm@ci.hillsboro.or.us]
Sent: Friday, August 17, 2012 3:05 PM
To: Gerry Uba; Dennis Yee
Cc: Steve Kelley (steve_kelley@co.washington.or.us); Alwin Turiel
Subject: 2040 Household Allocation Review Comments

Hi Gerry and Dennis,

Attached is Hillsboro's comments on the Metroscope Gamma 2.0 2040 Household allocations. I've completed the employment review and comments but I'd like to have a few key people review it before it goes out the door, so I'll get it to you early next week.

Doug Miller
Urban Planner II - GIS
City of Hillsboro
503-681-6231

From: Doug Miller [mailto:dougm@ci.hillsboro.or.us]
Sent: Wednesday, July 11, 2012 9:01 AM
To: Dennis Yee
Cc: Maribeth Todd; Jim Cser; Gerry Uba
Subject: RE: Hillsboro 2040 Forecast Employment Review

OK – I understand.

Doug

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Wednesday, July 11, 2012 8:56 AM
To: Doug Miller
Cc: Maribeth Todd; Jim Cser; Gerry Uba
Subject: RE: Hillsboro 2040 Forecast Employment Review

No. For our internal accounting purposes, we prefer not to cross data streams so that we can track changes over time without confusing geographies. If we start changing city limits by asserting that the urban reserve areas will become the new city limits, this will be very confusing to track if changes owe to the new areas or to the existing city TAZ's. if you feel the need to present the data with them merged for your own display purposes, feel free.

Dennis

From: Doug Miller [mailto:dougm@ci.hillsboro.or.us]
Sent: Tuesday, July 10, 2012 4:47 PM
To: Dennis Yee
Subject: Hillsboro 2040 Forecast Employment Review

Hi Dennis,

The "Emp by City" tab in the Gamma_TAZ_Forecast_report_2035-2040 workbook doesn't attribute all of the forecast employment with the Hillsboro Urban Reserves to Hillsboro. The attached spreadsheet shows the differences. I realize that most of it is currently outside the UGB, but shouldn't the forecasted jobs within our reserves be shown as Hillsboro's?

Doug Miller
Urban Planner II - GIS
City of Hillsboro
503-681-6231

CITY OF KING CITY

Distribution Adjustments completed (August 16, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

From: Liden, Keith S. [mailto:Liden@pbworld.com]
Sent: Thursday, August 16, 2012 9:27 AM
To: Gerry Uba; Dennis Yee; Steve Kelley
Cc: Jim Cser; Maribeth Todd; Steve Erickson; Dave Wells
Subject: RE: Metro 2035-2045 HH Forecast - King City Comments

We were hoping for funding assistance to update our comprehensive plan, but we can start with roses.

Keith

From: Dennis Yee
Sent: Wednesday, August 15, 2012 3:42 PM
To: Liden, Keith S.; Steve Kelley
Cc: Jim Cser; Maribeth Todd; Steve Erickson; Gerry Uba; Dave Wells
Subject: RE: Metro 2035-2045 HH Forecast - King City Comments

I'll coordinate with Steve regarding TAZ 1052, your comments will be considered with Washington county. Thanks….also my admin suggested I should send flowers in gratitude…so thank you!

From: Liden, Keith S. [mailto:Liden@pbworld.com]
Sent: Wednesday, August 15, 2012 3:39 PM
To: Dennis Yee; Steve Kelley
Cc: Jim Cser; Maribeth Todd; Steve Erickson; Gerry Uba; Dave Wells
Subject: RE: Metro 2035-2045 HH Forecast - King City Comments

Dennis,

A couple responses in **red**.

Thanks for working through this with us.

Keith

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Wednesday, August 15, 2012 3:20 PM
To: Liden, Keith S.; Steve Kelley
Cc: Jim Cser; Maribeth Todd; Steve Erickson; Gerry Uba; Dave Wells
Subject: RE: Metro 2035-2045 HH Forecast - King City Comments

See comment below (in blue CAPS)

Best,

Dennis

From: Liden, Keith S. [mailto:Liden@pbworld.com]
Sent: Wednesday, August 15, 2012 1:59 PM
To: Dennis Yee; Steve Kelley
Cc: Jim Cser; Maribeth Todd; Steve Erickson; Gerry Uba; Dave Wells
Subject: Metro 2035-2045 HH Forecast - King City Comments

Dennis and Steve,

Dave Wells and I have reviewed the Metro HH and employment forecasts in the King City area. The TAZs, which are within the city limit, are: 1050 (completely), 1025, 1051, and 1052 (partially) TAZ 1001 is not within the city but it is within the urban reserve area for which King City prepared a concept plan as part of the Metro urban reserve planning/review process.

We have the following comments:

- Employment figures are difficult to predict, but they appear reasonable in residentially zoned areas with the understanding that they include persons claiming their residence as their business address (home occupations and self-employed people with no business office address). UNDERSTANDABLE - OK
- The household capacity figures appear to be somewhat optimistic, but not worth debating. OUR ASSUMPTION ON CAPACITY TEND TO BE MORE AGGRESSIVE IN THE SUBURB LOCATIONS DUE TO PORTLAND AND OTHER MORE URBAN CITIES URGING METRO TO ASSUME MORE URBAN DENSITY IN ENVIRONOMENTAL CONTRAINED AREAS, HIGHER REDEVELOPMENT POTENTIAL AND MORE INFILL ASSUMED. I SUSPECT THAT THE CAPACITY WE ESTIMATED FOR KING CITY MAY BE MORE AGGRESSIVE THAN RECENT EXPERIENCE MAY SUGGEST, BUT IF OK BY YOU WE WILL LEAVE IT UNCHANGED. **Yes, that'll be fine.**
- TAZ 1052, with a 2045 residential capacity of 224 additional HH and 276 additional HH in 2035 (greater than the supposed capacity) should be corrected. This TAZ has only 2 properties having development potential with a theoretical capacity for 130± units. However, due to flood plain and ODOT access limitations, 80 units are more likely. Developed parcels in this TAZ are all relatively new and/or high density so redevelopment wouldn't yield many additional HH – certainly not enough to get to a total of 224 to 276 units. I'M NOT SURE WE ARE ON THE SAME PAGE ON TAZ 1052 YET…SINCE THE CITY ONLY INTERSECTS WITH TAZ 1052 IN A VERY SMALL GEOGRAPHIC WAY, I'M GOING TO WAIT FOR STEVE KELLEY'S COMMENTS AS HE MAY HAVE A BIT MORE TO SAY ABOUT THE CAPACITY IN THIS LOCALE. **The city probably includes around 30% of the land area of this TAZ. My comments about existing development were for the entire TAZ. Certainly appropriate to defer to Washington County regarding redevelopment potential of the unincorporated portion.**
- The assumption that urban development will not occur in TAZ 1001 until after 2035 is consistent with the city's expectations. ACCORDING TO OUR MAPPING, TAZ 1001 IS DELAYED UNTIL 2045….I ASSUME THIS IS OK AND CONSISTENT? **Yes. It's clearly a long way off.**

Attached is the Gamma TAZ spreadsheet with our comments .

Thanks for the opportunity to comment, and please feel free to contact me if you have any questions.

Keith S. Liden, AICP
Lead Planner, PlaceMaking

Parsons Brinckerhoff
400 SW 6th Avenue, Suite 802, Portland, OR 97204
Direct: 503.478.2348/ Office: 503.274.8772
www.pbworld.com/pbplacemaking

From: Liden, Keith S. [mailto:Liden@pbworld.com]
Sent: Wednesday, August 15, 2012 1:59 PM
To: Dennis Yee; Steve Kelley
Cc: Jim Cser; Maribeth Todd; Steve Erickson; Gerry Uba; Dave Wells
Subject: Metro 2035-2045 HH Forecast - King City Comments

Dennis and Steve,

Dave Wells and I have reviewed the Metro HH and employment forecasts in the King City area. The TAZs, which are within the city limit, are: 1050 (completely), 1025, 1051, and 1052 (partially) TAZ 1001 is not within the city but it is within the urban reserve area for which King City prepared a concept plan as part of the Metro urban reserve planning/review process.

We have the following comments:

- Employment figures are difficult to predict, but they appear reasonable in residentially zoned areas with the understanding that they include persons claiming their residence as their business address (home occupations and self-employed people with no business office address).
- The household capacity figures appear to be somewhat optimistic, but not worth debating.
- TAZ 1052, with a 2045 residential capacity of 224 additional HH and 276 additional HH in 2035 (greater than the supposed capacity) should be corrected. This TAZ has only 2 properties having development potential with a theoretical capacity for 130± units. However, due to flood plain and ODOT access limitations, 80 units are more likely. Developed parcels in this TAZ are all relatively new and/or high density so redevelopment wouldn't yield many additional HH – certainly not enough to get to a total of 224 to 276 units.
- The assumption that urban development will not occur in TAZ 1001 until after 2035 is consistent with the city's expectations.

Attached is the Gamma TAZ spreadsheet with our comments .

Thanks for the opportunity to comment, and please feel free to contact me if you have any questions.

Keith S. Liden, AICP
Lead Planner, PlaceMaking

Parsons Brinckerhoff
400 SW 6th Avenue, Suite 802, Portland, OR 97204
Direct: 503.478.2348/ Office: 503.274.8772
www.pbworld.com/pbplacemaking

From: Dennis Yee
Sent: Monday, August 13, 2012 9:30 AM

To: Liden, Keith S.
Cc: Jim Cser; Maribeth Todd; Steve Erickson; Gerry Uba; Dave Wells; Steve Kelley
Subject: RE: Metro 2035 HH Forecast - Question - King City

Keith:

We did not include the SW Corridor project into the TAZ consideration. It is still way too speculative at this time, so if it's all right with the city, please don't factor that in at this time.

On the matter of the capacity estimates, I can, in part, agree that some areas we may have been too aggressive in anticipating redevelopment capacities and perhaps even vacant land capacity for residential development. The reason for this may be due to our "aggressive" assumptions on how much growth could be netted from areas with environmental constraints adjacent to vacant or redevelopment possibilities. If you are seeing that this is the case, please make a note of that in the comment sections in the review process….and of course anything else you see.

This is a very long-term forecast, so it's understandable that opinions will differ about growth potential.

Thanks for your assist in reviewing the information,

Best,

Dennis

……

From: Liden, Keith S. [mailto:Liden@pbworld.com]
Sent: Monday, August 13, 2012 9:15 AM
To: Dennis Yee
Cc: Jim Cser; Maribeth Todd; Steve Erickson; Gerry Uba; Dave Wells; Steve Kelley
Subject: Metro 2035 HH Forecast - Question - King City

Thanks Dennis. This clarifies the assumptions behind the numbers. I'll discuss with Dave Wells tomorrow. I assume he'll want the city to respond to the figures for all the TAZs, which are, or potentially could be, within the city. I'll coordinate with Steve Kelly. We'll have a response by the 17th. I can appreciate the complexities of running a region-wide model. However, the preliminary reaction by Dave and me is that some of the capacity and development figures are probably too high, given a variety of constraints.

Looking out this far is also very difficult due to potential changes that could occur. For example, if SW Corridor high-capacity does become a reality, the plan designations, zoning, and development potential could change drastically. However, now it's too early to tell.

Keith

……

From: Dennis Yee
Sent: Friday, August 10, 2012 11:29 AM
To: Gerry Uba

Cc: Dave Wells
Subject: RE: Metro 2035 HH Forecast - Question

Gerry:

This is what I sent Keith Liden, my apologies for lateness of reply as I was on vacation for a few days … (and for not copying Dave Wells)

Dennis

*** message to Keith Liden begins below ***

Hi Keith:

Answers/ responses in red (see below).

Sorry for long explanation, but I would be happy to discuss one-on-one if any of this is confusing. I am meeting with Wilsonville one-on-one on Monday, so since I' out in the south metro area, I would be happy to swing by King city offices to discuss particulars. Please give me a ring.

Regards,

Dennis
503-797-1578

……
From: Dennis Yee
Sent: Friday, August 10, 2012 11:21 AM
To: Liden, Keith S.
Cc: Jim Cser; Maribeth Todd; Steve Erickson; Gerry Uba
Subject: RE: Metro 2035 HH Forecast - Question

Hi Keith:

Answers/ responses in red (see below).

Sorry for long explanation, but I would be happy to discuss one-on-one if any of this is confusing. I am meeting with Wilsonville one-on-one on Monday, so since I' out in the south metro area, I would be happy to swing by King city offices to discuss particulars. Please give me a ring.

Regards,

Dennis
503-797-1578

From: Liden, Keith S. [mailto:Liden@pbworld.com]
Sent: Monday, August 06, 2012 8:25 AM
To: Dennis Yee; Gerry Uba

Cc: Dave Wells
Subject: Metro 2035 HH Forecast - Question

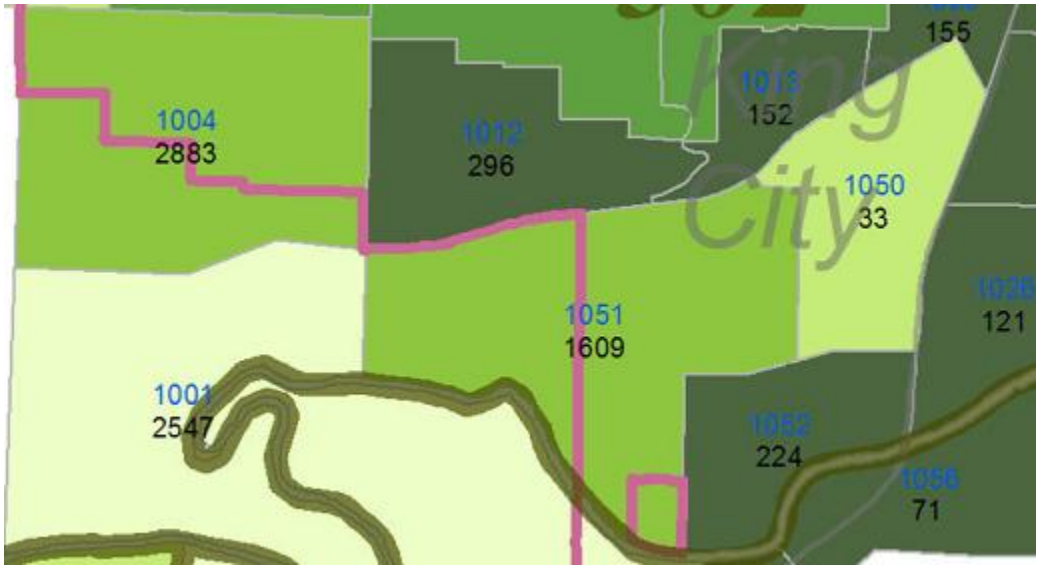
Dennis and Gerry,

I'm reviewing the Metro forecast information you presented in Hillsboro on July 19th for King City. I have a question about the map titled "Gamma TAZ 2010-2035 Total HH Change" and how it compares to the information on a related map "Gamma TAZ 2010-2035 % HH Capacity Used."

My understanding of the % HH Capacity Used map is that is shows the additional HH capacity anticipated over the 2010-2035 period.

Yes. The household capacity map depicts how many more dwelling units (or households) can be added between 2010 and 2045. The "blue" number is the TAZ and the "black" number indicates the available dwelling unit capacity we estimate with GIS data for the period up to 2045 (in theory). Additional unanticipated redevelopment could occur that might add to this capacity number.

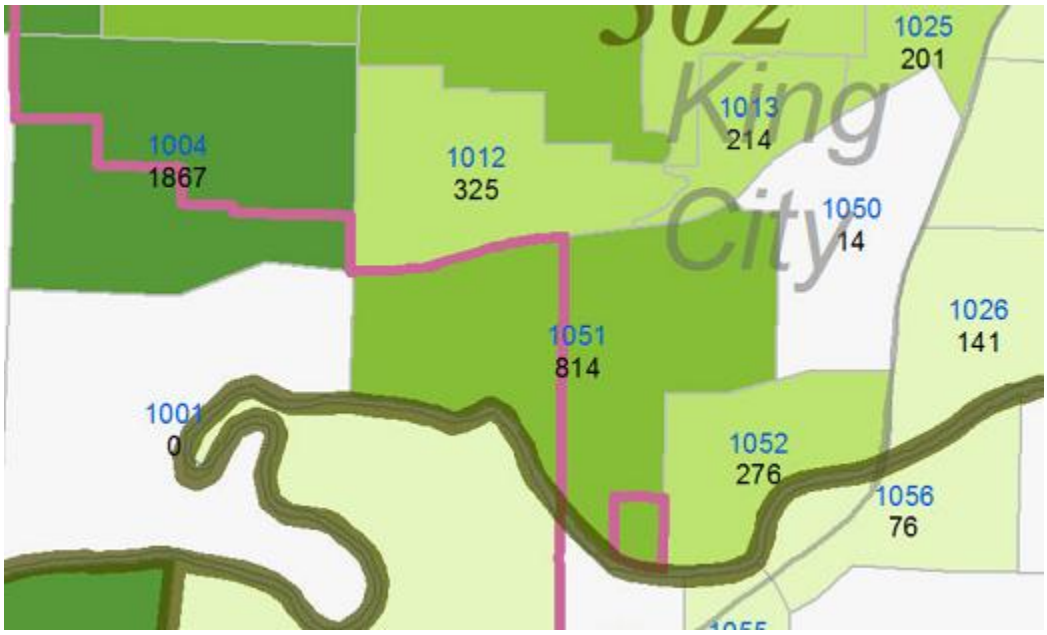
For purposes of this review of year 2035 and 2040 TAZ projections of households (and employment), we have assigned TAZ 1050 for King City to review; however this isn't exactly precise so you might want to take a glance at adjacent TAZ's that the city limits intersect in a small way (or are part of the city's future vision / urban service area if you have one).



My question is regarding the meaning of the HH figures shown on Total HH Change map below. Are these figures indicating the anticipated number of units built/households accommodated by 2035? If so, it appears you're assuming that approximately ½ of the capacity in TAZs 1050 and 1051 (above map) would actually be used by 2035 and development of TAZ 1001 would occur sometime after 2035. This feels reasonable to me but TAZ 1052 does not with the number of new households appearing to exceed the capacity shown in the first map.

The map titled "Household Allocation Change from 2010 to 2035 by TAZ" shows the change / growth in households between years 2010 and 2035. The "blue number" is the TAZ designation and the "black" number is the number of households added to the TAZ between 2010 and 2035. In rare instances, the growth number in this map may exceed the dwelling unit capacity in the other map. This is due to the problem I explained at the county meeting in regard to the shortfall we predict in SF housing

supplies/capacity throughout the region. Because the MetroScope model struggles to assign households to SF units when supplies run short, we get a mismatch in the total number of households that get assigned to any particular TAZ that is unresolved. What this means is that there is more demand for SF housing than practically exists based on our supply estimates for housing. The model is unable to resolve this conflict without more iterations (which we limit to 100 iterations due to the lengthy time it takes to complete one iteration) and therefore the number of households may exceed the supply of dwelling units in any TAZ.



Could you please clarify how comparisons between these two maps should be made? Thanks.

When I look at TAZ 1050, here's what I read from the data table for year 2035:

2010 HH = 955 dwelling units
2025 HH = 955
2035 HH = 969
2010 to 2035 growth in HH = 14 more units / households
2040 HH = 970 units
2010 to 2040 growth in HH = 15
HH Capacity through 2045 = 33 units
% consumed of capacity by year 2035 = 14/33 = 42%
% consumed of capacity by year 2040 = 15/33 = 47%

Other TAZ's you might want to review in addition to 1050 could be:
TAZ 1025 (a small part of King city overlaps into this TAZ – shared with Tigard)
TAZ 1051 (ditto – also urban reserves begin to roll into the UGB in year 2035, so there will be subsequently more potential growth in this TAZ)
TAZ 1052 (ditto – shared with uninc. Wash. co.)

I note that :

FINAL DRAFT

TAZ 1025 has HH allocations in 2035 and 2040 that exceed 100% capacity – meaning more demand exists than allowable supply of housing stock to accommodate
TAZ 1051 consumes about half of the available capacity due in part to the assertion that urban reserves become available into the Metro UGB
TAZ 1052 allocations in 2035 and 2040 that exceed 100% capacity – meaning more demand exists than allowable supply of housing stock to accommodate

Not sure if you want to comment on all these suggested TAZ's, but recommend you talk to Steve Kelley. Finally if you all think that there is not a chance that (and I think that likely) that these two TAZ's (1025 and 1052) can exceed estimated dwelling capacity, I would like Steve to take custody of this overage and consider reassigning that capacity elsewhere in the county or other city in the county.

Keith S. Liden, AICP
Lead Planner, PlaceMaking

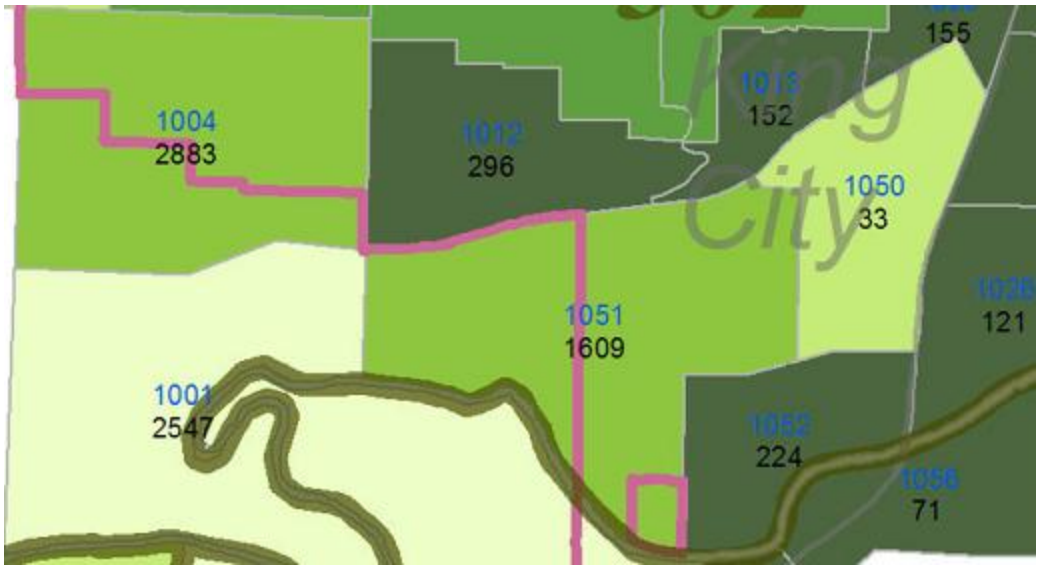
Parsons Brinckerhoff
400 SW 6th Avenue, Suite 802, Portland, OR 97204
Direct: 503.478.2348/ Office: 503.274.8772
www.pbworld.com/pbplacemaking

From: Liden, Keith S. [mailto:Liden@pbworld.com]
Sent: Monday, August 06, 2012 8:25 AM
To: Dennis Yee; Gerry Uba
Cc: Dave Wells
Subject: Metro 2035 HH Forecast - Question

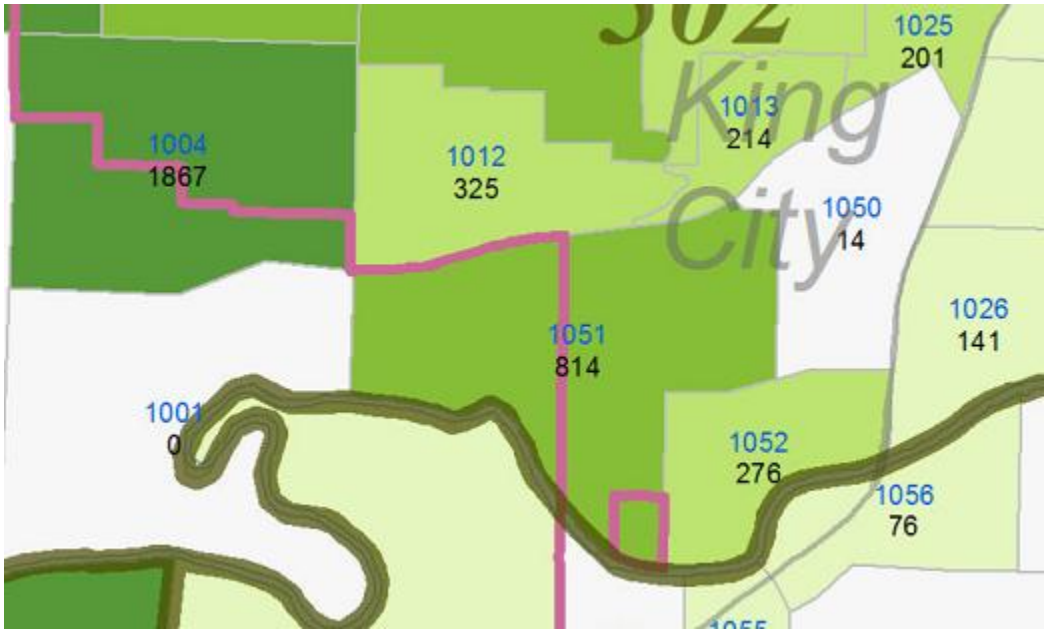
Dennis and Gerry,

I'm reviewing the Metro forecast information you presented in Hillsboro on July 19th for King City. I have a question about the map titled "Gamma TAZ 2010-2035 Total HH Change" and how it compares to the information on a related map "Gamma TAZ 2010-2035 % HH Capacity Used."

My understanding of the % HH Capacity Used map is that is shows the additional HH capacity anticipated over the 2010-2035 period.



My question is regarding the meaning of the HH figures shown on Total HH Change map below. Are these figures indicating the anticipated number of units built/households accommodated by 2035? If so, it appears you're assuming that approximately ½ of the capacity in TAZs 1050 and 1051 (above map) would actually be used by 2035 and development of TAZ 1001 would occur sometime after 2035. This feels reasonable to me but TAZ 1052 does not with the number of new households appearing to exceed the capacity shown in the first map.



Could you please clarify how comparisons between these two maps should be made? Thanks.

Keith S. Liden, AICP
Lead Planner, PlaceMaking

Parsons Brinckerhoff
400 SW 6th Avenue, Suite 802, Portland, OR 97204
Direct: 503.478.2348/ Office: 503.274.8772

CITY OF LAKE OSWEGO

Distribution Adjustments completed (August 22, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

From: Dennis Yee
Sent: Wednesday, August 22, 2012 8:45 AM
To: Conrad, Larry; Egner, Dennis; Gerry Uba
Subject: RE: Lake Oswego 2035 Gamma Forecast Notes

Thanks Larry. This sounds fine by me.

Dennis

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Wednesday, August 22, 2012 8:33 AM
To: Egner, Dennis; Dennis Yee; Gerry Uba
Subject: RE: Lake Oswego 2035 Gamma Forecast Notes

We will move them to other areas by e-zone

Our comments will be forth coming by Monday

Larry Conrad
Principal Transportation Planner
(v) 503.742.4539
larrycon@co.clackamas.or.us

''It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so.''

Mark Twain

From: Egner, Dennis [mailto:degner@ci.oswego.or.us]
Sent: Tuesday, August 21, 2012 12:13 PM
To: Dennis Yee; Gerry Uba; Conrad, Larry
Subject: Lake Oswego 2035 Gamma Forecast Notes

Dennis, Gerry, and Larry –

I've attached our proposed adjustments to the Gamma forecast. I focused on the 2035 forecast and did not make any adjustments for 2040. Please, let me know if you also need 2040 adjustments.

I'm assuming you guys can have these adjustments entered into your spread sheets. If I need to do it, please let me know.

Larry - The employment forecast includes adjustments that shift 2000 service jobs to Clackamas County.

Thanks,

Denny

Dennis Egner, AICP
Assistant Planning Director/Long Range Planning Manager
City of Lake Oswego
PO Box 369, Lake Oswego, 97034
503-697-6576

CITY OF PORTLAND

Distribution Adjustments completed (August 20, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

From: Dennis Yee
Sent: Monday, August 20, 2012 8:48 AM
To: Armstrong, Tom; Jim Cser; Gerry Uba
Cc: 'Charles BEASLEY'; Bouillion, Tom
Subject: RE: Portland TAZ changes

Message received. If we have questions, we will follow up. Meanwhile, it will take some time to compile all comments.

One question, however, have these changes been coordinated with Tom Bouillion and Chuck?

Thanks

Dennis

From: Armstrong, Tom [mailto:Tom.Armstrong@portlandoregon.gov]
Sent: Friday, August 17, 2012 3:46 PM
To: Dennis Yee; Jim Cser; Gerry Uba
Subject: Portland TAZ changes

Here are our changes. Let me know if you have questions.

Tom

From: Dennis Yee
Sent: Wednesday, August 15, 2012 1:11 PM
To: Armstrong, Tom; Gerry Uba; Jim Cser
Subject: RE: 2035-2040 TAZ changes

Yes.

From: Armstrong, Tom [mailto:Tom.Armstrong@portlandoregon.gov]
Sent: Wednesday, August 15, 2012 10:11 AM
To: Gerry Uba; Dennis Yee; Jim Cser
Subject: 2035-2040 TAZ changes

Still working on it - waiting for our Central City team's comments. When do you need these changes? Will Friday work?

RE: West Hayden Island (Port of Portland)

From: Bouillion, Tom [mailto:Tom.Bouillion@portofportland.com]
Sent: Tuesday, August 21, 2012 4:07 PM
To: Dennis Yee; Charles BEASLEY
Cc: Gerry Uba
Subject: RE: Portland TAZ changes

Thanks, I hadn't seen these. I'll take a look.

-Tom

Tom Bouillion, AICP
Planning Manager
Marine & Industrial Development
Port of Portland
(503) 415-6615

……

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Tuesday, August 21, 2012 4:04 PM
To: Charles BEASLEY
Cc: Bouillion, Tom; Gerry Uba
Subject: FW: Portland TAZ changes

Here is the spreadsheet sent by Tom Armstrong. If you weren't tapped into these numbers/changes, please coordinate with me and Tom Armstrong.

Dennis

……

From: Armstrong, Tom [mailto:Tom.Armstrong@portlandoregon.gov]
Sent: Friday, August 17, 2012 3:46 PM
To: Dennis Yee; Jim Cser; Gerry Uba
Subject: Portland TAZ changes

Here are our changes. Let me know if you have questions.

Tom

From: Bouillion, Tom [mailto:Tom.Bouillion@portofportland.com]
Sent: Tuesday, July 10, 2012 5:00 PM
To: 'Armstrong, Tom'; Dennis Yee; 'Charles BEASLEY'
Cc: Gerry Uba
Subject: RE: Multnomah County Cities TAZ Meeting July 10, 2012 - Long-term Forecast Distribution

Thanks, Tom and I will coordinate and get back to you Dennis.

-Tom

Tom Bouillion, AICP
Planning Manager
Marine & Industrial Development
Port of Portland
(503) 415-6615

……

From: Armstrong, Tom [mailto:Tom.Armstrong@portlandoregon.gov]
Sent: Tuesday, July 10, 2012 4:24 PM
To: 'Dennis Yee'; Bouillion, Tom; 'Charles BEASLEY'
Cc: Gerry Uba
Subject: RE: Multnomah County Cities TAZ Meeting July 10, 2012 - Long-term Forecast Distribution

I agree with WHI correction - and will submit change to bring it up to 600 in 2035. I will check on the PDX numbers and get back to Tom before submitting our changes.

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Tuesday, July 10, 2012 4:15 PM
To: Bouillion, Tom; 'Charles BEASLEY'; Armstrong, Tom
Cc: Gerry Uba
Subject: RE: Multnomah County Cities TAZ Meeting July 10, 2012 - Long-term Forecast Distribution

Gentlemen: When there is disagreement over TAZ estimates, it is preferable that the local government entities try to hash out differences. I thought in the 2025 TAZ distributions that the Port and Portland city had resolved differences. I don't initially want to pick one number over another suggested number and am hoping you all can come to a compromise position. Having said that, I am happy to participate in trying to work out something agreeable to all parties.

Thanks.

Dennis

……

From: Bouillion, Tom [mailto:Tom.Bouillion@portofportland.com]
Sent: Tuesday, July 10, 2012 12:14 PM
To: 'Charles BEASLEY'; Armstrong, Tom
Cc: Gerry Uba; Dennis Yee
Subject: RE: Multnomah County Cities TAZ Meeting July 10, 2012 - Long-term Forecast Distribution

Unfortunately I will be unable to attend this afternoon. I will provide more detailed comments at a later date for TAZs predominantly owned by the Port, but a couple areas stick out as being incorrect.

PDX- The TAZs that make up PDX include 138-140, 142, and 145-146. In aggregate, Metro shows the 2010 employment at **9,528**; 2025 employment at **10,168** and 2035 at **10,521**. We previously disagreed with the 2025 number, which was not changed, and we now disagree with the 2035 number.

The recently prepared PDX Master Plan includes a detailed forecast of enplaned passenger growth and is forecast to grow from 13.5 million in 2010 to over 27 million in 2035. These forecast numbers were prepared in consultation w/ Metro to incorporate regional population growth estimates. So while passenger growth is forecast to double by 2035, the employment growth should increase by at least 50-75%.

WHI- The TAZ for WHI is 124. Based on the traffic analysis for the WHI annexation process, we agreed with the City of Portland that 2025 should show 400 employees and 2035 and beyond should show 600 employees. The current Metro 2035 and 2040 forecast only shows 399 employees.

Let me know if you have questions-I'm happy to discuss further.

Thanks,

Tom

Tom Bouillion, AICP
Planning Manager
Marine & Industrial Development
Port of Portland
(503) 415-6615

……
From: Charles BEASLEY [mailto:charles.beasley@multco.us]
Sent: Monday, July 09, 2012 11:25 AM
To: Armstrong, Tom; Becky Gallien; Bill Peterson; Lindsey Nesbitt; Martin, Brian; mayorhardie@aol.com; Rich Faith; Bouillion, Tom
Cc: Gerry Uba; Dennis Yee
Subject: Multnomah County Cities TAZ Meeting July 10, 2012 - Long-term Forecast Distribution

All,
Attached is the agenda for our meeting tomorrow afternoon. I hope to see you all then.
--
Chuck Beasley, Senior Planner
Multnomah County Land Use Planning
1600 SE 190th Avenue, Suite 116
Portland, Oregon 97233
charles.beasley@multco.us
503-988-3043 ext 22610
FAX 503-988-3389

CITY OF SHERWOOD

Distribution Adjustments completed (September 6, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

From: Michelle Miller [mailto:MillerM@SherwoodOregon.gov]
Sent: Thursday, September 06, 2012 10:44 AM
To: Dennis Yee
Cc: Julia Hajduk
Subject: Sherwood Gamma TAZ comments.xlsx

Dennis,

Here are the comments we have on the 2045 numbers.

Thanks, Michelle

Michelle Miller, AICP
Associate Planner
City of Sherwood
millerm@sherwoodoregon.gov
503.625.4242

CITY OF TIGARD

Distribution Adjustments completed (August 5, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

From: Dennis Yee
Sent: Wednesday, September 05, 2012 4:29 PM
To: Darren Wyss
Cc: Gerry Uba; 'Steve Kelley'; 'Debbaut, Anne'; Tom McGuire
Subject: RE: Metro gamma forecast numbers

Darren:

Thanks for your agreeable comments. I will review and incorporate your input into my master spreadsheet in which I am collecting and assessing comments from all jurisdictions.

Best,

Dennis

From: Darren Wyss [mailto:darren@tigard-or.gov]
Sent: Wednesday, September 05, 2012 3:56 PM
To: Dennis Yee
Cc: Gerry Uba; 'Steve Kelley'; 'Debbaut, Anne'; Tom McGuire
Subject: Metro gamma forecast numbers

Dennis,
Tigard has finished its review of the 2035/2040 numbers and we are ok with the gamma forecast as presented. We are particularly happy with the household allocations in the Downtown Urban Renewal District (TAZ 1041 &1042) and Tigard Triangle (TAZ 1038). However, we do expect to see more households in the Tigard Triangle once HCT decisions are finalized and this can be addressed in future models. As always, thanks for providing us ample time for review.

Darren Wyss
Senior Planner
Community Planning
City of Tigard
503-718-2442

CITY OF TROUTDALE

Distribution Adjustments completed (August 10, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

From: Dennis Yee
Sent: Friday, August 10, 2012 3:36 PM
To: Elizabeth McCallum; Paulette Copperstone
Cc: Gerry Uba; Rich Faith; 'Charles BEASLEY'
Subject: RE: Final Gamma 2035-2040 Growth Distribution Files and Related Information

Thanks Elizabeth. Troutdale wins the prize for first city to register final comments into the 2035/2040 TAZ allocation. Congratulations and let me again reiterate my thanks for all of your hard work in assisting in this important work.

Dennis Yee
Metro Economist

From: Elizabeth McCallum [mailto:elizabeth.mccallum@troutdaleoregon.gov]
Sent: Friday, August 10, 2012 2:55 PM
To: Paulette Copperstone
Cc: Dennis Yee; Gerry Uba; Rich Faith
Subject: RE: Final Gamma 2035-2040 Growth Distribution Files and Related Information

August 10, 2012

The City of Troutdale has no changes to suggest to HH or Employment.

Elizabeth A. McCallum, Senior Planner
City of Troutdale
Please make a note of the following:
The new official mailing address is:
219 E. Historic Columbia River Hwy, Troutdale, OR 97060-2078
elizabeth.mccallum@troutdaleoregon.gov
phone: 503-674-7228
fax 503-667-0524

My office is located at: 2200 SW 18th Way, Troutdale, OR 97060.

From: Paulette Copperstone [mailto:Paulette.Copperstone@oregonmetro.gov]
Sent: Tuesday, July 03, 2012 12:12 PM

To: kaha@westlinnoregon.gov; erin.aigner@greshamoregon.gov; jose.alvarez@clark.wa.gov; Christine Amedzake; susan.anderson@portlandoregon.gov; tom.armstrong@portlandoregon.gov; asherk@ci.milwaukie.or.us; charles.beasley@multco.us; preston@tigard-or.gov; Richard Benner; adam.t.barber@multco.us; tom.bouillion@portofportland.com; boyce@ci.gladstone.or.us; karenb@co.clackamas.or.us; ron@tigard-or.gov; Jim Cser; campbella@ci.milwaukie.or.us; connellpc@comcast.net; larrycon@co.clackamas.or.us; Paulette Copperstone; brent_curtis@co.washington.or.us; anne.debbaut@state.or.us; Christina Deffebach; jennifer.donnelly@state.or.us; cdunlop@ci.oregon-city.or.us; degner@ci.oswego.or.us; Kim Ellis; Rich Faith; tfranz@ci.cornelius.or.us; mfritzie@co.clackamas.or.us; randygra@co.clackamas.or.us; sgaschler@damascusoregon.gov; camgil@co.clackamas.or.us; jharmon@ci.oswego.or.us; mark@rtc.wa.gov; bob@rtc.wa.gov; chahn@ci.tualatin.or.us; hajdukj@ci.sherwood.or.us; mayorhardie@aol.com; jonathan.harker@greshamoregon.gov; susanh@tigard-or.gov; khofmann@ci.tualatin.or.us; Mike Hoglund; jholan@forestgrove-or.gov; jenniferh@co.clackamas.or.us; ahurd-ravich@ci.tualatin.or.us; steve.iwata@portlandoregon.gov; steve_kelley@co.washington.or.us; stevel_kelley@co.washington.or.us; lkelly@beavertonoregon.gov; ckerr@westlinnoregon.gov; tkonkol@orcity.org; nkraushaar@ci.oregon-city.or.us; nels_mickaelson@co.washington.or.us; chi.mai@odot.state.or.us; manglek@ci.milwaukie.or.us; brian.martin@greshamoregon.gov; kevin.martin@portlandoregon.gov; ceddmail@beavertonoregon.gov; Robin McArthur; mikem@co.clackamas.or.us; Elizabeth McCallum; mikem@tigard-or.gov; rmeyer@ci.cornelius.or.us; mmiddleton@beavertonoregon.gov; dougm@ci.hillsboro.or.us; johnson.city@hotmail.com; neamtzu@ci.wilsonville.or.us; nesbittl@ci.fairview.or.us; darren.nichols@state.or.us; dono@ci.hillsboro.or.us; oliver.orjiako@clark.wa.gov; ortizp@ci.sherwood.or.us; epalmer@ci.damascus.or.us; Susan Patterson-Sale; pauly@ci.wilsonville.or.us; Cindy Pederson; kirsten.pennington@odot.state.or.us; billp@ci.wood-village.or.us; ann.pytynia@greshamoregon.gov; lidwien.rahman@odot.state.or.us; rreynolds@ci.cornelius.or.us; patrickr@ci.hillsboro.or.us; cityofrivergrove@yahoo.com; driordan@forestgrove-or.gov; djrobbins@forestgrove-or.gov; rossonk@ci.milwaukie.or.us; arouyer@ci.tualatin.or.us; jsalvon@beavertonoregon.gov; karen.c.schilling@multco.us; tscott@ci.tualatin.or.us; kia.selley@greshamoregon.gov; ronshay@buzzworm.com; andrew_singelakis@co.washington.or.us; elaine.smith@odot.state.or.us; marty.snell@clark.wa.gov; jsonnen@westlinnoregon.gov; stark@ci.wilsonville.or.us; dtaylor@beavertonoregon.gov; Maribeth Todd; jasont@ci.happy-valley.or.us; Gerry Uba; Molly Vogt; michaelw@ci.happy-valley.or.us; vickiew@ci.hillsboro.or.us; John Williams; cityofdurham@comcast.net; Dennis Yee; ningsheng.zhou@portlandoregon.gov
Cc: Gerry Uba; Paulette Copperstone
Subject: Final Gamma 2035-2040 Growth Distribution Files and Related Information

Hello All,

The long-term (2035-2040) Gamma growth forecasts at the TAZ level have been completed and posted on the Metro FTP site for download and early review before the County coordination meetings scheduled this month. The FTP address is:

ftp://ftp.oregonmetro.gov/dist/gm/TazAlloc2010/2035-2040_Review

The information at the site includes Excel workbooks containing household and employment TAZ forecasts and several maps of TAZ level of household and employment forecasts. Metro staff will explain all of this information and answer your questions at the County coordination meetings. You will recall that we told you at the mid-term distribution meetings in February that four weeks had been allotted for local government comments on the long-term distributions.

The dates of the coordination meetings are:

- Multnomah County – Tuesday, July 10, 2012; 1:00 - 4:00 pm
- Clackamas County – Wednesday, July 11, 2012; 2:00 – 5:00 pm
- Washington County – Thursday, July 19, 2012; 2:00 – 5:00 pm

County coordinators (Chuck Beasley, Larry Conrad and Steve Kelley) will send you the meeting agendas and other details. Please mark your calendars with the dates above.

Thank you for your collaboration with Metro on the growth distribution project. This collaboration has resulted in many accomplishments including the comments of elected officials on the growth distribution process and land supply/capacity estimation method and assumptions, improved MetroScope land supply modules, and 2025 Gamma Growth Distribution.

Please do not hesitate to contact me or Dennis Yee (503-797-1578) at dennis.yee@oregonmetro.gov if you have any questions. We look forward to seeing you over the next two weeks.

Thank you.

Gerry Uba

Metro
Regional Growth Distribution Coordinator
503-797-1737
gerry.uba@oregonmetro.gov

CITY OF TUALATIN

Distribution Adjustments completed (August 14, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

From: Colin Cortes [mailto:CCortes@ci.tualatin.or.us]
Sent: Tuesday, August 14, 2012 2:19 PM
To: Dennis Yee
Cc: AQUILLA HURD-RAVICH; Conrad, Larry; Steve Kelley
Subject: Tualatin Comments on Metro 2035 Forecast

Dear Dennis,

Please see the attached comments.

Sincerely,

Colin Cortes, AICP, CNU-A
Assistant Planner
City of Tualatin | Planning
503.691.3024 | Fax: 503.692.0147

CITY OF WEST LINN

Distribution Adjustments completed (September 10, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 10, 2012).

From: Javoronok, Sara [mailto:sjavoronok@westlinnoregon.gov]
Sent: Monday, September 10, 2012 10:46 AM
To: Dennis Yee
Cc: Sonnen, John
Subject: TAZ 2035-2040

Dennis,

Thanks for your call. We've reviewed the forecasts and do not have changes to them. Please let me know if you have any additional questions.

Sara

Sara Javoronok
sjavoronok@westlinnoregon.gov
Associate Planner
22500 Salamo Rd
West Linn, OR 97068
P: (503) 722-5512
F: (503) 656-4106
Web: westlinnoregon.gov

CITY OF WILSONVILLE

Distribution Adjustments completed (August 17, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

From: Dennis Yee
Sent: Friday, August 17, 2012 2:32 PM
To: Pauly, Daniel
Cc: Gerry Uba
Subject: RE: 2035-2040 Gamma Forecast Comments from Wilsonville (Clack. Co.)

Got it thanks. If I have questions next week when I roll this together with others, I may give you a call.

Best

d

From: Pauly, Daniel [mailto:pauly@ci.wilsonville.or.us]
Sent: Friday, August 17, 2012 2:20 PM
To: Dennis Yee
Subject: RE: 2035-2040 Gamma Forecast Comments from Wilsonville (Clack. Co.)

Here you go. I made some modifications and extra columns, but, the feedback columns remain the same.

Daniel Pauly, AICP
Associate Planner

City of Wilsonville Planning Division
503-682-4960
pauly@ci.wilsonville.or.us

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Friday, August 17, 2012 2:16 PM
To: Pauly, Daniel; LarryC@co.clackamas.or.us
Cc: Neamtzu, Chris; Mangle, Katie; Gerry Uba
Subject: RE: 2035-2040 Gamma Forecast Comments from Wilsonville (Clack. Co.)

Thanks Dan for turning in Wilsonville comments for the TAZ forecast. I review the details next week, but would you mind sending me the data in a spreadsheet? That would facilitate cutting and pasting into my main file.

Best

Dennis Yee
Metro Economist

From: Pauly, Daniel [mailto:pauly@ci.wilsonville.or.us]
Sent: Friday, August 17, 2012 2:13 PM
To: LarryC@co.clackamas.or.us
Cc: Neamtzu, Chris; Mangle, Katie; Dennis Yee; Gerry Uba
Subject: 2035-2040 Gamma Forecast Comments from Wilsonville (Clack. Co.)

Larry

We have reviewed the 2035-2040 Gamma Forecast and had a good meeting with Dennis this last Monday to discuss some concerns.

While some of the jobs numbers seemed high at first glance, after comparison to regional totals and other similar sized jurisdictions as well as the available land we are comfortable with the total for the City. I have moved some numbers around within the Ezone that covers the majority of the City limits within Clackamas County, but as Dennis would say these are mainly "cosmetic". We moved jobs out of Villebois (TAZ 971) where the mixed use zoning shows a lot more job capacity than the predominantly residential master plan calls for and the Town Center area (TAZ 966), where some of the numbers seemed unrealistically high. The jobs were moved to other nearby TAZ's (974, 975) that seemed low on jobs or had additional capacity.

Our main topic of conversation when we met with Dennis on Monday was low HH numbers in urban reserves (mainly TAZ 985 and 1128) and the Frog Pond UBG Area (TAZ 976). Following the meeting with Dennis we are fine with the overall HH numbers. We have made some changes, which Dennis would again call "cosmetic", by shifting most of the above capacity allotment from different TAZ's within the Ezone to the TAZ 985 and 976. All of the 2035 over capacity allotment was shifted to Frog Pond (TAZ 976) representing a build out of the area currently within the UGB. While some of the 2040 over capacity allotment was left in the respective TAZ's most of it was split between TAZ 985 and 976, realizing some of the additional growth indicated in 976 may actually be in TAZ 1128 across the street, but in a different Ezone.

TAZ2162		2035 Retail	2035 Service	2035 Other	2035 Total	Please input your review comments or explanation for the change(s) below 2035 comments	TAZ2162	2040 Retail	2040 Service	2040 Other	Total2040	Please input your review comments or explanation for the change(s) below 2040 comments
965	1						965				0	
966	2	1,47	2069	1555	5,10	job numbers seem	966	1579	2202	1584	53	job numbers seem somewhat high.

6		7			1	somewhat high. 152 other jobs tranferred to TAZs 974 and 975, just north.	6				65	Jobs moved to TAZs 974 and 975, just north within same Ezone.
9672							9672				0	
9682							9682				0	
9692							9692				0	
9702							9702				0	
9712		128	203	250	581	more consistent with adopted Master Plan for Master Plan and assumed build out prior to 2035	9716	157	213	260	629	more consistent with adopted Master Plan for Master Plan and assumed build out prior to 2040
9722							9722				0	
9733							9733				0	
9742		141	329	175	2,245	Service jobs low, new number follows pattern of jurisdiction comments for 2025 forecast and variety of employment types allowed in zone	9742	152	558	195	2,705	Service jobs low, new number follows pattern of jurisdiction comments for 2025 forecast and variety of employment types allowed in zone, moved from within Ezone
9752		69	2350	3096	5,515	Other jobs moved from elsewhere in Ezone as more	9752	88	2490	3071	5,649	Other jobs moved from elsewhere in Ezone as more likely location for

						likely location for jobs development								jobs development
9							9							
7							7							
6	2						6				0			
9							9							
7							7							
7	3						7				0			
9							9							
7							7							
8	3						8				0			
9							9							
7							7							
9	3						9				0			
9							9							
8							8							
0	3						0				0			
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1	3						1				0			
9							9							
8							8							
2	3						2				0			
9							9							
8							8							
4	2						4				0			
9							9							
8							8							
5	2						5				0			
1							1							
1							1							
2							2							
2	3						2				0			
1							1							
1							1							
2							2							
3	4						3				0			
1							1							
1							1							
2							2							
8	4						8				0			

TAZ 2162	Total HH 2035	Please input your review comments or explanation for the chang

965		
966	2,237	Reduce HH by 146 to bring to capacity and consider the unlikely further development of a FUD z
967		
968		
969	1,228	Reduce HH by 130 to bring to capacity, move within E Zone
970		
971		
972		
973		
974		
975		
976	1,022	Increase by 302 HH based on local knowledge of probable build out of area currently in UGB, HH
977		
978		
979		
980		
981		
982		
984	386	Reduce HH by 26 to capacity, move within Ezone
985		
1122		
1123		
1128		

Daniel Pauly, AICP
Associate Planner

City of Wilsonville Planning Division
29799 SW Town Center Loop East
Wilsonville OR 97070
503-682-4960
pauly@ci.wilsonville.or.us

WOOD VILLAGE

Distribution Adjustments completed (August 17, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

From: Dennis Yee
Sent: Friday, August 17, 2012 11:33 AM
To: Carole Connell; 'Charles BEASLEY'; Gerry Uba
Cc: Bill Peterson
Subject: RE: Wood Village TAZ data

Thanks Carole

It was equally nice talking to you and getting your feedback concerning employment and household allocations settled for Wood Village.

Best,

Dennis Yee
Metro Economist

From: Carole Connell [mailto:connellpc@comcast.net]
Sent: Friday, August 17, 2012 10:19 AM
To: 'Charles BEASLEY'; Dennis Yee; Gerry Uba
Cc: Bill Peterson
Subject: Wood Village TAZ data

Chuck:

As a follow up to our recent correspondence, I had a good conversation with Dennis Yee today regarding the TAZ forecast data for Wood Village. Dennis was able to clarify for me in detail the boundaries between the TAZ boundaries and the corresponding household and employment projections. I understand Bill Peterson, Wood Village City Administrator, has also worked closely with Dennis and Metro staff to review the projections. I can report with confidence that we're all in agreement with the Wood Village TAZ zone projections. Thanks to all for your cooperation and the good work!

Carole Wells Connell, AICP
Consulting Land Use Planner for Wood Village
4626 SW Hewett Blvd.
Portland, OR 97221
503-297-6660
connellpc@comcast.net

From: Charles BEASLEY [mailto:charles.beasley@multco.us]
Sent: Wednesday, July 18, 2012 2:01 PM
To: Carole Connell
Subject: Re: Mult Co 7/10/12 Cities Meet - Handouts

Carole,
Metro wants to hear back by August 17. I've attached the updated project schedule here as well.

Let me know if you have further questions and I'll help sort them out.

C.

On Wed, Jul 18, 2012 at 10:40 AM, Carole Connell <connellpc@comcast.net> wrote:
Chuck: I was able o get the Wood Village data broken out, and am wondering when comments are due back?

From: Charles BEASLEY [mailto:charles.beasley@multco.us]
Sent: Wednesday, July 11, 2012 8:45 AM
To: connellpc@comcast.net
Cc: Bill Peterson
Subject: Mult Co 7/10/12 Cities Meet - Handouts

Carol,

Good to talk with you this morning, and thanks for looking into these numbers.

I've attached the two handouts from the meeting, a summary of the modeling procedure used by Metro, and the updated project schedule.

Please let me know if you have additional questions and I'll help you get the info you need.

regards,

--
Chuck Beasley, Senior Planner
Multnomah County Land Use Planning
1600 SE 190th Avenue, Suite 116
Portland, Oregon 97233
charles.beasley@multco.us

503-988-3043 ext 22610
FAX 503-988-3389

CLACKAMAS COUNTY

Distribution Adjustments completed (September 6, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Thursday, September 06, 2012 3:12 PM
To: Dennis Yee; Gerry Uba
Cc: Queener, David; Itel, Kenneth; Steve Gaschler; Erika Palmer; Brian Brown; Scott Lazenby; Tracy Brown; Hoelscher, Scott; Glasgow, Clay
Subject: RE: Clackamas County - Partial Comments on 2035 Gamma Forecast

These are the only detail comments that we sent

Larry Conrad

Principal Transportation Planner

(v) 503.742.4539

larrycon@co.clackamas.or.us

''It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so.''

Mark Twain

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Thursday, September 06, 2012 1:43 PM
To: Conrad, Larry; Gerry Uba
Cc: Queener, David; Itel, Kenneth; Steve Gaschler; Erika Palmer; Brian Brown; Scott Lazenby; Tracy Brown; Hoelscher, Scott; Glasgow, Clay
Subject: RE: Clackamas County - Partial Comments on 2035 Gamma Forecast

Did you send other detailed comments for unincorporated Clackamas county under separate email? I am unable to find them in my inbox. Could you please resend?

Dennis

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Monday, August 27, 2012 12:10 PM
To: Gerry Uba; Dennis Yee; Jim Cser
Cc: Hughes, Jennifer; 'Jennifer Donnelly'; Rogalin, Ellen; Chandler, Daniel; Roth, Christine; Steve Kelley; Chuck Beasley (Charles.Beasley@co.multnomah.or.us); Fritzie, Martha; Gilevich, Shari; McCallister, Mike;

FINAL DRAFT

Barth, Gary; Gilmour, Cam; Comer, Catherine; Rede, Simone; Johnson, Dan; Queener, David; Itel, Kenneth; Steve Gaschler; Erika Palmer; Brian Brown; Scott Lazenby; Tracy Brown; Hoelscher, Scott; Glasgow, Clay
Subject: Clackamas County - Partial Comments on 2035 Gamma Forecast
Importance: High

Clackamas County has been please to be involved in the review of the Metro 2035 / 2045 Forecast of Household and Employment, Gamma Version.

The process has been open and our comments have been addressed in a satisfactory manner. The County will only be commenting on the forecast through 2035 because that is our planning horizon and the amount of uncertainty in the forecast increases as the forecasting period lengthens.

Specific Changes Recommended

Mount Hood Corridor / Sandy Household forecast

As a first step in the County Rural Population Coordination Process, the County recommends the shift 1000 units to Sandy from TAZ 961. This household will be allocated as follows :

TAZ	Area / City	2010 Households	2035 Households Gamma	*Household Growth 2010-2035*	*County Modified Growth Forecast*
834	Sandy	611	1,297	*686*	*886*
835	Sandy	386	451	*65*	*65*
836	Sandy	222	674	*452*	*652*
837	Sandy	1,436	1,749	*313*	*513*
838	Sandy	1,568	2,213	*645*	*845*
839	Sandy	102	251	*149*	*349*
961	Villages at Mt Hood / Government Camp	1,997	4,246	*2,249*	*1,249*

Lake Oswego Service Employment Forecast Reallocation

Lake Oswego has asked the County to reallocate 2000 service sector jobs. The County suggests the following reallocations.

E – Zone	Additional Service Jobs
201	300

202	500
203	500
204	400
206	300

General Comments on 2035 Gamma Forecast

A initial review of the forecast for the LRT Station Areas raises a number of concerns including the low level of forecast household growth. The County's concerns on this issue will be outline in a forth coming set of general comments that are currently under review by County Staff.

LRT Station Area TAZ	New Housing Units	New Jobs
Park Avenue	283	580
Fuller Road	61	730
Clackamas Town Center	456	1,900
LRT Station Area Totals	***800***	***3,210***

Rural Clackamas Forecasting Issues

Clackamas County is current working with the Rural Cities (Sandy, Estacada, Molalla, Canby and Barlow) to develop a Coordinated Population Forecast for Rural Clackamas County and the Rural City as required by ORS 197.

Although Clackamas County has a number of concerns about the allocations assumed in the Metro Regional Forecast for rural Clackamas County and the Rural Cities, we will use 23,182 new household (2010 to 2035) and 14,425 new jobs (2010 to 2035) as the control total for Rural Clackamas County in our Coordinated Population Forecast process.

The current Metro growth allocation in the Gamma Forecast appear to be influence by a weak understanding of the land supply conditions in Rural Clackamas County. For example, Metro's assumed capacity for Rural Unincorporated Clackamas County is higher than any previous rural residential capacity identified by the County. In addition the 2035 Gamma Forecast exceeds both of those numbers.

Fortunately, the Rural Cities have additional capacity within their existing UGB's and have the ability to expand their UGB's is a need is identified to meeting future demands such as those currently identified by this forecast.

Rural Area Forecast by TAZ *City / Unincorporated*	*New Housing Units*	*Metro Assumed Household*	*City Capacity Household Estimates*	*New Jobs*	*City Capacity Job Estimates*

Area		*Capacity*			
Rural Cities – East County (Sandy and Estacada)	*3,234*	*5,500 (S)* *1,000 (E)*	*3,114 (S)** *n/a (E)*	*5,131*	*≈3,400 (S)** *≈4,380 (E)***
Rural Cities – Southwest County (Canby, Molalla and Barlow)	*6,007*	*5,500 (C)* *2,000 (M)* *n/a (B)*	*4,403 (C)* *≈500 (M)**** *n/a (B)*	*5,432*	*4,623 (C)* *≈2,060 (M)**** *n/a (B)*
Total for Rural City	***9,241***	***13,500***		***10,563***	
Rural Unincorporated East County	*4,047*	*---*	*---*	*2,701*	*---*
Rural Unincorporated Southwest County	*7,395*	*---*	*---*	*2919*	*---*
Rural Unincorporated Northwest County	*2,500*	*---*	*---*	*936*	*---*
Total Rural Unincorporated Area	***13,942***	***9,700***	***6,000-8,000***	***3,863***	***n/a***
Total Rural TAZ Clackamas County	***23,183***	***23,200***		***14,425***	

*Based on 2009 Urbanization Report (ECONorthwest)
** 2009 EOA report (Cogen Owens Cogen) found 116.23 acres of buildable commercial land and 329.36 acres of buildable industrial land – assumes 15 empl/acre commercial and 8 empl/acre industrial.
***2008 BLI found 71 acres of buildable residential land in the UGB. Assumes 7 units per acre (per OAR 660-024a table1 "safe harbor") BLI found 52 acres of buildable commercial land and 160 acres of buildable industrial land – assumes 15 empl/acre commercial and 8 empl/acre industrial.

The County will work with the Rural Cities over the next several months to revision the Rural Forecast and to produce a more reasonable rural growth allocation. The County will then send you the final version of these changes to the rural allocations for inclusion in your regional forecast.

Additional comments on the household forecast are undergoing a review and will be sent to you later this week. This includes comments on the Stafford Basin Urban Reserve assumptions, the Damascus / Happy Valley Forecast and the assumptions used in the housing market allocations.

Employment Comments

General employment forecast comments are undergoing a review and will be sent to you later this week. This includes comments on the Stafford Basin Urban Reserve assumptions.

I hope these comments are helpful.

Sorry for the delay in getting them to you.

Larry Conrad
Principal Transportation Planner

(v) 503.742.4539

larrycon@co.clackamas.or.us

"Our obligation is to not mistake slogans for solutions."

Edward R Murrow

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Monday, August 20, 2012 9:04 AM
To: Dennis Yee; Gerry Uba
Cc: Fritzie, Martha; Gilevich, Shari; Barth, Gary; Rede, Simone
Subject: Gamma Forecast Comments

Dennis

Our comment on the Gamma forecast will be to you by Thursday --

Larry Conrad
Principal Transportation Planner

(v) 503.742.4539

larrycon@co.clackamas.or.us

"Our obligation is to not mistake slogans for solutions."

Edward R Murrow

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Wednesday, August 15, 2012 9:05 AM
To: Dennis Yee; Jim Cser; Gerry Uba
Subject: FW: Comparison Metro 2035 Forecasts

FYI

Larry Conrad
Principal Transportation Planner
(v) 503.742.4539
larrycon@co.clackamas.or.us

''It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so.''

Mark Twain

From: Conrad, Larry
Sent: Wednesday, August 15, 2012 8:28 AM
To: Conrad, Larry; McCallister, Mike; Hughes, Jennifer; Fritzie, Martha; Gilevich, Shari; Barth, Gary; Comer, Catherine; Hagen, Cindy; Chandler, Daniel; Johnson, Dan; Hoelscher, Scott; Glasgow, Clay; Abbott, Sarah; Buehrig, Karen
Cc: Gilmour, Cam; Bezner, Mike; Rogalin, Ellen; Roth, Christine; Marek, Joe; Itel, Kenneth; Queener, David; Marc Butorac; Erin Ferguson; Susan Wright
Subject: RE: Comparison Metro 2035 Forecasts

Here is the change in the employment forecast between the Beta Forecast and the Gamma Forecast –

The Gamma Forecast **reduces the forecast employment** in the County by more than 137,000 jobs

Larry Conrad
Principal Transportation Planner
(v) 503.742.4539
larrycon@co.clackamas.or.us

''It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so.''

Mark Twain

From: Conrad, Larry
Sent: Tuesday, August 14, 2012 11:58 AM
To: McCallister, Mike; Hughes, Jennifer; Fritzie, Martha; Gilevich, Shari; Barth, Gary; Comer, Catherine; Hagen, Cindy; Chandler, Daniel; Johnson, Dan; Hoelscher, Scott; Glasgow, Clay; Abbott, Sarah
Cc: Gilmour, Cam; Bezner, Mike; Rogalin, Ellen; 'Roth, Christine (christinerot@co.clackamas.or.us)'; Marek, Joe; Itel, Kenneth; Queener, David; Marc Butorac; Erin Ferguson; Susan Wright

Subject: Comparison Metro 2035 Forecasts
Importance: High

Just a quick bit of information for you –

The previous forecast – BETA was used for the RTP, the Urban reserve process and the first round of TSP update modeling (Low Build and Full Build) .

The 2035 BETA forecast for Clackamas County is larger than the 2035 Gamma Forecast. The difference is more than 14,000 housing units.

The2035 Gamma Forecast is the one that we are currently reviewing.

Also here is a reminder that I need you comments on the Metro 2035 Gamma Forecast by the Thursday if at all possible.

Thanks

Larry Conrad
Principal Transportation Planner

(v) 503.742.4539

larrycon@co.clackamas.or.us

"Our obligation is to not mistake slogans for solutions."

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Wednesday, August 15, 2012 9:04 AM
To: Dennis Yee
Cc: Gerry Uba; Jim Cser; Buehrig, Karen
Subject: RE: Difference between Beta and Gamma

For those of us who are working on TSP updates - a number of cities and counties – the difference between these 2 forecast is a very large issue

Many of us have been using the Beta forecast for our initial modeling runs – and expected to shift to Gamma forecast when it became available. There is a potentially large problem with our initial analysis.

LARRY CONRAD

PRINCIPAL TRANSPORTATION PLANNER

(V) 503.742.4539

LARRYCON@CO.CLACKAMAS.OR.US

''IT AIN'T WHAT YOU DON'T KNOW THAT GETS YOU INTO TROUBLE. IT'S WHAT YOU KNOW FOR SURE THAT JUST AIN'T SO.''

MARK TWAIN

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Wednesday, August 15, 2012 8:53 AM
To: Conrad, Larry
Cc: Gerry Uba; Jim Cser
Subject: RE: Difference between Beta and Gamma

I wouldn't compare to closely the "differences" between beta and gamma. There were significant changes that were recommended between the two distributions. Recall that beta was prepared prior to the July 22 summit with local planning directors. At the meeting, there was a wide call for us to take more time with review of the input assumptions, especially capacity estimates. We took several months more to hammer out differences in capacity assumptions, which got rolled into gamma, but not beta. Even though I don't recall substantive changes between beta and gamma for Clackamas county areas / cities, changes implemented in Portland and Washington county and its cities appear to be the prime cause for differences in allocations. MetroScope – as an equilibrium model – will rebalance the allocations according to the new supply and sometimes this rebalance will tip the scales significantly in unexpected dimensions.

I should have more details by tomorrow, but this is the general explanation for now.

Dennis

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Tuesday, August 14, 2012 5:46 PM
To: Dennis Yee
Cc: Jim Cser
Subject: RE: Difference between Beta and Gamma

I will have final number in the morning but employment is a order of magnitude worse

Larry Conrad

Principal Transportation Planner

(v) 503.742.4539

larrycon@co.clackamas.or.us

''It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so.''

Mark Twain

From: Dennis Yee [mailto:Dennis.Yee@oregonmetro.gov]
Sent: Tuesday, August 14, 2012 4:21 PM
To: Conrad, Larry
Cc: Jim Cser
Subject: RE: Difference between Beta and Gamma

We are researching it, but we have plausible explanations…more on this later in the week.

Thanks

Dennis

From: Conrad, Larry [mailto:LarryC@co.clackamas.or.us]
Sent: Tuesday, August 14, 2012 1:24 PM
To: Dennis Yee
Subject: Difference between Beta and Gamma
Importance: High

I am at a lost to explain this large of a change

Lawrence M Conrad
Principal Transportation Planner
Department of Transportation and Development
Clackamas County
150 Beavercreek Road
Oregon City, OR 97045

(v) 503.742.4539

larrycon@co.clackamas.or.us

In keeping with the County's sustainability goals our Department is open Monday – Thursday and is closed on Fridays.

MULTNOMAH COUNTY

Distribution Adjustments completed (August 27, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

From: Dennis Yee
Sent: Monday, August 27, 2012 9:07 AM
To: Charles BEASLEY
Cc: Gerry Uba
Subject: RE: Mult Co Rural TAZ

Will make the changes per your note concerning TAZ 660.

Thanks for your helping hands. The next major email will likely be a consolidated spreadsheet similar to the one you reviewed but with the final set of TAZ reviews for jobs and households. That should be the end of the technical portion of this project…and then switching over to the politics side of adoption by resolution or ordinance by Metro.

Dennis

From: Charles BEASLEY [mailto:charles.beasley@multco.us]
Sent: Thursday, August 23, 2012 4:00 PM
To: Dennis Yee
Subject: Re: Mult Co Rural TAZ

Dennis,
Re employment in these rural TAZ, it isn't clear what source of new jobs will occur in the future for areas outside of urban reserves since these areas are for the most part already developed with farm or forest related uses. There are other minor employment uses like parks, processing, and home occupations. The one TAZ that seems out of the range of increase in other TAZ is 660 showing increase from 2025 - 2040 of 50 total. I think an increase of 20 is more consistent with other areas nearby. Please make this change for us.

thanks

Chuck

From: Dennis Yee
Sent: Tuesday, August 21, 2012 4:04 PM
To: Charles BEASLEY
Cc: Bouillion, Tom; Gerry Uba
Subject: FW: Portland TAZ changes

Here is the spreadsheet sent by Tom Armstrong. If you weren't tapped into these numbers/changes, please coordinate with me and Tom Armstrong.

Dennis

……

From: Armstrong, Tom [mailto:Tom.Armstrong@portlandoregon.gov]
Sent: Friday, August 17, 2012 3:46 PM
To: Dennis Yee; Jim Cser; Gerry Uba
Subject: Portland TAZ changes

Here are our changes. Let me know if you have questions.

Tom

From: Dennis Yee
Sent: Tuesday, August 21, 2012 4:03 PM
To: Charles BEASLEY
Cc: Gerry Uba
Subject: RE: Mult Co Rural TAZ

Already done so in my master spreadsheet. Will look forward to your job comments.

d

From: Charles BEASLEY [mailto:charles.beasley@multco.us]
Sent: Tuesday, August 21, 2012 4:01 PM
To: Dennis Yee
Subject: Re: Mult Co Rural TAZ

Dennis,
Thanks much for discussing the HH by TAZ data with me. Please go ahead and reduce the capacity to reflect that our March 8 reconciliation is total capacity for the taz.
Re the declining percentages, we touched on several additional TAZ where this occurs. Thanks for looking in to this and revising these since they don't appear to be areas where capacity will increase.

I will review the employment data asap this week.

thanks

Chuck

On Thu, Aug 16, 2012 at 4:22 PM, Dennis Yee <Dennis.Yee@oregonmetro.gov> wrote:
Let's talk Monday. Have a good weekend. Meanwhile I'll take a closer look at the TAZ you mentioned.

From: Charles BEASLEY [mailto:charles.beasley@multco.us]
Sent: Thursday, August 16, 2012 4:10 PM
To: Dennis Yee
Subject: Mult Co Rural TAZ

Dennis,

Why would %2045 capacity used by 2025 be higher than in subsequent time periods? I'm looking at TAZ 42. If 2045 capacity is 92% used by 2025, how can a lower amount, 77% be used by 2035?

Also, our reconciliation of HH back in March was intended on my end to reflect all additional capacity for the TAZ. I'm referring to the March 8 email. For example, TAZ 51 has total supply at 186. But the map is showing and additional 246 HH.

Since I'm out tomorrow, I can only pick this up again next Monday. I hope that doesn't delay the project too much.

--
Chuck Beasley, Senior Planner
Multnomah County Land Use Planning
1600 SE 190th Avenue, Suite 116
Portland, Oregon 97233
charles.beasley@multco.us

503-988-3043 ext 22610
FAX 503-988-3389

WASHINGTON COUNTY

Distribution Adjustments completed (September 3, 2012): Add an explanation of the consensus that was reached by Metro and the local government during the comment and response period (August 15 – September 5, 2012).

From: Steve Kelley [mailto:Steve_Kelley@co.washington.or.us]
Sent: Monday, September 03, 2012 12:06 PM
To: Dennis Yee
Cc: Brian Hanes; Andy Back
Subject: Regional Growth Allocations Review - Washington County Unincorporated TAZ's

Dennis;

In case you did not receive this last week (Brian attempted to get it to you but we were having Network & E-mail system problems Thursday & Friday -- hopefully, they are fixed)
- I seem to have a long list of "Delivery Status Notifications" in my inbox.

Here's the link to our TAZ Review file posted on our FTP server.
FTP://tbg5.co.washington.or.us/Metro

There is a worksheet tab in the ***Wash-Co_2045-Employ-Cap-by-TAZ_June-2012.xls*** workbook titled: **"Wash_Co_Review_2045"** - This table shows estimates of post 2040 capacity estimates (surplus / deficit) for both jobs and housing units. The purpose of this methodology is to allow you / MetroScope to determine the timing and amount of the allocations as long as they do not exceed estimated 2045 capacity.
(I think that the majority of the estimated 2045 capacities in Washington County could be achieved by 2030 if the demand existed - (all services with the possible exception of transportation could be provided by that time).

Give me a call if you have any questions or would like to continue our growth allocations discussion.

Also note:
1) I have an e-mail from Dick Reynolds in Cornelius - he apparently wants to discuss the allocations before responding to your questions to him. I will attempt to call him some time early this week.
2) We remain concerned about the capacity estimates in Portland and plan to review the long-term allocations to currently developed lands in areas outside of downtown.
3) We would also like to see the transportation model outputs for 2030 to 2040. I don't think it makes much sense to sanction growth allocations that cannot 'reasonably' be accommodated by our transportation system.

Steve

Steven D. Kelley, Senior Planner
Washington County - Dept. of Land Use and Transportation
155 N. First Ave. - Suite 350-14
Hillsboro, OR. 97124
Phone: (503) 846-3593
E-Mail: steve_kelley@co.washington.or.us

BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF ADOPTING THE DISTRIBUTION OF THE POPULATION AND EMPLOYMENT GROWTH TO YEAR 2035 TO TRAFFIC ANALYSIS ZONES IN THE REGION CONSISTENT WITH THE FORECAST ADOPTED BY ORDINANCE NO. 11-1264B IN FULFILLMENT OF METRO'S POPULATION COORDINATION RESPONSIBILITY UNDER ORS 195.036	)	Ordinance No. 12-1292 Introduced by Councilor Kathryn Harrington

WHEREAS, ORS 195.025 designates Metro as the local government responsible for coordination of planning activities within the Metro district; and

WHEREAS, ORS 195.036 requires the designated local government responsible for coordination of planning activities in a region to establish and maintain a population forecast for the area within its boundary and to coordinate the forecast with the other local governments within the boundary; and

WHEREAS, the Metro Council adopted a population and employment forecast for the region by Ordinance No. 11-1264B ("For the Purpose of Expanding the Urban Growth Boundary to Provide Capacity for Housing and Employment to the year 2030 and Amending the Metro Code to Conform") on October 20, 2011; and

WHEREAS, the distribution to specific zones within the region of forecasted population and employment adopted by this ordinance reflects prior policy decisions made by the Metro Council to: (1) use land inside the UGB more efficiently in Ordinance No. 10-1244B, and (2) add land to the UGB in Ordinance No. 11-1264B; and

WHEREAS, Metro began the process of distribution of the forecasted population and employment in October 2010, by coordinating the distribution with the 25 cities and three counties portions of which lie within the Metro district; in the course of 24 months, Metro held 15 coordination meetings with local governments, by county; more than 25 meetings with individual cities and counties; and four meetings with the city of Vancouver and Clark County to share the results of preliminary distributions and to seek comments and suggestions to improve the accuracy of the distributions; and

WHEREAS, Metro staff made presentations to its advisory committees (MPAC, MTAC, TPAC and JPACT) regarding the distribution and coordination with local governments; and

WHEREAS, Metro incorporated many of the comments and suggestions to refine the distribution and published a final distribution on _____, 2012; now, therefore,

THE METRO COUNCIL ORDAINS AS FOLLOWS:

1. The distribution made to traffic analysis zones, described in Exhibits A and B to this Ordinance and in the Staff Report dated October 2, 2012, of the regional population and employment forecast adopted by the Council in Ordinance No. 11-1264B, is accepted and adopted as fulfillment of Metro's responsibilities regarding coordination of population forecasts under ORS 195.025 and 195.036 and is endorsed for use by the 25 cities and three counties as their own population and employment forecasts for their planning activities.

2. The Chief Operating Officer shall make the distribution of population and employment available to each city and county in the district.

ADOPTED by the Metro Council this ____ day of November, 2012.

_____
Tom Hughes, Council President

Approved as to form:

_____
Alison Kean Campbell, Metro Attorney

EXHIBIT A (Ordinance No. 12-1292)
2035 Reviewed Household Forecast Distribution by Jurisdiction
MetroScope Gamma TAZ Forecast

Final Draft 9/19/2012

Notes: Jurisdiction geographies are approximate, and based on TAZs. Urban Reserves are considered to be outside the UGB.

	2010 Reviewed HH			2035 Reviewed HH			2010-2035 Change		
Inside UGB:	SF	MF	Total	SF	MF	Total	SF	MF	Total
Beaverton	18,128	21,953	40,081	20,038	30,479	50,517	1,910	8,526	10,436
Cornelius	2,467	1,051	3,518	3,428	2,085	5,513	961	1,034	1,995
Damascus	3,322	205	3,527	11,700	217	11,916	8,378	12	8,389
Durham	350	8	358	410	26	436	60	18	78
Fairview	1,677	1,954	3,631	1,927	2,076	4,003	250	122	372
Forest Grove	4,775	2,717	7,492	6,999	3,380	10,379	2,224	663	2,887
Gladstone	2,831	1,356	4,187	3,097	1,779	4,876	266	423	689
Gresham	19,781	18,243	38,024	25,394	25,656	51,051	5,613	7,413	13,027
Happy Valley	4,162	273	4,435	9,898	512	10,410	5,736	239	5,975
Hillsboro	18,575	14,251	32,826	21,762	23,211	44,973	3,187	8,960	12,147
King City	572	383	955	590	379	969	18	-4	14
Lake Oswego	10,887	5,180	16,067	12,307	6,984	19,291	1,420	1,804	3,224
Milwaukie	5,934	2,307	8,241	7,166	2,574	9,740	1,232	267	1,499
Oregon City	8,463	3,511	11,974	12,186	4,861	17,047	3,723	1,350	5,073
Portland	143,801	104,915	248,716	165,636	204,068	369,704	21,835	99,153	120,988
Sherwood	4,971	1,505	6,476	5,553	1,716	7,269	582	211	793
Tigard	12,035	6,632	18,667	15,120	10,877	25,997	3,085	4,245	7,330
Troutdale	3,981	1,806	5,787	4,506	2,126	6,632	525	320	845
Tualatin	5,391	4,847	10,238	5,980	5,190	11,170	589	343	932
West Linn	7,670	2,582	10,252	9,237	2,751	11,988	1,567	169	1,736
Wilsonville	3,471	4,509	7,980	5,625	5,883	11,508	2,154	1,374	3,528
Wood Village	458	1,081	1,539	488	1,121	1,609	30	40	70
Uninc. Clackamas Co.	21,497	13,559	35,056	28,816	16,650	45,466	7,319	3,091	10,410
Uninc. Multnomah Co.	1,715	314	2,029	3,260	847	4,107	1,545	533	2,078
Uninc. Washington Co.	50,176	21,204	71,380	71,698	28,778	100,476	21,522	7,574	29,096
Inside UGB Total	357,090	236,346	593,436	452,823	384,225	837,048	95,733	147,879	243,612
Outside UGB:									
Clackamas County	40,749	4,202	44,951	60,792	5,600	66,392	20,043	1,398	21,441
Multnomah County	3,776	97	3,873	4,243	122	4,365	467	25	492
Washington County	11,259	101	11,360	27,369	5,401	32,770	16,110	5,300	21,410
Clark County	114,638	114,638	158,110	164,207	64,185	228,392	49,569	20,713	70,282
Outside UGB Total	170,422	119,038	218,294	256,610	75,309	331,919	86,188	27,437	113,625
Four-County Total	527,512	284,218	811,730	709,433	459,534	1,168,967	181,921	175,316	357,237

EXHIBIT B (Ordinance No. 12-1292)

2035 Reviewed Employment Forecast Distribution by Jurisdiction

MetroScope Gamma TAZ Forecast

Final Draft 9/19/2012

Notes: Jurisdiction geographies are approximate, and based on TAZs. Urban Reserves are considered to be outside the UGB.

	2010 Employment Geocode				2035 Jurisdiction Review				2010 - 2035 Change			
Inside UGB:	Retail	Service	Other	Total	Retail	Service	Other	Total	Retail	Service	Other	Total
Beaverton	11,041	19,261	21,539	51,841	14,254	33,282	27,822	75,358	3,213	14,021	6,283	23,517
Cornelius	693	711	1,680	3,084	1,611	1,880	4,440	7,931	918	1,169	2,760	4,847
Damascus	260	357	908	1,525	902	1,613	1,894	4,409	642	1,256	986	2,884
Durham	1	213	318	532	1	307	458	766	0	94	140	234
Fairview	236	497	1,878	2,611	558	3,293	3,724	7,575	322	2,796	1,846	4,964
Forest Grove	882	2,018	2,617	5,517	1,747	3,455	5,343	10,545	865	1,437	2,726	5,028
Gladstone	702	546	883	2,131	903	1,040	1,092	3,035	201	494	209	904
Gresham	7,353	8,871	16,408	32,632	12,334	20,154	26,079	58,567	4,981	11,283	9,671	25,935
Happy Valley	241	256	621	1,118	789	1,842	1,616	4,247	548	1,586	995	3,129
Hillsboro	9,584	14,449	34,227	58,260	12,152	25,518	55,733	93,403	2,568	11,069	21,506	35,143
King City	137	269	64	470	173	511	137	821	36	242	73	351
Lake Oswego	2,553	7,024	8,670	18,247	2,323	11,584	8,879	22,786	-230	4,560	209	4,539
Milwaukie	1,403	3,527	6,658	11,588	1,944	5,751	7,712	15,407	541	2,224	1,054	3,819
Oregon City	3,081	3,727	7,580	14,388	5,418	6,990	10,077	22,485	2,337	3,263	2,497	8,097
Portland	65,150	139,116	170,076	374,342	76,134	218,147	214,199	508,482	10,984	79,031	44,123	134,140
Sherwood	1,103	1,206	1,907	4,216	1,643	2,604	5,005	9,252	540	1,398	3,098	5,036
Tigard	9,072	11,901	16,196	37,169	10,764	23,818	19,650	54,232	1,692	11,917	3,454	17,063
Troutdale	1,272	493	2,361	4,126	2,039	2,357	5,615	10,011	767	1,864	3,254	5,885
Tualatin	4,372	6,140	12,460	22,972	5,066	8,868	21,305	35,239	694	2,728	8,845	12,267
West Linn	966	1,593	1,693	4,252	1,517	2,683	2,331	6,531	551	1,090	638	2,279
Wilsonville	2,480	4,839	9,754	17,073	3,536	9,733	14,150	27,419	1,056	4,894	4,396	10,346
Wood Village	1,261	242	531	2,034	1,783	1,158	1,489	4,430	522	916	958	2,396
Uninc. Clackamas Co.	11,506	13,302	20,344	45,152	15,519	26,628	25,775	67,922	4,013	13,326	5,431	22,770
Uninc. Multnomah Co.	109	377	396	882	749	1,658	2,367	4,774	640	1,281	1,971	3,892
Uninc. Washington Co.	5,929	13,844	17,097	36,870	8,659	23,012	31,142	62,813	2,730	9,168	14,045	25,943
Inside UGB Total	141,387	254,779	356,866	753,032	182,518	437,886	498,034	1,118,440	41,131	183,107	141,168	365,408
Outside UGB:												
Clackamas County	4,803	5,218	15,348	25,369	8,182	11,295	22,359	41,836	3,379	6,077	7,011	16,467
Multnomah County	361	479	1,513	2,353	384	876	1,945	3,205	23	397	432	852
Washington County	854	1,640	5,881	8,375	2,363	6,659	18,084	27,106	1,509	5,019	12,203	18,731
Clark County	25,375	42,061	59,831	127,267	40,864	80,963	100,193	222,020	15,489	38,902	40,362	94,753
Outside UGB Total	31,393	49,398	82,573	163,364	51,793	99,793	142,581	294,167	20,400	50,395	60,008	130,803
Four-County Total	172,780	304,177	439,439	916,396	234,311	537,679	640,615	1,412,607	61,531	233,502	201,176	496,211

STAFF REPORT (Revised)

IN CONSIDERATION OF ORDINANCE NO. 12-1292, FOR THE PURPOSE OF ADOPTING THE DISTRIBUTION OF THE POPULATION AND EMPLOYMENT GROWTH TO YEAR 2035 TO TRAFFIC ANALYSIS ZONES IN THE REGION CONSISTENT WITH THE FORECAST ADOPTED BY ORDINANCE NO. 11-1264B IN FULFILLMENT OF METRO'S POPULATION COORDINATION RESPONSIBILITY UNDER ORS 195.036

Date: October 9, 2012 Prepared by: Gerry Uba, x1737

BACKGROUND

Oregon land use law (ORS 195.036; 195.025) requires Metro to coordinate its regional population forecasts with local governments inside the urban growth boundary for use in updating their comprehensive plans, land use regulations and other related policies. In 2009, Metro created a population and employment growth forecast for the seven-county region[1] for the next 50 years. One of the ways Metro coordinates the population and employment forecast is to conduct a localized distribution of the 2009 forecast after an urban growth boundary decision cycle is completed.

Metro has been preparing localized-level analyses every five years for over 20 years. The current distribution is the most advanced analysis yet. The experience gained from previous distributions has helped Metro and local governments to improve the methodology and the information that is produced. To accommodate various local and regional planning needs, the localized growth forecast distribution was produced for the years 2025, 2035 and 2040. Local government staff expressed interest in the 2035 distributions as more relevant for their 20-year growth planning.

The distribution information is essential for local and regional planning, such as updating local comprehensive plans (through periodic review), local transportation system plans, and the Regional Transportation Plan. The information is also used for corridor planning and special districts planning. Many cities in the region currently undergoing periodic review are coordinating their forecast with Metro as they are updating their comprehensive plans. Although there is no legal requirement for school districts and special districts to coordinate their forecast with Metro, the distribution information will be useful to school districts for enrolment forecasting and facility planning, and to special districts in the region, such as water, sewer and fire districts, in updating their facility plans and emergency preparedness plans. The information is also helpful to TriMet in forecasting future ridership and mapping travel patterns, enabling the agency to better plan for frequency of MAX and bus service and future routes.

Methodology of the growth forecast distribution

The growth forecast distribution is based on policy and investment decisions and assumptions that local elected leaders and the Metro Council have already adopted, including the seven-county forecast,

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[1] Clark, Clackamas, Columbia, Multnomah, Skamania, Washington, and Yamhill counties

existing zoning, adopted plans, the most recently adopted Regional Transportation Plan, and urban and rural reserves. The regional coordination of the forecast distribution is a two stage process.

The first stage of the coordination process involves Metro and local government staff working together to refine the buildable land inventory (BLI) methodology to ensure the accuracy of zoning and growth capacity assumptions. Attachment 1 contains names of local jurisdiction staff involved in the population and employment coordination. The methodology takes into account land that cannot be built on due to environmental constraints and right of way, as well as capacity from vacant buildable lands, new urban areas[2], prospective urban growth boundary expansions into designated urban reserves, redevelopment and infill. As a result of this exercise, the region now has an updated 30-year capacity estimate that reflects the input and review from local government staff. This coordinated buildable land inventory reflects the increasing importance of redevelopment as a key part of the land supply in this region.

The geography used for this analysis is the Traffic Analysis Zone (TAZ). To provide more detail than the previous growth distribution, the number of TAZs used was increased from 2,013 to 2,162. The TAZ is the geographic unit that serves as the building block of Metro's primary forecasting tools (the travel demand model and MetroScope). By dividing the region into 2,162 TAZs, the accuracy of the travel demand model as well as all other aspects of transportation planning are improved. The TAZ-level data also assist land use planners in updating comprehensive plans and zoning, and conducting other types of land use analysis, including neighborhood level analysis.

In the second stage of the distribution coordination process, land use and transportation models are used to match demand (the seven-county forecast) with supply (the BLI). After extensive review of Metro's initial distributions with local governments' staff, the final product is the 2025, 2035 and 2040 distributions of forecast households and jobs to TAZs, cities and unincorporated areas in the region.

Further analyses of the distribution data reveal future trends that regional and local planners should bring to the attention of their decision makers.

Regional Planning Directors Involvement

The coordination of population and employment forecast was kicked off with a meeting of the Regional Planning Directors in October 2010, endorsing roles and responsibilities of local governments and Metro. The directors met again in July 2011 to review, discuss and reach agreement on the outcome of the first stage of the process – the BLI methodology, urban reserve urbanization assumptions, redevelopment assumptions, and the capacity of residential and employment land. The last meeting of directors was in September 2012 to review and comment specifically on the 2035 distribution of households and employment. Attachments 2 and 3 contain the 2035 forecast distribution by local jurisdiction.

Metro advisory committee involvement

The outcome of the first stage of the process (BLI methodology, urban reserve urbanization assumptions, redevelopment assumptions, and capacity of residential and employment land) was presented to the Metro Technical Advisory Committee (MTAC), and Transportation Policy Alternatives Committee (TPAC) in January 2012, and to the Metro Policy Advisory Committee (MPAC) in February 2012 for discussion and comment. The 2035 distribution of households and employment was presented

[2] Areas added to the urban growth boundary that does not yet have urban zoning.

to TPAC in September 2012, and to MTAC, MPAC and the Joint Policy Advisory Committee on Transportation in October 2012.

Additional outreach

Staff updated the Oregon Land Conservation and Development Commission in June 2011 on how Metro is coordinating its regional forecast with the forecasts of local governments in the region, including other ways Metro coordinates with local governments -- urban growth report, capacity ordinance, and growth management decisions.

ANALYSIS/INFORMATION

1. **Known Opposition**

   Washington County and the City of Beaverton provided written comments emphasizing the need for a better understanding of residential housing demand and preferences and redevelopment. In response, Metro staff has identified additional research possibilities. Depending on funding availability, this research could inform the next Urban Growth Report and forecast distribution.

2. **Legal Antecedents**

   The distribution of the growth forecast satisfies Metro's coordination obligations under ORS 195.025 and 195.036. As requested by DLCD, staff is proposing that the Metro Council adopt the forecast distribution by an ordinance that will be acknowledged by DLCD as part of Metro's planning documents in order to support future planning decisions by local governments that rely upon the population forecasts. State law requires cities and counties to adopt coordinated forecasts as part of their comprehensive plans.

3. **Anticipated Effects**

   Adoption of the distribution of population and employment forecast at a localized-level will encourage local governments to use distribution information to conform their land use and transportation plans to recent regional policies adopted by the Metro Council. The TAZ-level distributions would also inform the next Regional Transportation Plan. Delay of the adoption would delay some local government activities that would be accomplished with the forecast distribution information.

4. **Budget Impacts**

   The FY 2010/2011 and FY 2011/2012 budgets included resources for staff in the Research Center and the Planning and Development Department to work on this project. In the current FY 2012/2013 budget there are sufficient funds to package and post the forecast distribution in electronic platforms that will make the data accessible to local governments and school and special districts in the region.

RECOMMENDED ACTION

Staff recommends that the Metro Council accept and adopt the distribution of the 2009 population and employment forecast as fulfillment of Metro's responsibilities on population coordination with local governments in the region

ATTACHMENTS

1. Forecast Distribution Process Local Government and Agency Staff
2. 2035 Reviewed Household Forecast Distribution by Jurisdiction
3. 2035 Reviewed Employment Forecast Distribution by Jurisdiction
4. Regional 2035 Forecast Distribution: Executive Summary
5. Technical Documentation of the Project (i.e., The Technical Report)
6. Local Governments' Comments on the 2025 and 2035 Forecast Distributions and Metro Response

Attachment 1

2035 FORECAST DISTRIBUTION PROCESS LOCAL GOVERNMENT AND AGENCY STAFF

Cities	Staff
City of Beaverton	Laura Kelly, Robert McCracken, Jeff Salvon, Steven Sparks, Doug Taylor
City of Cornelius	Dick Reynolds
City of Damascus	Steve Gaschler, John Morgan, Erika Palmer, Bob Short
City of Durham	
City of Fairview	Lindsey Nesbitt
City of Forest Grove	Jon Holan, Dan Riordan
City of Gladstone	Larry Conrad
City of Gresham	Erin Aigner, Jonathan Harker, Brian Martin, Ann Pytynia
City of Happy Valley	Jason Tuck, Michael Walter
City of Hillsboro	Colin Cooper, Doug Miller, Don Odermott, Pat Ribellia, Alwin Turiel
City of Johnson City	
City of King City	Keith Liden
City of Lake Oswego	Denny Egner, Erica Rooney, Sarah Selden
City of Maywood Park	
City of Milwaukie	Li Alligood, Kenny Asher, Katie Mangle
City of Oregon City	Tony Konkol, Christina Roberts-Gardner, Laura Terway
City of Portland	Tom Armstrong
City of Rivergrove	
City of Sherwood	Julia Hajduk, Michelle Miller
City of Tigard	Darren Wyss
City of Troutdale	Rich Faith, Elizabeth McCallum
City of Tualatin	Colin Cortes, Cindy Hahn, Aquilla Hurd-Ravich, Alice Rouyer
City of West Linn	Sara Javronok, Chris Kerr, John Sonnen
City of Wilsonville	Chris Neamtzu, Stephan Lashbrook, Daniel Pauly, Dan Stark
City of Wood Village	Bill Peterson
Counties	**Staff**
Clackamas County	Sarah Abbott, Larry Conrad, Martha Fritzie, Shari Gilevich, Clay Glasgow, Cindy Hagen, Scott Hoelscher, Diedre Landon, Mike McAllister, Simone Rede, Michael D. Walden
Multnomah County	Chuck Beasley
Washington County	Andy Back, Steve D. Kelley
Agencies	**Staff**
Oregon Employment Dept.	Lynn Wallis
Dept. of Land Conservation & Development	Anne Debbaut, Jennifer Donnelly, Darren Nichols, Lynn Wallis
Oregon Dept. of Transportation	Mai Chi, Kirsten Pennington, Lidwien Rahman, Lainie Smith
Port of Portland	John Boren, Tom Bouillion
Metro	Roger Alfred, Sonny Conder, Jim Cser, Chris Deffebach, Mike Hoglund, Robin McArthur, Cindy Pederson, Ted Reid, Maribeth Todd, Gerry Uba, John Williams, Dennis Yee
Neighboring Cities	
Canby	Bryan Brown, Matilda Deas
Sandy	Tracy Brown

ATTACHMENT 2 (Staff Report to Ordinance No. 12-1292)
2035 Reviewed Household Forecast Distribution by Jurisdiction
MetroScope Gamma TAZ Forecast

Final Draft 9/19/2012

Notes: Jurisdiction geographies are approximate, and based on TAZs. Urban Reserves are considered to be outside the UGB.

	2010 Reviewed HH			2035 Reviewed HH			2010-2035 Change		
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Cornelius	2,467	1,051	3,518	3,428	2,085	5,513	961	1,034	1,995
Damascus	3,322	205	3,527	11,700	217	11,916	8,378	12	8,389
Durham	350	8	358	410	26	436	60	18	78
Fairview	1,677	1,954	3,631	1,927	2,076	4,003	250	122	372
Forest Grove	4,775	2,717	7,492	6,999	3,380	10,379	2,224	663	2,887
Gladstone	2,831	1,356	4,187	3,097	1,779	4,876	266	423	689
Gresham	19,781	18,243	38,024	25,394	25,656	51,051	5,613	7,413	13,027
Happy Valley	4,162	273	4,435	9,898	512	10,410	5,736	239	5,975
Hillsboro	18,575	14,251	32,826	21,762	23,211	44,973	3,187	8,960	12,147
King City	572	383	955	590	379	969	18	-4	14
Lake Oswego	10,887	5,180	16,067	12,307	6,984	19,291	1,420	1,804	3,224
Milwaukie	5,934	2,307	8,241	7,166	2,574	9,740	1,232	267	1,499
Oregon City	8,463	3,511	11,974	12,186	4,861	17,047	3,723	1,350	5,073
Portland	143,801	104,915	248,716	165,636	204,068	369,704	21,835	99,153	120,988
Sherwood	4,971	1,505	6,476	5,553	1,716	7,269	582	211	793
Tigard	12,035	6,632	18,667	15,120	10,877	25,997	3,085	4,245	7,330
Troutdale	3,981	1,806	5,787	4,506	2,126	6,632	525	320	845
Tualatin	5,391	4,847	10,238	5,980	5,190	11,170	589	343	932
West Linn	7,670	2,582	10,252	9,237	2,751	11,988	1,567	169	1,736
Wilsonville	3,471	4,509	7,980	5,625	5,883	11,508	2,154	1,374	3,528
Wood Village	458	1,081	1,539	488	1,121	1,609	30	40	70
Uninc. Clackamas Co.	21,497	13,559	35,056	28,816	16,650	45,466	7,319	3,091	10,410
Uninc. Multnomah Co.	1,715	314	2,029	3,260	847	4,107	1,545	533	2,078
Uninc. Washington Co.	50,176	21,204	71,380	71,698	28,778	100,476	21,522	7,574	29,096
Inside UGB Total	357,090	236,346	593,436	452,823	384,225	837,048	95,733	147,879	243,612
Outside UGB:									
Clackamas County	40,749	4,202	44,951	60,792	5,600	66,392	20,043	1,398	21,441
Multnomah County	3,776	97	3,873	4,243	122	4,365	467	25	492
Washington County	11,259	101	11,360	27,369	5,401	32,770	16,110	5,300	21,410
Clark County	114,638	114,638	158,110	164,207	64,185	228,392	49,569	20,713	70,282
Outside UGB Total	170,422	119,038	218,294	256,610	75,309	331,919	86,188	27,437	113,625
Four-County Total	527,512	284,218	811,730	709,433	459,534	1,168,967	181,921	175,316	357,237

ATTACHMENT 3 (Staff Report for Ordinance No. 12-1292)

2035 Reviewed Employment Forecast Distribution by Jurisdiction

MetroScope Gamma TAZ Forecast

Final Draft 9/19/2012

Notes: Jurisdiction geographies are approximate, and based on TAZs. Urban Reserves are considered to be outside the UGB

	2010 Employment Geocode				2035 Jurisdiction Review				2010 - 2035 Change			
Inside UGB:	Retail	Service	Other	Total	Retail	Service	Other	Total	Retail	Service	Other	Total
Beaverton	11,041	19,261	21,539	51,841	14,254	33,282	27,822	75,358	3,213	14,021	6,283	23,517
Cornelius	693	711	1,680	3,084	1,611	1,880	4,440	7,931	918	1,169	2,760	4,847
Damascus	260	357	908	1,525	902	1,613	1,894	4,409	642	1,256	986	2,884
Durham	1	213	318	532	1	307	458	766	0	94	140	234
Fairview	236	497	1,878	2,611	558	3,293	3,724	7,575	322	2,796	1,846	4,964
Forest Grove	882	2,018	2,617	5,517	1,747	3,455	5,343	10,545	865	1,437	2,726	5,028
Gladstone	702	546	883	2,131	903	1,040	1,092	3,035	201	494	209	904
Gresham	7,353	8,871	16,408	32,632	12,334	20,154	26,079	58,567	4,981	11,283	9,671	25,935
Happy Valley	241	256	621	1,118	789	1,842	1,616	4,247	548	1,586	995	3,129
Hillsboro	9,584	14,449	34,227	58,260	12,152	25,518	55,733	93,403	2,568	11,069	21,506	35,143
King City	137	269	64	470	173	511	137	821	36	242	73	351
Lake Oswego	2,553	7,024	8,670	18,247	2,323	11,584	8,879	22,786	-230	4,560	209	4,539
Milwaukie	1,403	3,527	6,658	11,588	1,944	5,751	7,712	15,407	541	2,224	1,054	3,819
Oregon City	3,081	3,727	7,580	14,388	5,418	6,990	10,077	22,485	2,337	3,263	2,497	8,097
Portland	65,150	139,116	170,076	374,342	76,134	218,147	214,199	508,482	10,984	79,031	44,123	134,140
Sherwood	1,103	1,206	1,907	4,216	1,643	2,604	5,005	9,252	540	1,398	3,098	5,036
Tigard	9,072	11,901	16,196	37,169	10,764	23,818	19,650	54,232	1,692	11,917	3,454	17,063
Troutdale	1,272	493	2,361	4,126	2,039	2,357	5,615	10,011	767	1,864	3,254	5,885
Tualatin	4,372	6,140	12,460	22,972	5,066	8,868	21,305	35,239	694	2,728	8,845	12,267
West Linn	966	1,593	1,693	4,252	1,517	2,683	2,331	6,531	551	1,090	638	2,279
Wilsonville	2,480	4,839	9,754	17,073	3,536	9,733	14,150	27,419	1,056	4,894	4,396	10,346
Wood Village	1,261	242	531	2,034	1,783	1,158	1,489	4,430	522	916	958	2,396
Uninc. Clackamas Co.	11,506	13,302	20,344	45,152	15,519	26,628	25,775	67,922	4,013	13,326	5,431	22,770
Uninc. Multnomah Co.	109	377	396	882	749	1,658	2,367	4,774	640	1,281	1,971	3,892
Uninc. Washington Co.	5,929	13,844	17,097	36,870	8,659	23,012	31,142	62,813	2,730	9,168	14,045	25,943
Inside UGB Total	141,387	254,779	356,866	753,032	182,518	437,886	498,034	1,118,440	41,131	183,107	141,168	365,408
Outside UGB:												
Clackamas County	4,803	5,218	15,348	25,369	8,182	11,295	22,359	41,836	3,379	6,077	7,011	16,467
Multnomah County	361	479	1,513	2,353	384	876	1,945	3,205	23	397	432	852
Washington County	854	1,640	5,881	8,375	2,363	6,659	18,084	27,106	1,509	5,019	12,203	18,731
Clark County	25,375	42,061	59,831	127,267	40,864	80,963	100,193	222,020	15,489	38,902	40,362	94,753
Outside UGB Total	31,393	49,398	82,573	163,364	51,793	99,793	142,581	294,167	20,400	50,395	60,008	130,803
Four-County Total	172,780	304,177	439,439	916,396	234,311	537,679	640,615	1,412,607	61,531	233,502	201,176	496,211

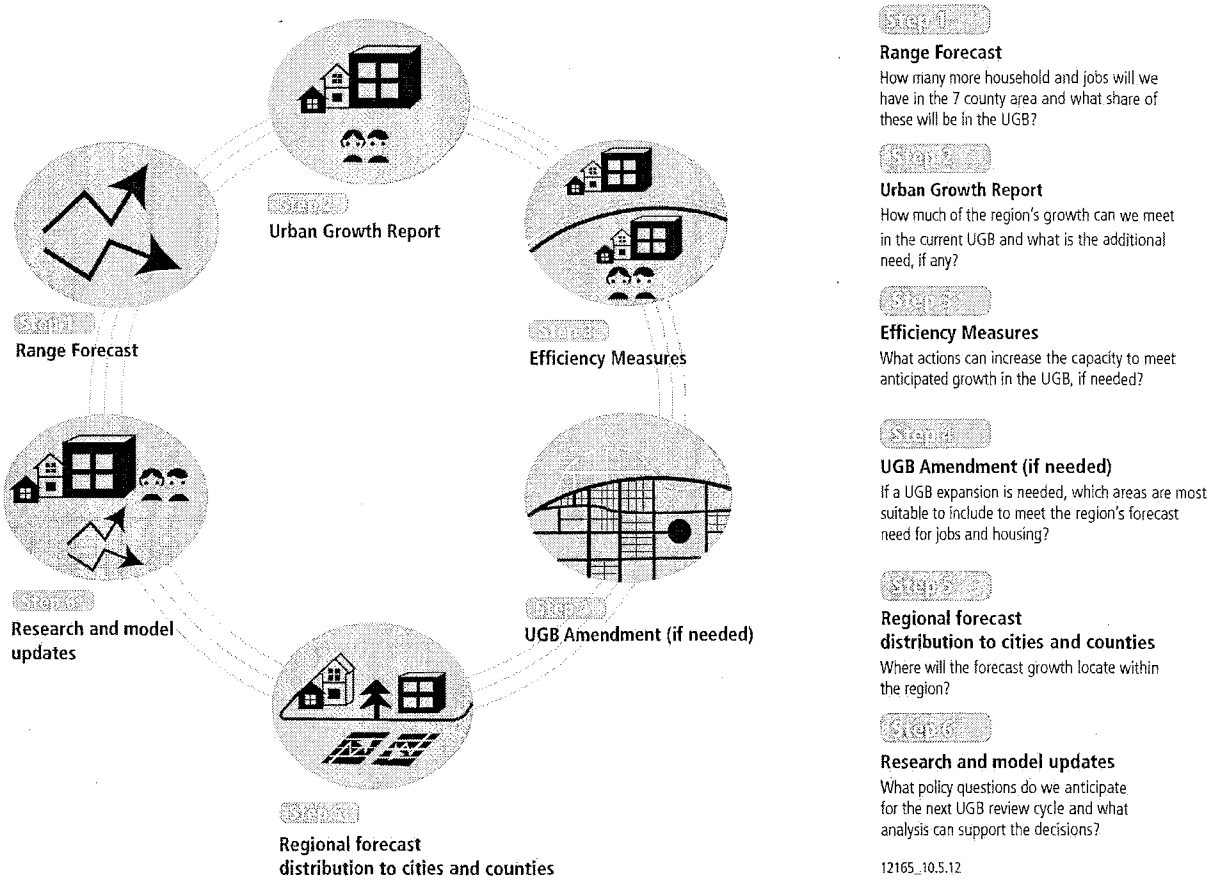
REGIONAL 2035 FORECAST DISTRIBUTION: EXECUTIVE SUMMARY

Purpose of this report

This Regional Growth Distribution report explains how Metro and local governments collaborated to forecast where population and employment forecast will be accommodated over the in 2035 based on current policies in zoning and adopted transportation plans, environmental regulations and development incentives. Planning for expected growth in population and jobs enable the region and local communities to make decisions that support good jobs, safe neighborhoods, protect farmland, and invest in public structures and services that enhance our quality of life.

Metro is required by Oregon law to forecast the population and employment growth that is expected for this region over the next 20 years. In 2009 Metro initiated its growth management decision process depicted in Figure 1. The first task in the process was the 2009 forecast of a range of 1.2 to 1.3 million households and 1.3 to 1.7 million jobs in the seven-county region (Clackamas, Clark, Columbia, Multnomah, Skamania, Yamhill, Washington) by 2030. Within the seven county total, Metro forecast the proportion expected to live and work within the Metro urban growth boundary (UGB).

Figure 1: Growth Management and Population and Employment Coordination Process

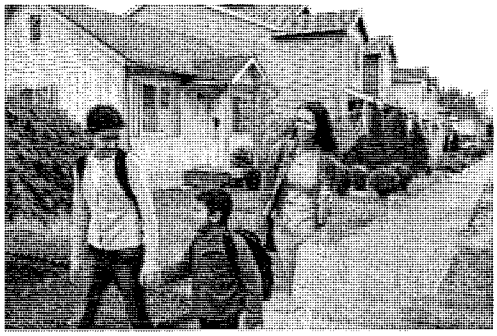


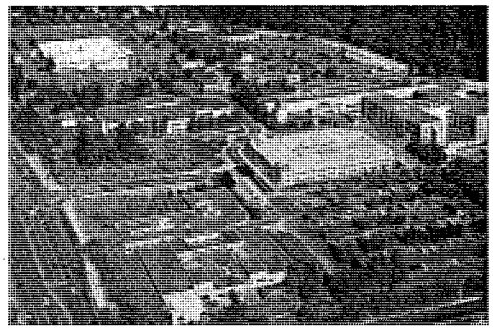
In 2010, the Metro Council adopted the capacity analysis which accounted for Regional Transportation Plan (RTP) investments and other actions that are likely to shape development patterns, and determined that some UGB expansion would likely be necessary. In 2011, the Metro Council made the urban growth boundary (UGB) decision based on investment policies and a point on the forecast range it picked.

The next step after the UGB decision, required by law, is the distribution of the forecast at smaller geographies to guide local and regional planning efforts as explained in this report. Oregon law (ORS 195.025; 195.036) requires Metro to coordinate a population forecast with local governments for planning purposes inside the UGB. Local governments that are scheduled to review and update their land use plans are expected by the Oregon Department of Land Conservation and Development to rely on the population and employment distribution information for their analysis. In addition to the state law, the Federal Clean Air Act requires Metro to use its forecast distributed at smaller geographies called traffic analysis zones (TAZ)[1] as the basis for its federally-required air quality conformity determination. This federal law requires Metro to show that the region will continue to meet the federal and state air quality regulations if the projects included in the RTP are built.

Metro has collaborated with local governments in the past to distribute the region's population and employment forecasts at the TAZ level. The last distribution, coordinated with local governments, was completed in 2006. The TAZ and city and county level distributions reflect adopted policies.

Metro Council adopted the household and employment forecast distributions by jurisdiction in November 2012 (Ordinance No. 12-1292) after the distributions were reviewed by Metro advisory committees – Metro Policy Advisory Committee, Joint Policy Advisory Committee on Transportation, Metro Technical Advisory Committee, Transportation Policy Alternatives Committee.





[1] The TAZ is the standard unit containing data representing the building blocks of Metro's key forecasting tools

How growth distribution information is used

Local governments and Metro rely on the population and employment forecast distribution to help build the future they want in the region and ensure that as jobs and population grow, they will be able to make wise investments that support economic development, safe neighborhoods and strong and vibrant communities, and minimize the burdens of growth.

The growth distribution information is useful for various entities:
Cities and Counties rely on the information to support their:

- Comprehensive plan update processes and address requirements for their periodic review of their land use plans
- Coordination of planning in areas outside Metro's jurisdictional boundary but within county boundaries.
- Planning of where to extend and upgrade pipes, roads and other essential public structures
- Identify needs necessary to update Transportation System Plan for consistency with the Regional Transportation Functional Plan and State Transportation Rule.

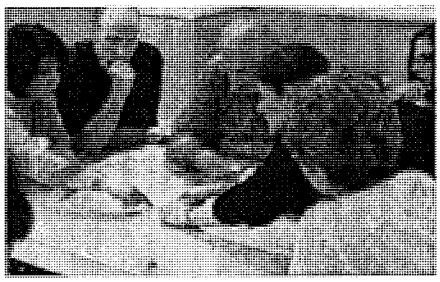
Schools and Special Districts can use the population and employment distribution for:

- Facility and financial planning
- Financial planning for facilities
- Parks planning
- Water and sewer system planning
- Sewer system planning
- Public school enrollment forecasting

Metro relies on the information to support:

- Updates to the Regional Transportation Plan
- Analysis of planning scenarios for the Climate Smart Communities Scenarios Project
- Transportation investments through the analysis of potential benefits of proposed projects within a half-mile radius of those projects

- Corridor planning such as the East Metro Connections Plan (EMCP) and Southwest Corridor Plan.



How Metro and local governments coordinated on growth distribution

There are two key steps in the actual forecast distribution coordinated by Metro and local governments:

- Estimating regional land supply -- existing housing and employment capacity, including undeveloped land that is available for development, based on existing zoning)
- Distributing the regional household and employment growth forecast to the available land supply

Land supply: Current approach of calculating residential land supply across the region is the buildable land inventory (BLI). The calculation method varies from one local government to another. Metro and local planners coordinated to refine the regional BLI method. The BLI method relies on local zoning to estimate the capacity of residential and employment land (how many residential units and acres of employment land can be accommodated in any area). However, not all zoned capacity will get used everywhere. The capacity estimation takes into account environmental constraints, rights of way, and future UGB expansion into urban reserves.

Additional capacity is realized from the decisions and policies made by some cities to encourage redevelopment in certain areas through incentive programs, such as urban renewal, tax abatement, streetscape and infrastructure improvements, and other policies. The additional capacity is added on top of the capacity that is based on residential and employment land zoning.

Distribution of the forecast: At this step in the process, the goal is to match the demand (forecast population and employment) with the supply (capacity of residential and employment land). The demand of forecast population was based on household size, income brackets, and age of households. Factors used to match the demand with the supply include built space by zone, location of household and employment, tenure choice (own or rent), type of building, estimate of development density, prices and cost of land, travel activity levels by mode and road segment, travel times between TAZs by time of day, and cost perceived by travelers in getting from any TAZ t another.

Summary of results

[Following is a Place Holder]

Figure 2 show the growth in households, displayed in housing units, captured inside the Metro UGB and the number of housing units captured by communities outside the Metro UGB. The forecast distribution indicates 4% decrease in the total number of single-family units captured by local governments inside the UGB (from 68% in 2010 to 64% in 2035), and slight (1%) increase in the number of multi-family units captured by local governments inside the UGB (from 83% in 2010 to 84% in 2035).

The analysis of the forecast distribution data also depicts changes in the mix of single family and multi-family units in the jurisdiction inside the UGB. For example, the City of Portland the current mix of more single-family (58%) than multi-family (48%) in 2010 will change to more multi-family (55%) than single-family (45%) in 2035. The data show similar reversal of mix in the Cities of Beaverton and Hillsboro. In the City of Gresham, the mix of more single-family (52%) and multi-family (48%) in 2010 will be even in 2035 (50% single-family and 50% multi-family). The current (2010) mix of more multi-family than single-family units in the Cities of Fairview, Wilsonville and Wood Village will not change in 2035. The current (2010) mix of more single-family than multi-family units in the remaining cities and unincorporated areas will not change in 2035.

Figure 2: Housing Units (for Household) Forecast

Area	2010		2035		2010-2035 change	
	Single-Family	Multi-Family	Single-Family	Multi-Family	Single-Family	Multi-Family
Inside Metro UGB	357,090 (68%)	236,346 (83%)	452,823 (64%)	384,225 (84%)	95,733 (53%)	147,879 (84%)
Outside Metro UGB	170,422 (32%)	47,872 (17%)	256,610 (36%)	75,309 (16%)	86,188 (47%)	27,437 (16%)
Seven county PMSA	527,512 (100%)	284,218 (100%)	709,433 (100%)	459,534 (100%)	181,921 (100%)	175,316 (100%)

Figure 3 show the growth in jobs captured inside the Metro UGB and the number captured by communities outside the Metro UGB. The forecast distribution indicates a decrease in the total number of jobs units captured by local governments inside the UGB (from 82% in 2010 to 79% in 2035).

Figure 3: Employment Forecast

Area	2010	2035	2010-2035 change
Inside Metro UGB	753,032 (82%)	1,118,440 (79%)	365,408 (74%)
Outside Metro UGB	163,364 (18%)	294,167 (21%)	130,803 (26%)
Seven county PMSA	916,396 (100%)	1,412,607 (100%)	496,211 (100%)

Further analysis if the forecast distribution data reveal success in the 2040 Growth Concept objectives. For example, 37% growth in centers, 17% growth in corridors, strong redevelopment, and rise in residential density to 12.3 unit/acre. There are drawbacks depicted by the forecast distribution. For example, lower income households get squeezed on affordability, and steep rise in single family residential prices beyond 2035.

Future improvement of land supply estimation approach

Comments from local governments during the estimation of regional land supply acknowledged improvements in the residential capacity methodology so as to match households and land supply correctly in the long-term. The comments emphasized areas where the methodology could be further improved, such as residential location choice, including quality-of-life factors that influences a person's preference for single- or multi-family housing, and generational shift. The comments also emphasized the need to consider the difference between housing preference and living preference. In response, Metro has identified future research on:

- Residential choice study enhanced with market segmentation
- Redevelopment supply assumption refinement

It is anticipated that the research would further refine the residential capacity assumptions and methodology, provide valuable insight into how people weigh transportation and housing costs when deciding where to live, and illustrate differentiation of the full range of housing needs in the region. Implementation of the research is dependent on funding availability.

Sharing the information

[TO BE ADDED: FTP and Web addresses where interested persons can find the growth distribution information]

Final version will be available by second read scheduled for November 29th

DRAFT

Attachment 5 (Staff Report to Ordinance no. 12-1292)

Technical Documentation

Regional Growth Distribution

Population and Employment

2010-40 TAZ Growth Distribution "gamma scenario"

Metro

Research Center and Planning and Development Department

October 2012

Final version will be available by
second read scheduled for November 29th

Attachment 6 (Staff Report to Ordinance No 12-1292)

Regional Forecast Distribution

2025 MID-TERM AND 2035 LONG-TERM DISTRIBUTIONS Local Governments' Comments and Metro Response

Comments and responses – Feb. 9 to May 14, 2012
Comments and responses – August 1 to August 31, 2012

Source: Metro Council Ordinance No. 12-1292A, November 29, 2012

YEAR 2035 HOUSING	SINGLE FAMILY UNITS	MULTIFAMILY UNITS	TOTAL
Portland Allocation	21,829	99,153	120,982

YEAR 2035 EMPLOYMENT	RETAIL	SERVICE	OTHER	TOTAL
Portland Allocation	10,984	79,031	44,123	134,140

Draft allocation was 132,000 housing and 147,000 jobs.

PORTLAND BROWNFIELD ASSESSMENT
FINAL REPORT

December 18, 2012
Prepared for:
City of Portland
Bureau of Planning and Sustainability

E.D. Hovee
& Company, LLC
Economic and Development Services

ECONorthwest
ECONOMICS • FINANCE • PLANNING

REDEVELOPMENT
ECONOMICS

MAUL FOSTER ALONGI

PORTLAND BROWNFIELD ASSESSMENT

FINAL REPORT

Prepared for

CITY OF PORTLAND BUREAU OF PLANNING AND SUSTAINABILITY

December 18, 2012
Project No. 0559.02.01

Prepared by
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The findings and recommendations in this report do not necessarily reflect the views or policies of Metro.

CONTENTS

ACKNOWLEDGMENTS III

1 INTRODUCTION 1
1.1 KEY FINDINGS 3

2 APPROACH 5
2.1 BROWNFIELD INVENTORY AND TYPOLOGIES 5
2.2 FINANCIAL FEASIBILITY ANALYSIS 6
2.3 PUBLIC BENEFIT 7
2.4 POLICY OPTIONS 7

3 BROWNFIELD TYPOLOGIES 10
3.1 TYPOLOGIES 10
3.2 INVENTORY OF POTENTIAL BROWNFIELDS 14

4 ECONOMIC ANALYSIS 15
4.1 ECONOMIC TRENDS AND FORECAST 15
4.2 FINANCIAL FEASIBILITY ANALYSIS 17
4.3 CLOSING THE FINANCIAL GAPS IN ACHIEVING REDEVELOPMENT GOALS 19
4.4 BARRIERS TO REDEVELOPMENT 19

5 PUBLIC BENEFITS ANALYSIS 20
5.1 EMPLOYMENT 20
5.2 TAX REVENUE POTENTIAL 21
5.3 ENVIRONMENTAL AND SMART GROWTH BENEFITS 23

6 POLICY TOOLS 24
6.1 STATEWIDE TAX INCENTIVES 25
6.2 CITYWIDE INSTITUTIONS 26
6.3 SUPERFUND POLICIES 29
6.4 CUMULATIVE BENEFIT OF POLICY TOOLS 30
6.5 RETURN ON INVESTMENT 31
6.6 POLICY IMPLICATIONS 33

7 IMPLEMENTATION 35
7.1 INDUSTRIAL FOCUS 35
7.2 SYNERGIES 35

ACRONYMS AND ABBREVIATIONS 39

APPENDIX A
INVENTORY AND EXISTING CONDITIONS ANALYSIS REPORT

APPENDIX B
FINANCIAL ANALYSIS REPORT

APPENDIX C
PUBLIC BENEFIT REPORT

1 INTRODUCTION

The cleanup and redevelopment of brownfield properties is a key strategy for meeting economic, environmental, and social goals for the City of Portland (Portland). Continued economic development within the Urban Growth Boundary requires adaptive reuse of and infill redevelopment for urban properties. Portland's Economic Opportunity Analysis (EOA) projects a shortfall of industrial land supply within the Urban Growth Boundary in the next 20 years and estimates that brownfield properties account for about one-third of the growth capacity in Portland's industrial, commercial, and other employment areas. However, brownfields face significant, but not insurmountable, challenges in the marketplace. Recent trends indicate that most of Portland's brownfield land will continue to sit idle despite increasing economic growth and demand for new real estate development.

Brownfields Defined

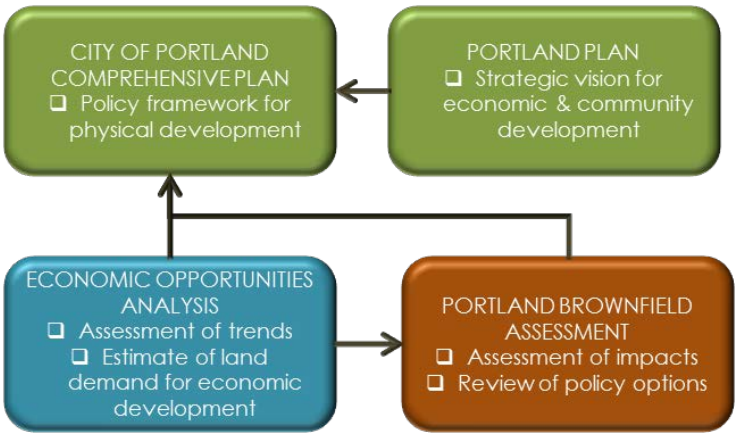
The term "brownfield" refers to real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of hazardous substances.

The Portland plan and comprehensive plan update provide opportunities to shape how Portland will develop over the next 25 years. In order to provide adequate land supply to capture economic development opportunities, effective public policy to encourage redevelopment of brownfield properties will be needed. To support those policy decisions, Portland has undertaken this Portland Brownfield Assessment to examine the financial and economic development characteristics of brownfield redevelopment, with a particular focus on industrial lands. Brownfield sites are traditionally characterized by real or potential environmental contamination concerns, but the driver for redevelopment of brownfields is their potential value when redeveloped. With the guidance of an advisory panel of public- and private-sector experts, the Portland Brownfield Assessment report has:

- Evaluated the scale and financial challenge of brownfields in Portland
- Forecasted the public benefits of redevelopment of these properties
- Reviewed a suite of policy tools and reforms that can enhance the redevelopment of brownfields

The results of the Portland Brownfield Assessment summarized in this report are intended to inform policymakers and stakeholders; form the basis for sound economic policies; and provide a framework for future urban infill and economic development in Portland.

Figure 1-1. Interconnection of Planning Efforts



Public Role in Promoting Brownfield Redevelopment

The federal Superfund Law and the Oregon Cleanup Law provide the regulatory framework for cleanup of contaminated sites, based on the principle that responsible parties must pay for remediation. This enforcement-based approach has been effective in addressing many of the most highly contaminated sites, but has its drawbacks. In many cases, the fear of liability for cleanup has had a chilling effect on new investment in properties that have experienced historical uses typically associated with contamination. Many potentially contaminated properties are owned by small businesses that do not have the financial resources to conduct expensive cleanups or that may have ceased operations years ago. These two factors have led to increasing numbers of vacant properties that contribute to blighted conditions.

Many brownfield properties are remediated with support from new investors: innocent parties that seek to redevelop the property. National and local experience with brownfields in the last 30 years has shown that these properties are more likely to be remediated within a shorter time frame and to meet or even exceed cleanup standards when they are part of a redevelopment effort. Incentives, combined with a predictable and efficient regulatory framework, have led to more cleanups than enforcement alone. This proactive approach can increase the rate of brownfield redevelopment to achieve policy goals and can play an integral role in meeting Portland's land demand needs over the 25-year planning horizon.

City of Portland and Metro Brownfield Studies

Portland and Metro have undertaken concurrent studies of brownfield property economic impacts and policy solutions. Both of these studies incorporate financial feasibility analysis of brownfield projects and review of potential policy tools and reforms to promote cleanup and redevelopment of these brownfield properties. While the two studies complement one another through a robust inventory effort and an in-depth review by stakeholders, industry practitioners, and policymakers, there are still important distinctions between the studies, including:

Geographic Scale: The Portland study focuses on issues related to the city, in particular employment lands, while the Metro study incorporates the three-county area in a broader context, including property types.

Focus of Economic Analysis: The more focused scale of the Portland study requires a narrower categorization of market areas and conditions.

Policy Objectives: The Portland study is more focused on economic development and employment-related objectives, while the Metro study places a greater emphasis on land use and community development goals.

1.1 Key Findings

Scale of the Brownfield Problem

- There are approximately **910 acres of potential brownfield properties** in Portland. This includes approximately 558 industrially zoned acres, which could offset the projected 720-acre shortfall of industrial land forecasted for the next 20 years.
- It is estimated that the **total cleanup costs** of all potential brownfield properties in Portland is approximately **$240 million**. The burden of these costs places nearly all analyzed development prototypes (in all market areas) underwater financially.
- With potential federal Superfund liability costs added, the total cost of remediating affected properties within the Portland Harbor Waterfront is estimated to increase to as much as $24 per square foot of site area—more than three times the market value of unconstrained industrial land.

Potential Economic & Community Benefits of Brownfield Redevelopment

- **Redevelopment** of all potential brownfields identified in Portland could potentially result in **31,000 new jobs** and over **$40 million** in additional annual Portland tax revenues.
- The potential for added industrial land availability, assuming 100 percent brownfield redevelopment, would be about **335 acres of extra land capacity**, reducing the industrial lands shortfall by 45 percent, from a 740-acre to a 405-acre deficit.

  - High-density development in downtown accounts for nearly 50 percent of both potential employment and Portland tax revenue, but represents only 6 percent of total brownfield acres.
  - Redevelopment of brownfields in industrial areas accounts for approximately 30 percent of future potential jobs.

- It is estimated that full build-out of the inventory of potential infill brownfields would represent a reduction of 39,000 metric tons of CO^2 annually, relative to expanded suburban greenfield development through reduced employee commuting— the equivalent of taking 9,200 cars off the road every year.
- Infill development on brownfields has the potential to avoid $115 million to $180 million in public infrastructure investment that would be necessary if new greenfield sites were developed.

Innovative Policy Solutions

- Existing financial incentives are not sufficient to overcome the financial feasibility gap of a large number of brownfields.
- Potential new incentives such as Remediation Tax Credits, Job Creation Tax Credits, Property Tax Abatement, Brownfield Land Bank, and Pooled Environmental Insurance have great potential, with each potentially facilitating redevelopment of about 150 acres.
- Public investment in new brownfield incentives is estimated to have a positive return on investment (ROI), as high as $10 returned in state and local tax revenue for every $1 invested.
- Incentives for redevelopment in industrial areas have the potential to revitalize a large amount of land area, but with relatively low increase in Portland tax revenues. The tax revenues generated to Multnomah County and the State of Oregon for industrial redevelopment are significant and support a rationale for shared investment in this area as a regional economic asset.

2 APPROACH

The Portland Brownfield Assessment included four main tasks:

1. Estimate the number of potential brownfield properties in Portland and categorize them by land use and market typologies.
2. Assess market conditions and barriers to brownfield redevelopment.
3. Estimate the public benefits of brownfield redevelopment.
4. Identify a public policy toolkit to promote brownfield redevelopment.

The methods used to conduct these interrelated tasks are summarized in the following section. More detailed descriptions of methods and results are provided in the appendices to this report.

2.1 Brownfield Inventory and Typologies

To understand the brownfields challenge for Portland, it is important to quantify the scale of the issue. It is inherently difficult to precisely count the number of brownfields in a community. While properties that are vacant or underutilized can be seen, it is often not apparent if there are concerns related to contamination in soil or groundwater. Landowners are often very reluctant to notify public agencies about potential contamination because of anxiety over legal liability, cleanup costs, and stigma that may impact property value. Given these challenges, an extensive effort was made to develop an inventory of potential brownfield sites to provide a foundation of information on which to conduct economic analysis and develop policy, while at the same time not creating negative perceptions at the parcel level.

The inventory was developed through the following steps:

1. Identify Vacant and Underutilized Lands—The Buildable Lands Inventory was used to identify properties with development capacity, based on comparison of existing to maximum allowed floor area ratio. Note that the inventory focused on commercial and industrial lands and did not include residential properties.
2. Cross Reference with Reported Contaminated Sites—The Oregon Department of Environmental Quality (DEQ) maintains databases of known contaminated sites and properties with reported leaking underground storage tanks. Parcels with development capacity that were also on the state databases were identified as potential brownfields.

3. Historical Records Research—Research was conducted in historical business directories to explore whether underdeveloped parcels were formerly used for industrial or commercial activities commonly associated with hazardous materials, such as gas stations, dry cleaners, and chemical plants. Properties that were both currently underutilized and associated with historical uses that may have left contamination were identified as potential brownfields.

The inventory was used to define typologies in order to organize and assess common market and environmental characteristics of brownfields in Portland. The traditional approach for categorizing brownfield properties has been to focus on the contamination issues. However, experience with revitalization of these properties demonstrates that it is market forces that typically drive cleanup and redevelopment of brownfield properties. Therefore, an integrated approach that considers both market potential and contamination provides a more accurate and meaningful categorization.

R2V

The R2V is positive for properties that have a high enough potential value to offset the costs of remediation (common in the Pearl District), and it is negative for properties with low market value and high cleanup liability (common in industrial areas).

The fundamental guiding principle underlying the brownfield typologies is that the potential for redevelopment of a property is driven primarily by market factors and that the type and level of contamination must be considered in the context of property value. The relationship between redevelopment potential and cost to remediate is the "remediation to redevelopment value" (R2V). This relationship is the basis for financial feasibility analysis conducted in subsequent tasks of the Portland Brownfield Assessment.

The categorization of the brownfield typologies took into account a number of characteristics, including market location, zoning, future use potential, historical use, and contamination issues.

2.2 Financial Feasibility Analysis

To assess the market potential for redevelopment of brownfields in Portland, a range of prototypical development scenarios were modeled for properties in the different typologies. Pro forma estimates of development costs, likely rents, and property values were created for each of the prototypes.

The critical test of financial feasibility for the prototypical redevelopment scenarios lies in the relationship of project *cost to valuation*. This is different from R2V, as defined above, because remediation costs are not included and therefore are not a factor. If the valuation upon completion and resulting occupancy exceeds the cost of development, the project is viewed as feasible. In situations where valuation is less than cost, the project is viewed as having a "financial feasibility gap."

Financial pro forma spreadsheets were developed to compare the cost of developing a property (including land acquisition, hard and soft development costs, and site remediation) to the market value of the completed building as an indicator of feasibility. It evaluated a mix of building types as appropriate for zoning and employment geography. The pro forma analysis also incorporated a range of typical cleanup costs based on local and national data sources.

2.3 Public Benefit

Based on the results of the pro forma analysis, the potential public benefits of redevelopment of the entire inventory of brownfield properties were forecasted. The public benefit analysis included the following key elements:

Employment—Jobs associated with different uses and density of potential projects were calculated based on Portland metropolitan research and standard economic models.

Tax Revenue—Estimates of employment capacity and of tax revenue generation from the development scenarios were based on current rates for Portland, Multnomah County, and the State of Oregon for property taxes, corporate taxes, and personal income taxes.

Environmental and Growth Management—Using estimates from published local and regional studies, forecasts were made of implications of brownfield redevelopment for greenhouse gas emissions, land consumption, and infrastructure costs.

2.4 Policy Options

A review of national best practices for promoting brownfield redevelopment was conducted. These policy tools were tailored to Portland and combined with other locally originated concepts to create a suite of options for consideration. The policy tools were reviewed and prioritized by the advisory panel. An ROI analysis was conducted on the priority tools to compare their potential impacts.

Figure 2-1. Brownfield Inventory Map

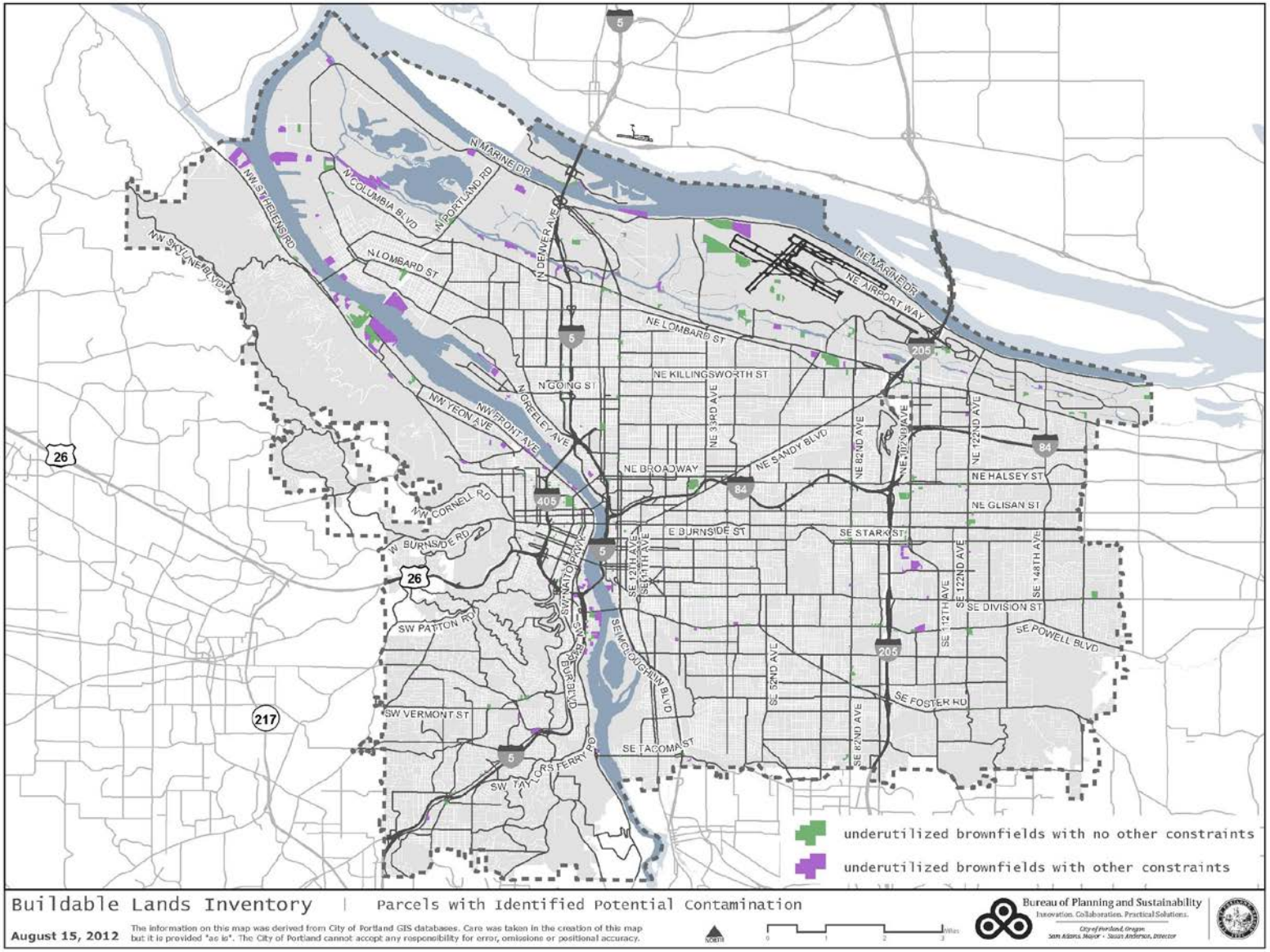
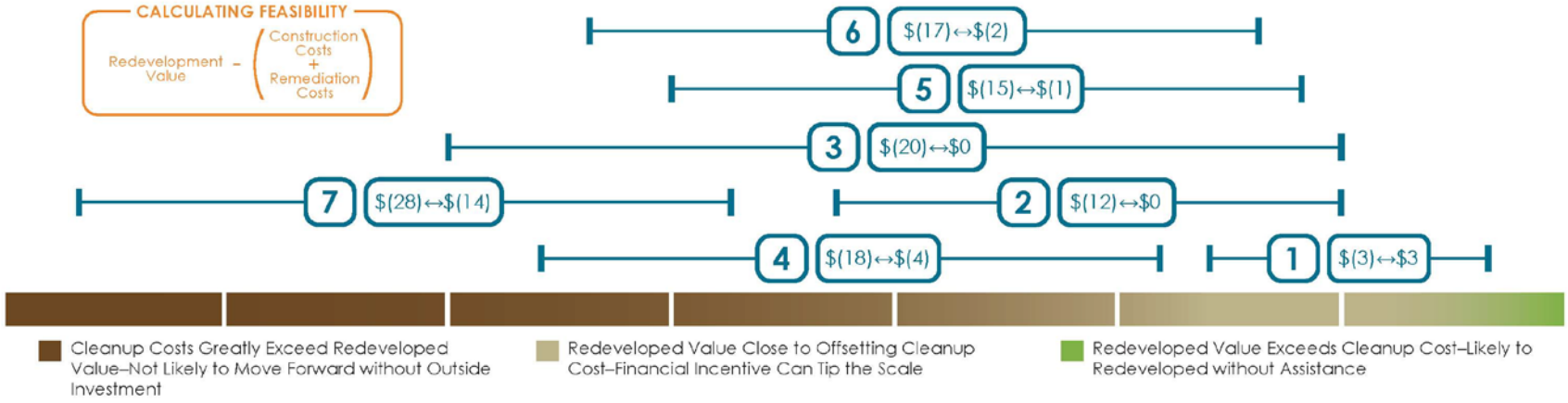


Figure 2-2

PORTLAND BROWNFIELD ASSESSMENT
FINANCIAL IMPACT SUMMARY

BROWNFIELD TYPOLOGY FINANCIAL FEASIBILITY GAP
($ PER SQUARE FOOT)



TOTAL GAP AND BENEFITS FOR ALL BROWNFIELDS IN PORTLAND

BROWNFIELD TYPE	ACRES	TOTAL FINANCIAL GAP	JOB POTENTIAL	TAX REVENUE POTENTIAL CITY OF PORTLAND	TAX REVENUE COMBINED
1 Downtown High Density	94	$ (4)MM	14,000	$ 21 MM	$ 104 MM
2 Mixed Use Hubs	58	$ (10) MM	2,600	$ 3 MM	$ 16 MM
3 Main Street	194	$ (34) MM	5,300	$ 5.9 MM	$ 32 MM
4 Central City Industry	4	$ (1) MM	280	$ 400 K	$ 2 MM
5 Standard Industry	326	$ (79) MM	5,700	$ 7.4 MM	$ 52 MM
6 Superfund Shadow	79	$ (24) MM	1,400	$ 1.8 MM	$ 12.5 MM
7 Harbor Waterfront	154	$ (154) MM	1,900	$ 2.7 MM	$ 19 MM
TOTAL	**910**	**$ (307) MM**	**31,000**	**$ 42.5 MM**	**$ 238.5 MM**

3 BROWNFIELD TYPOLOGIES

3.1 Typologies

While all brownfield sites share the common characteristics of either real or perceived environmental contamination as well as underutilization, not all sites are the same. Understanding the different types of brownfields will allow policymakers to refine and target tools to support successful revitalization of these properties. Brownfield typologies also serve as an analytical tool for evaluating the range of impacts that different categories of sites have on the region. Grouping brownfields by certain key criteria facilitates the evaluation of challenges faced by these impacted sites and helps prioritize potential solutions to address the unique issues faced by discrete groups of properties.

Based on analysis of land use and environmental factors, the following types of brownfields have been categorized for Portland (see Figures 3-1 and 3-2).

1. **Downtown High Density**—Characterized as former industrial and commercial operations in an area of increasing high-density development. High property values drive redevelopment and often result in conversion to commercial and residential mixed-use properties. Examples: Pearl District, South Waterfront, Downtown.
2. **Mixed-Use Hub**—Significant neighborhood centers that contain a mix of uses and represent historic and planned town centers. Redevelopment typically results in commercial and mixed-use projects with more density. Examples: St. Johns, Gateway.
3. **Main Street Commercial**—Commercial corridors characterized by mixed uses and smaller-scale commercial activity. Redevelopment of this type of brownfield typically results in conversion to commercial and mixed-use projects with more density. For purposes of financial analysis, this typology has been subdivided into Main Street East and Main Street West, with 82nd Avenue serving as the boundary. This subdivision was made in order to reflect the substantially different market conditions in East Portland. Examples: SE Hawthorne, NW 23rd, NE Alberta, sections of SE 82nd, SE 122nd.
4. **Central City Industrial**—Large-scale industrial operations typically including historical and current manufacturing activities. Redevelopment is driven by changing land use patterns and increased land values through zoning. Redevelopment of this brownfield type generally results in industrial and flex space. Examples: Central Eastside Industrial, Albina.

5. **Standard Industrial**—Variety of industrial uses, ranging in size and intensity and located in multiple areas in Portland. Redevelopment typically is constrained by location, land value, and regulatory requirements such as environmental overlays and industrial sanctuary. Examples: Johnson Boulevard, Brooklyn/Milwaukie Rail Yard.

Portland Harbor Superfund

In 2000, the U.S. Environmental Protection Agency (USEPA) designated the Portland Harbor a Superfund site. The Superfund site is defined by contamination in sediments on the bottom of the Willamette River and extends approximately from the Steel Bridge at River Mile 12 to Evraz Oregon Steel Mills at River Mile 2. While the Superfund designation is focused on sediments, it creates potential for federal environmental liability for adjacent properties and inland properties with stormwater discharges to the harbor as potential sources of contamination.

The Superfund designation creates a special case for brownfields because of the uncertainty regarding costs, regulatory closure, and the involvement of the USEPA. In recognition of this special case, two brownfield typologies related to the Superfund have been defined for properties immediately adjacent to sediment contamination areas and for properties that contribute stormwater runoff to the harbor.

6. **Superfund Shadow**—Properties located upland from the Portland Harbor Superfund area. These sites may be impacted by the Superfund designation and therefore are limited in their redevelopment potential. Redevelopment would result in industrial and flex space uses, but is hindered by regulatory uncertainty. Examples: Areas within NW Industrial and the Portland Harbor.
7. **Portland Harbor Waterfront**—Sites located on the Portland Harbor with direct connection to the areas identified as having sediment contamination. Sites in this type are typically large-scale and current or former heavy industry operations. Examples: Portland Harbor sites from Columbia River South to the Fremont Bridge (approximately).

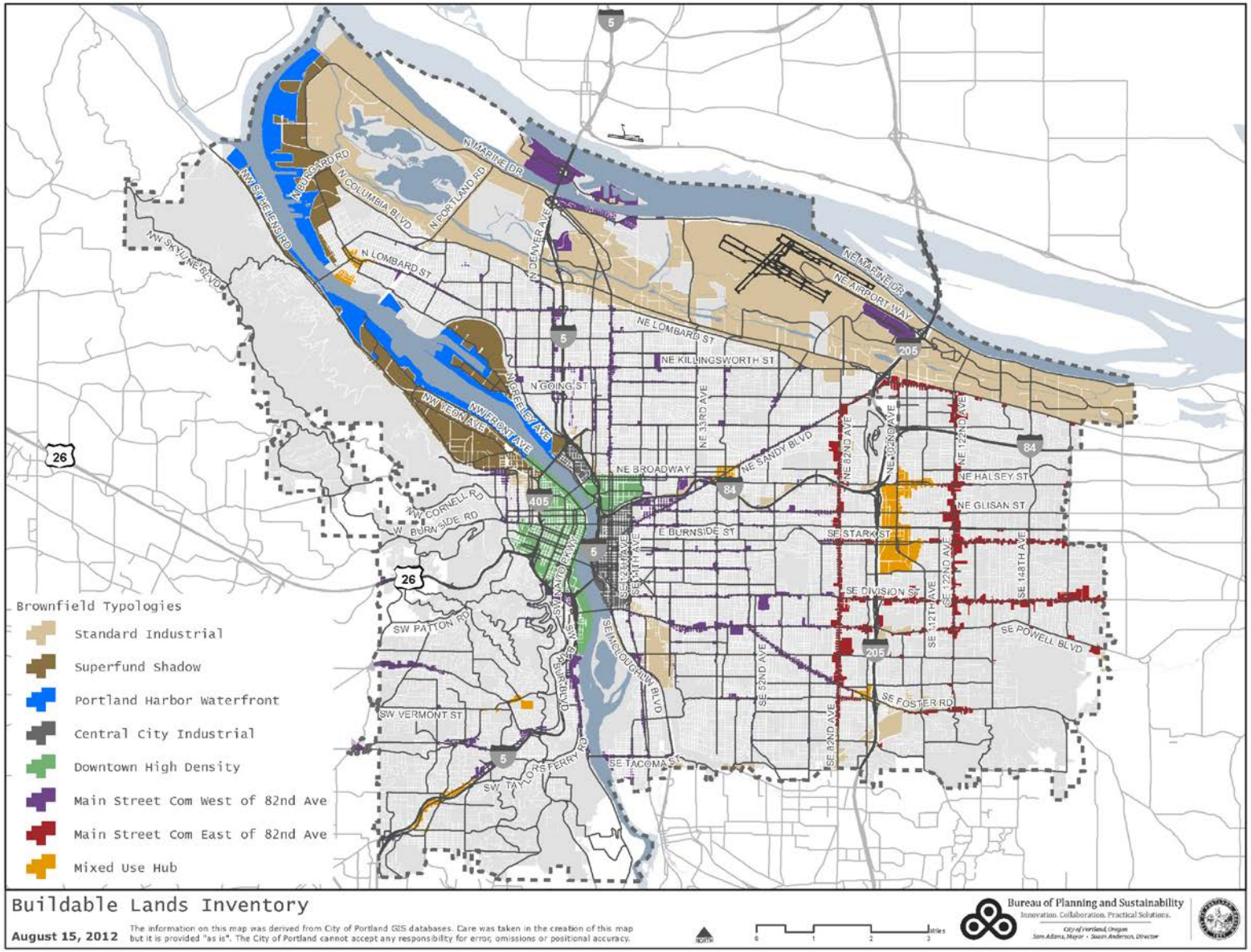
Metro Brownfield Study Typologies

A concurrent study of brownfields led by the Metro regional government has developed typologies for the same purpose: understanding the issues of brownfields on a regional scale. The Metro typologies were considered in this Portland Brownfields Assessment, and the summary figure below indicates how they relate to Portland typologies. In general, the smaller geographic extent of Portland lends itself to a more detailed understanding of typologies than areas addressed by the Metro study.

Figure 3.1 Portland Brownfield Typologies

	Portland Typology	Metro Typology	Historical Use	Employment Geography	Potential Future Uses
COMMERCIAL	1. Downtown High Density	Types 1 and 2	Automotive, Dry Cleaner, Manufacturing, and Chemical	Central City	Commercial, Mixed Use, Multifamily
	2. Mixed Use Hub	Types 1 and 2	Automotive and Dry Cleaner	Town Center, Gateway Regional Center	Commercial, Mixed Use, Multifamily
	3. Main Street Commercial	Types 1 and 2	Automotive, Dry Cleaner, Manufacturing, and Chemical	Neighborhood Commercial	Commercial, Mixed Use, Multifamily
INDUSTRIAL	4. Central City Industrial	Type 3	Automotive, Manufacturing, and Chemical	Central City	Industrial, Flex Space
	5. Standard Industrial	Type 3	Automotive, Manufacturing, and Chemical	Columbia Harbor and Dispersed Industrial	Industrial
	6. Superfund Shadow	Type 3	Automotive, Manufacturing, and Chemical	Columbia Harbor	Industrial
	7. Portland Harbor Waterfront	Type 3	Automotive, Manufacturing, and Chemical	Columbia Harbor	Industrial

Figure 3-2. Brownfield Typologies Map



3.2 Inventory of Potential Brownfields

It is estimated that there are approximately 910 acres of potential brownfield properties in commercial and industrial areas of Portland (see Figure 3-3). While most of these sites are concentrated in current and/or historically industrial areas, brownfields are found in nearly every neighborhood in Portland. The brownfield inventory identified properties constrained not only by contamination, but also by other factors such as infrastructure, access, or environmentally sensitive areas.

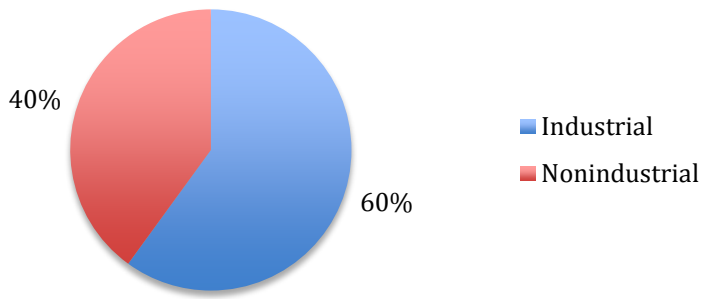
Figure 3-3. Number of Brownfields in Each Typology

Typology/Zone/Site Type	Contamination Only	Multiple Constraints	Total
Downtown High Density	42.9	51.5	94.4
Mixed Use Hub	31.8	26.2	58
Main Street Com E of 82nd	48	9.6	57.6
Main Street Com W of 82nd	87.6	49.5	137
Central City Industrial	3	1.1	4.2
Standard Industrial	249.2	76.7	325.9
Superfund Shadow	53.7	25.1	78.8
Portland Harbor Waterfront	37.5	116.4	153.9
Total Acres	**553.7**	**356**	**909.7**

Source: Portland Bureau of Planning and Sustainability; August 8, 2012.

Approximately 356 acres (39 percent) of the properties are impacted not only by contamination, but by other site constraints as well, including inadequate infrastructure or other physical site characteristics. Portland's industrial areas (including the Standard Industrial, Superfund Shadow, and Portland Harbor Waterfront typologies) comprise nearly 559 acres, or more than 60 percent, of the employment lands brownfield total.

Figure 3-4. Brownfield Acreage



4 ECONOMIC ANALYSIS

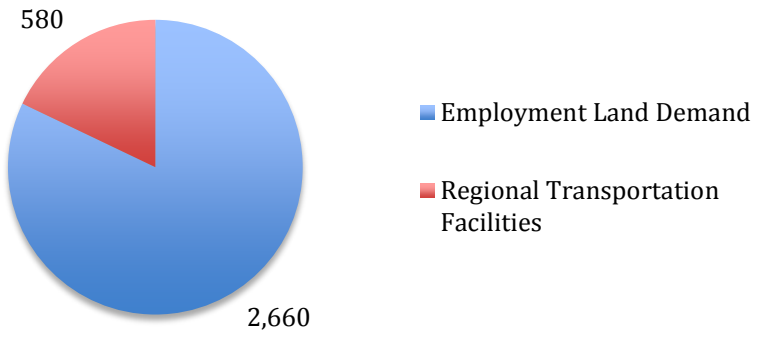
Brownfield projects are no different than any complex real estate development projects that can be subject to a wide range of entitlement issues and other constraints. Like all real estate projects, they are driven by market conditions and financial ROI. To provide context for the specific analysis of brownfields, a broad assessment of economic conditions and trends in Portland was conducted (Section 4.1). To provide a property-specific perspective, a financial feasibility assessment was conducted for prototypical development scenarios (Section 4.2).

4.1 Economic Trends and Forecast

As of 2010, Portland had an in-city employment base of 370,000 jobs. In-city employment is projected to experience a net increase of approximately 147,000 jobs over the 2010-35 period. The pace of job change represents an annual average growth rate of 1.3 percent, and Portland expects to capture 27 percent of the metropolitan region's employment growth.

The EOA translates this forecast employment growth into demand for additional employment-related development and land. After accounting for jobs that locate in residential areas (schools, home occupations, nonconforming uses), there is an estimated demand for 2,660 acres of employment land in Portland, with over half of it in industrial areas. An additional 580 acres of land for regional transportation throughput facilities is required—bringing the 25-year total industrial-commercial need to 3,240 acres.

Figure 4-1. Total Land Demand for Industrial, Commercial, and Transportation Uses (Acres)



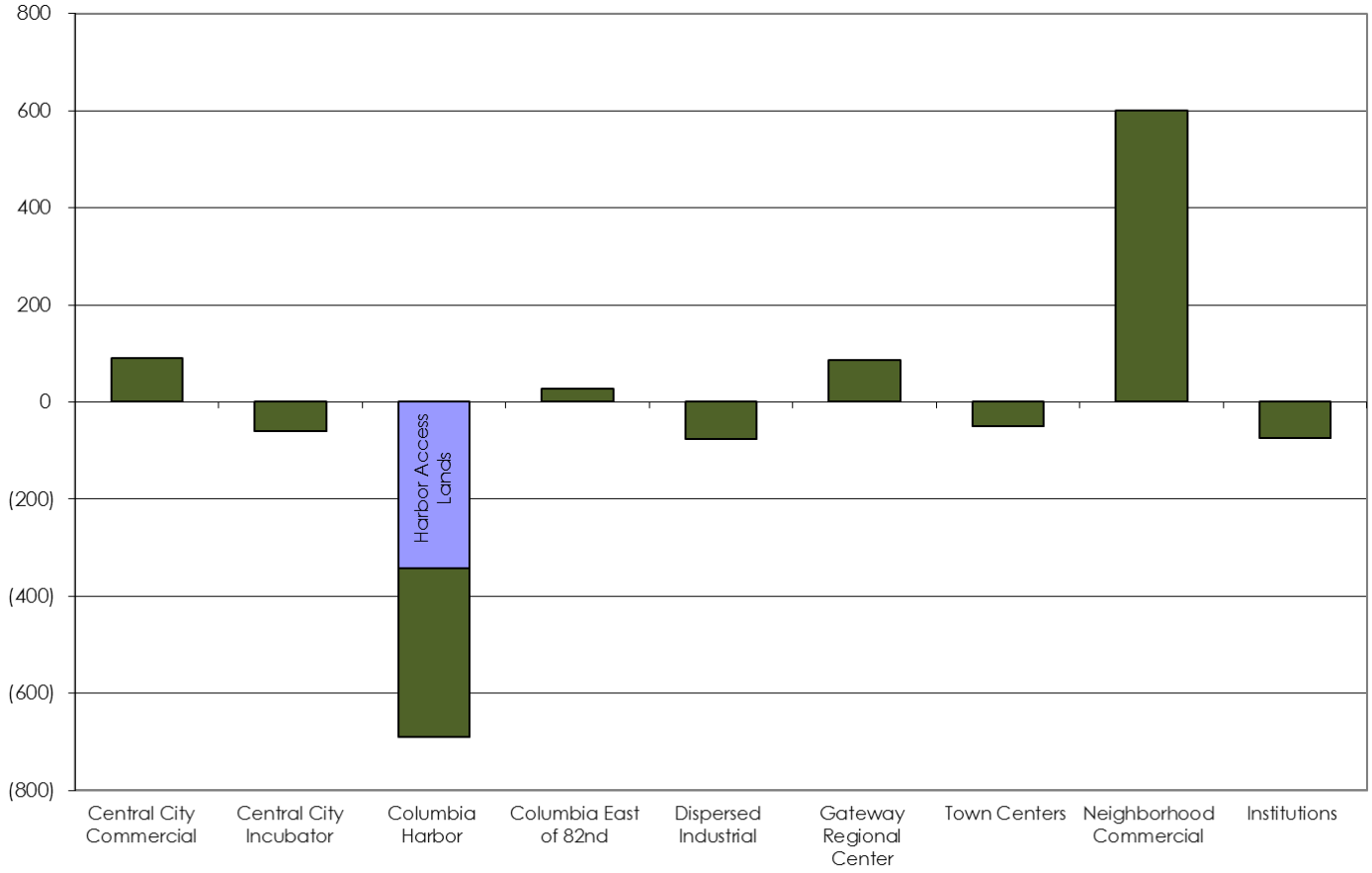
Industrial and Commercial Land Supply

Compared to forecast employment land demand of 3,240 acres, the EOA indicates the total estimated employment land supply to be 3,094 acres. This leaves a net deficit of as little as 146 acres, assuming that land is fully interchangeable between industrial and commercial uses. However, the extent of land shortage is potentially much greater, as land is not distributed on the basis of where the demand is greatest.

Projected demand for industrial land exceeds existing buildable land supply by 720 acres.

The shortage of land for Portland's industrial areas has been estimated at 720 acres. Taken as a combined group, Central City and other commercial areas appear to have a surplus of employment land through 2035.

Figure 4-2. 2035 Employment Acreage Surplus/(Deficit) by Geography



Source: E. D. Hovee & Company, LLC and Portland Bureau of Planning and Sustainability.

Potential Brownfield Contribution to Employment Land Supply

The draft EOA anticipates that an estimated 90 percent of Central City brownfield acreage may redevelop because of strong market support over a time horizon to 2035. Non-Central City commercial properties are expected to have redevelopment rates at 50 percent through 2035 and industrial properties redevelopment rates of 40 percent.

At these ratios, close to 440 acres of the citywide 910-acre brownfield inventory would be assumed to redevelop over the EOA time horizon, leaving more than 470 acres not redeveloped as late as 2035.

The added contribution that full (100 percent) redevelopment could offer is most significant for industrial properties. The potential for added industrial land supply, assuming 100 percent brownfield redevelopment, would be about 335 acres of extra land capacity, reducing the industrial lands shortfall by 45 percent, from a 720-acre to a 385-acre deficit.

4.2 Financial Feasibility Analysis

While the economic analysis demonstrates a long-range demand for commercial and industrial land, the potential for brownfield redevelopment to meet this demand is largely driven by the R2V of individual properties. Simply put, businesses and developers are not likely to invest in real estate projects that cost more than they are worth. To assess financial feasibility of brownfields across Portland, pro formas were prepared for a range of development alternatives—commercial office/retail, industrial business park/warehouse-distribution, and/or mixed use—as applicable to each of Portland's seven brownfield typologies. With each pro forma, it has been possible to quantify the extent to which remediation of brownfield sites on industrial and commercial property is financially feasible in the context of current market trends and ultimate site value. The analysis quantifies the potential feasibility gap associated with costs of brownfield remediation and then, for affected harbor area properties, the additional costs associated with Superfund Shadow or Portland Harbor Waterfront properties.

Results of specific development prototype feasibility testing are then aggregated to assess overall cost and feasibility implications across the full citywide employment-related brownfield inventory of 910 acres.

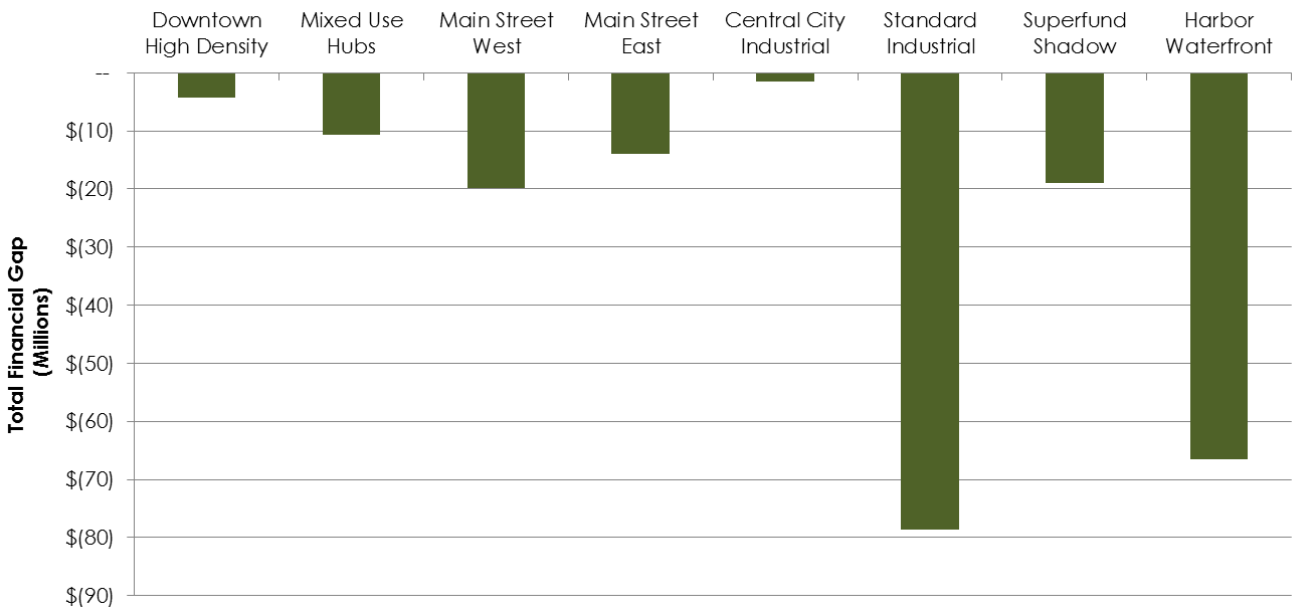
Financial Feasibility Gap Results by Typology

- Generally, environmental cleanup costs have a stronger overall influence on feasibility than the costs associated with market variables (i.e., rents, development costs, location).
- The total feasibility gap (or amount by which properties are financially underwater) is estimated at $214 million across all

employment brownfield typologies, or $307 million when Superfund costs are included for affected properties. These costs are about 9 to 12 percent less than total cleanup cost because some development types can absorb a portion of remediation cost without the need for financial incentives or offsets.

- High-value locations with high allowed density development are much more likely to be market feasible. For example, properties in downtown Portland can often absorb average remediation costs and their redevelopment can still be financially viable. The feasibility gap for downtown high-density typology is a total of $4 million spread over 94 acres of property (see Figure 4-3).

Figure 4-3. Estimate of Total Financial Feasibility Gap by Typology



Source: Portland Bureau of Planning and Sustainability, Maul Foster & Alongi, Inc., and E. D. Hovee & Company, LLC
Note: Financial gap does not include potential Superfund liability.

- Mixed-use developments in some typologies such as Main Street East are often financially infeasible because construction costs outweigh potential rents achievable with current market conditions. The addition of remediation costs only exacerbates those scenarios. However, these development types make up a small portion of total potential brownfields in Portland.
- Redevelopment of industrial brownfields is generally challenging because cleanup costs often exceed the redeveloped property value, which is limited by the lower density of development.
- The financial gap for the Portland Harbor Waterfront is nearly $67 million. Taken together, industrial properties (associated with typologies 4 through 7) account for a combined 77 percent of the

overall feasibility gap associated with on-site remediation. This increases to an estimated 84 percent of the gap affecting brownfield constrained properties, if potential Superfund-related liability is included.

4.3 Closing the Financial Gaps in Achieving Redevelopment Goals

Reaching complete build-out of the brownfield inventory is not a realistic goal, so interim targets of reaching redevelopment of 50 percent, 70 percent, and 90 percent of these properties were evaluated to establish a context for the level of public investment that may be needed to put these sites into productive use. These targets align with analysis conducted in the EOA to examine the potential for brownfields to meet the forecasted industrial land supply shortfall within the Urban Growth Boundary.

The analysis indicates that a large number of properties included in the brownfield inventory can be redeveloped with a relatively modest investment (Table 4-1). Achieving higher levels of redevelopment likely will result in a diminishing-returns scenario. Closing the estimated financial feasibility gap on 50 percent of the brownfield acreage requires approximately $36 million. That investment doubles to achieve an additional 20 percent of redevelopment, then doubles again to achieve 90 percent. The analysis indicates that there is a large amount of "low-hanging fruit" in projects that could become financially feasible with some level of public investment. The increasing costs to achieve higher levels of redevelopment are largely driven by the assumed high costs of cleanup associated with a relatively small number of individual properties.

Table 4-1. Financial Gap to Reach Target Levels of Redevelopment

% of Total Acres	Number of Acres	Total Financial Gap	% of Total Financial Gap	Jobs	Portland Tax Revenue (Annual)	Total State & Local Tax Revenue (Annual)
50%	408	$36,371,000	17%	23,000	$31,760,000	$170,385,000
70%	572	$74,860,000	35%	26,000	$35,103,000	$194,107,000
90%	735	$158,820,000	74%	30,000	$40,397,000	$224,235,000
100%	817	$214,296,000	100%	31,000	$42,511,000	$238,698,000

Note: The financial gap shown here excludes costs associated with Superfund sites.

4.4 Barriers to Redevelopment

While the financial feasibility gap is a fundamental barrier to redevelopment of brownfields, these properties face a number of other, interrelated challenges.

Financial—Financial feasibility is the controlling factor that determines project success or failure. The additional direct costs of remedial actions and

the indirect increased carrying costs associated with longer timelines make cleanup and redevelopment of many brownfield properties financially infeasible without some public intervention. Factors that enter into the calculation include: competition with greenfield sites, cost overruns, timing, limited public and private financial resources for conducting investigation and cleanup, and other non-brownfield constraints.

Uncertainty and Risk—Redevelopment of a contaminated property inherently involves uncertainty and risk related to potential extent of contamination, lack of predictability in regulatory decisions, and potential for federal liability. Uncertainty is a serious liability in the development context, because it has the potential to affect the development timeline, funding sources, and even site design and engineering costs. This uncertainty discourages development, sometimes more than the actual cost of cleanup. Issues that influence uncertainty in the Portland context include: fear of the regulatory environment, the Superfund overlay in the harbor, and the transaction costs of the regulatory process.

Regulatory Process—A few states have excellent reputations for making the brownfield regulatory process predictable and customer friendly. Some perceptions of the Oregon process include: overly constrained land use regulations, uncoordinated or even conflicting permitting processes, and lack of a timely pathway to liability settlement.

5 PUBLIC BENEFITS ANALYSIS

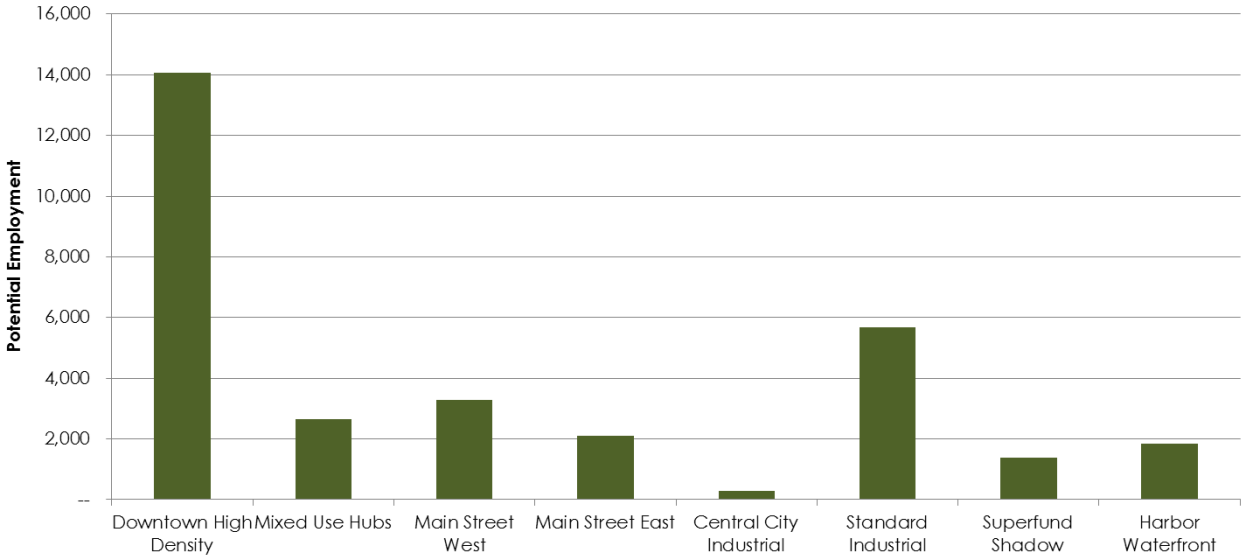
Putting underutilized, contaminated property back into productive use has multiple economic, environmental, and social benefits. Building on the pro forma analysis of prototypical brownfield redevelopment scenarios, an estimate of the economic and environmental benefits of redevelopment of the inventory of potentially contaminated sites has been calculated. While it is clearly unlikely that 100 percent of the brownfields will redevelop within any reasonable planning horizon, this analysis provides a sense of the scale and potential represented by these properties.

5.1 Employment

Redevelopment of the full inventory of brownfield properties has the potential to provide over 31,000 gross jobs. This would generate an estimated $1.4 billion in annual payroll potential for the affected sites. The number of jobs provided through each brownfield typology is driven both by employment density and by the number of acres in that category (Figure 5-1). Downtown High Density provides nearly 45 percent of the job potential. Another 8,300 jobs (27 percent of the total) may be oriented to Mixed-Use Hubs and Main Street areas. The industrial typologies account for

approximately 9,200 (30 percent of total) potential jobs. Industrial jobs account for much of the total projected payroll because of relatively high wage rates and large acreage of properties represented in the brownfield inventory.

Figure 5-1. Employment Potential

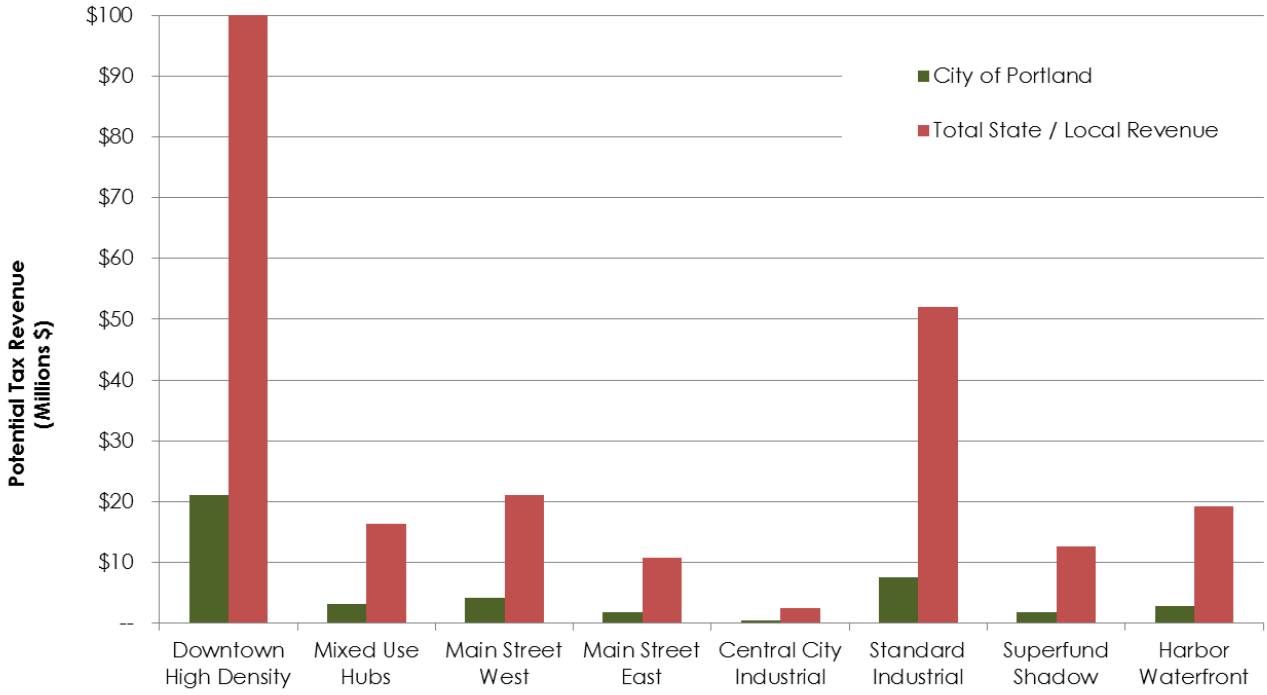


Note: Employment represents gross jobs based on building floor area and use type.

5.2 Tax Revenue Potential

Full redevelopment of the entire brownfield inventory also has the potential to generate approximately $240 million per year in potential state and local income and property and business tax revenues (estimated in 2012 dollars). Annual tax revenues for Portland account for approximately $42 million of that total (see Figure 5-2). Since tax revenues are largely driven by business and personal income taxes, the implications for typologies are similar to the employment figures. The high density of high-paying jobs in downtown annually drives over $20 million in Portland taxes and over $100 million in combined state and local tax revenues. Industrial typologies provide Portland approximately $12 million in tax revenues and over $86 million in combined state and local taxes.

Figure 5-2. Total Annual Tax Revenue by Brownfield Typology



Redevelopment of brownfields in Portland directly contributes annual tax revenues to Portland, county, state, and other tax authorities, so it is possible to compare the estimated cost of closing the financial feasibility gap through public investment to the estimated tax revenue generated by the redeveloped parcels (see Table 4-1). This analysis provides a general understanding of the benefits of redeveloping brownfield sites relative to the level of public investment. **In practice, of course, the tax revenues that result from redevelopment could not explicitly fund brownfield remediation.** Portland has many constraints on its ability to expend its tax revenues, and multiple demands for tax dollars. This analysis simply provides some context for considering how expenditures on brownfield incentives might compare to benefits over time.

The analysis indicates that Portland would see a net gain after less than ten years if it invested in remediated brownfields in the commercial typologies. The payback period for industrial sites is longer; the Portland Harbor Waterfront has a large financial gap and generates relatively low Portland tax revenues, so it takes over four decades for Portland to regain any investment in remediation.

These findings indicate that while Portland may be able to realize substantial ROIs in higher-value commercial brownfield properties, a regional or statewide investment is more appropriate for supporting remediation of industrial properties around the harbor. While this may appear financially advantageous for Portland, it is also important to consider that the EOA and the financial feasibility analysis (Section 4.2) indicate that

the downtown commercial typology brownfields are also likely to develop without any public investment.

Table 5-1. Payback Period

TYPOLOGY	YEARS	
	PORTLAND TAX REVENUE	TOTAL STATE & LOCAL TAX REVENUE
1. Downtown High Density	< 1	< 1
2. Mixed Use Hubs	4	< 1
3a. Main Street West	6	< 1
3b. Main Street East	9	2
4. Central City Industrial	4	< 1
5. Standard Industrial	13	2
6. Superfund Shadow	13	2
7. Portland Harbor Waterfront	43	4

Note: This analysis excludes costs attributable to Superfund sites. Including Superfund costs would increase the payback period for the Superfund Shadow and Portland Harbor Waterfront typologies.

5.3 Environmental and Smart Growth Benefits

In addition to economic benefits, brownfield remediation and redevelopment can help protect the environment directly through cleanup of contamination and often through the associated impacts of compact, infill land development.

Redevelopment of brownfields can help Portland achieve its greenhouse gas reduction goals. By encouraging infill development in areas with a mix of uses and transportation options, redevelopment of these properties represents a reduction in vehicle miles traveled when compared to suburban development. It is estimated that full build-out of the inventory of potential brownfields would represent a reduction of 39,000 metric tons of CO^2 annually, relative to sprawl development—the equivalent of taking 9,200 cars off the road.

Redevelopment of brownfields typically allows buildings to connect to existing infrastructure rather than requiring construction or expansion of roads and water and sewer lines. This use of existing infrastructure can result in significant savings to local governments. Based on national studies, it is estimated that infill development on brownfields in Portland has the

potential to save $115 million to $180 million in public infrastructure investment compared to typical greenfield development.

6 POLICY TOOLS

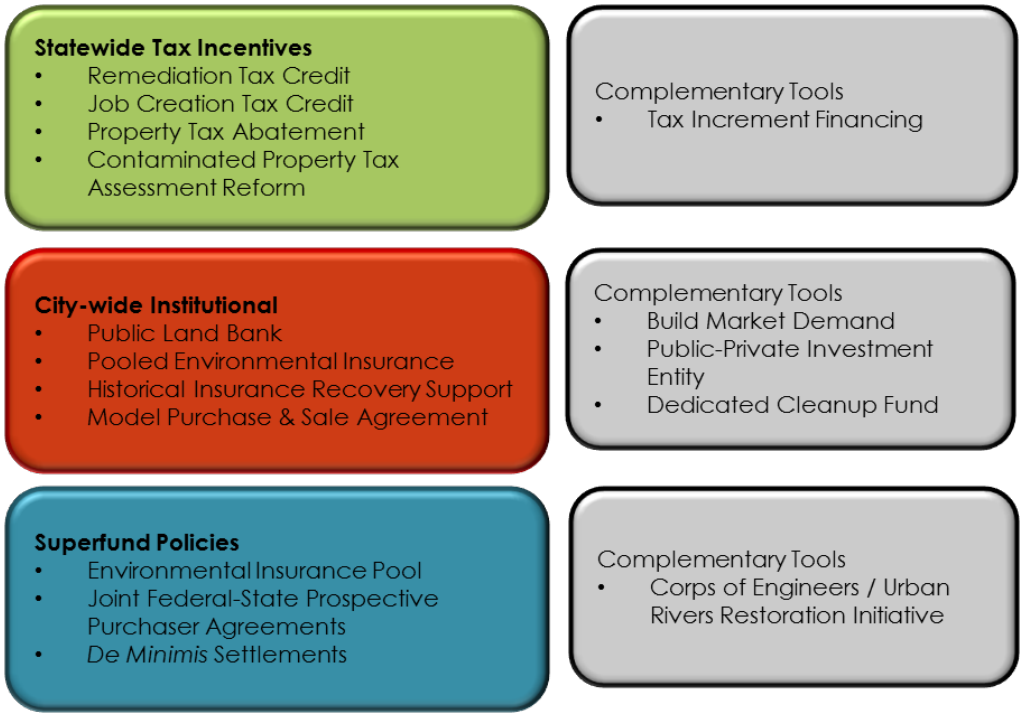
An effective policy framework is critical for promoting brownfield redevelopment and capturing the potential economic, environmental, and social benefits described above. There are two major components to existing policy in Oregon: regulatory and financial.

Regulatory Framework—The DEQ regulates cleanup of most contaminated properties, with the USEPA playing the lead role for areas designated as federal Superfund sites. The Oregon Cleanup Law establishes a risk-based approach to cleanup that allows flexibility for remediation to align with redevelopment of property. A Prospective Purchaser Agreement (PPA) program has been established that provides certainty of liability settlement for innocent developers of properties. This program is generally considered to be very effective, but is used by an average of only eight sites per year.

Financial Incentives—Portland and the State of Oregon offer several grant and loan programs to support assessment and cleanup of brownfield properties. However, these programs have limited capacity, so while they can play a critical role on individual projects, they are not able to have broad impact across the market. For example, the largest program is the Oregon Brownfield Redevelopment Fund, which provides low-interest loans and some grants for site assessment and cleanup. The program was recapitalized in 2008 with $9 million in state appropriation, which is just a quarter of the estimated $36 million needed to close the financial feasibility gap to redevelop 50 percent of the brownfield inventory just in Portland, not accounting for the rest of the state.

A set of innovative policy options that can accelerate brownfield redevelopment to achieve Portland's economic and community development goals has been developed through a review of best practices in other cities and states across the country and collaborative discussions with the advisory group of stakeholders and experts. The policy tools have been prioritized by the advisory group and bundled to demonstrate synergies between options and lay the foundation for an implementation strategy. The policy tools are briefly described below and explained in more detail in the Financial Analysis Report, included as Appendix B. Tools prioritized by the advisory group are described below, with other tools assessed in the study listed as "complementary tools."

Figure 6-1. Priority Policy Tool Bundles



6.1 Statewide Tax Incentives

Tax policy provides a way to improve the financial feasibility of brownfield redevelopment projects in a way that is predictable for developers and that requires relatively little administration by public agencies. As the financial analysis demonstrated, the fundamental challenge to brownfield redevelopment is that the costs of cleanup often exceed the value of a property. Implementation of tax policy changes would require state legislative action. The demonstration of the large potential increase in tax revenues associated with job creation on brownfields in Portland alone presents a strong case for investment by the state.

Two taxation policies have been prioritized: a remediation tax credit and reform of the existing property tax assessment for contaminated lands. Additionally, a job creation tax credit or a property tax abatement policy could be developed for brownfields.

Remediation Tax Credits allow property owners and developers to decrease their business or personal income taxes by a percentage of the documented costs of conducting a cleanup. To ensure that this incentive makes a true difference in financial feasibility, applicants could be required to present a pro forma for a project to demonstrate real need in order to be eligible. In order to manage the short-term impacts on the state budget, limits could be set on the amount of credit available on an individual project or for

all projects in a fiscal year. Making the tax credits transferable would allow nonprofit and public entities to use the tool.

A **Job Creation Tax Credit** could be targeted to brownfield redevelopment projects that create a certain number of new, family-wage jobs. This incentive could be particularly beneficial to industrial projects that typically create higher-wage jobs than retail developments.

A **Redeveloped Brownfield Tax Abatement** gives landowners a reprieve for payment of property taxes for a set period of time after a development is constructed. The Portland Development Commission (PDC) currently manages the Enterprise Zone that offers property tax abatements for industrial developments in a designated area. To promote redevelopment of brownfield properties for industrial uses, the abatement could be expanded to a longer duration and offered to qualifying sites outside the designated Enterprise Zone.

Contaminated Property Tax Assessment policy in Oregon is currently considered a disincentive to cleanup. The state administrative rule regulating assessment for property taxes establishes a method for reducing the value of contaminated land by the cost of the environmental liability. This policy can result in a substantial decrease in property tax payments on a brownfield property. While the market value of a property is certainly impaired by contamination, the tax assessment should include a time limit to encourage owners to address the problem. Coupling a sunset on the assessed value reduction with a tax credit on remediation would minimize financial impacts to property owners while promoting cleanup.

Complementary Tax Tools:

- Tax Increment Financing (TIF) can be a powerful tool for promoting urban redevelopment; however, Portland is reaching its statutory limits for use of this incentive. Several options could be explored to tailor TIF to more effectively target brownfields or to expand capacity. It would be necessary to change state TIF-enabling legislation in order to facilitate the brownfields-TIF connection. (See discussion immediately below.)

6.2 Citywide Institutions

Portland's brownfield program and PDC have played major roles in redevelopment of a number of contaminated properties, including supporting redevelopment of the Pearl District and the South Waterfront. The capacity of public agencies to promote brownfield revitalization could be bolstered through a set of policy tools that strengthen or create new institutions focused on cleanup and redevelopment. These tools include establishing a land bank, establishing an environmental insurance pool,

supporting claims on historical insurance policies, and creating Model Purchase and Sale Agreements for contaminated property transactions.

Brownfield Land Bank—A Brownfield Land Bank creates an entity with the resources and long-term perspective to acquire and reposition brownfield properties without putting additional liabilities on Portland's balance sheet. The Brownfield Land Bank would operate with a clear mission and long-term plan for community revitalization. To be effective in repositioning contaminated lands, it should have special powers, such as protection from environmental liability, authority to clear title, and ability to issue bonds and use TIF. The land bank would require initial capitalization to acquire a portfolio of properties and financial support for the initial years, but should achieve financial self-sufficiency within five to ten years through sale of properties to the private market.

If it were granted special authorities in the use of TIF, the land bank could be a frontline tool. One example could be to allow exceptions to debt limitations and the ability to use TIF for noncontiguous parcels outside urban renewal areas. TIF may be the most effective mechanism for addressing more difficult and upside-down properties, such as port and industrial properties. In order to be most effective, a land bank should be enabled with an environmental liability exemption on acquired properties.

Environmental Insurance—A number of private insurers provide policies that protect against discovery of unknown environmental contamination and potential for contribution claims or third-party personal injury suits. These insurance policies can be critical risk management tools in facilitating a brownfield land transaction, but they can also be costly or difficult for smaller projects to obtain. Portland could establish a pooled environmental insurance program through preselecting insurers and establishing common terms to reduce transaction costs. Portland could also potentially subsidize the premiums for environmental insurance policies to promote certain types of projects that meet multiple policy goals. A specialized environmental insurance pool could be established to address risk related to Superfund liability. That concept is discussed below in Section 6.3.

Historical Insurance Recovery Support—Before the mid-1980s, commercial general liability policies did not contain exclusions for liabilities caused by environmental damage. Since federal and state law has made liability for environmental contamination retroactive, cost recovery may be pursued from historical insurance policies that were in place when pollution occurred and that covered the property owner, operators, or other potentially liable parties. It takes technical expertise and resources to make a claim on a historical insurance policy, but case law makes Oregon one of the most favorable states in the country for these actions, and they are becoming standard practice. Portland could provide technical support to property owners submitting a claim on historical insurance policies for environmental impacts. This relatively minor investment in staff or contractor resources

could potentially generate millions of dollars to support assessment and cleanup of contamination.

Model Purchase and Sale Agreement—The legal transaction of contaminated property is a complicated and risk-laden operation. Portland could reduce transaction costs and uncertainty by creating a Model Purchase and Sale Agreement that includes indemnification terms and standard transfer issues such as due diligence period, timing of cleanup, warranties, and inspection periods. Such a model agreement would require few city resources to develop and could be useful for a large number of transactions. Portland might also consider creating models for continuing obligations agreements, contaminated media management plans, and tailored easements and equitable servitudes.

The environmental insurance pool, historical insurance support, and Model Purchase and Sale Agreement all would be valuable tools to support the efforts of a Public Land Bank or the acquisition of contaminated property by Portland, PDC, or the Port of Portland. As a group, these policies provide substantial tools to manage risk, reduce transaction costs, and leverage outside funding to promote brownfield cleanup and redevelopment.

Brownfields-Focused TIF—Although Portland has limitations in using this tool, TIF is the most powerful tool in the local economic development toolshed, and it would be a mistake to ignore its potential. A strong rationale could be developed for making exceptions to debt limitations for brownfields that are producing little or no tax revenue. Other TIF changes, for example allowing noncontiguous brownfield properties outside urban renewal districts, could work to maximize the TIF-brownfields connection. This more flexible brownfields-focused TIF tool could work in conjunction with the Brownfield Land Bank to address the more difficult and upside-down industrial sites. Additionally, TIF could be a repayment source for a brownfields-focused HUD 108 loan pool, effectively turning loans into grants. TIF also could be used as a subsidy source to pay for the Superfund-focused environmental insurance program referenced above.

Complementary Tools:

- Building Market Demand—Business Oregon and PDC actively market properties. Their efforts could be expanded to emphasize brownfield properties that represent important regional assets.
- Public-Private Entity—The Community Investment Initiative represents an innovative approach that is emerging to leverage public and private resources to address infrastructure needs and property constraints, including brownfields.
- Dedicated Cleanup Fund—A bond measure or other revenue source could establish a fund to support site assessment, cleanup, and integrated planning for redevelopment of brownfields. A brownfields

revolving loan fund can also be created without a new revenue source by using HUD 108 authority.

6.3 Superfund Policies

The financial feasibility analysis demonstrates that the potential Superfund liability has a dramatic negative impact on industrial property in the Portland Harbor. There are many complex issues related to the Portland Harbor Superfund designation, such as the technical analyses of risk and remediation options, and legal arguments over allocation of costs, which are beyond the scope of this project. There are also a number of large-scale strategies for resolving the harbor issue, such as implementation of interim actions to support Superfund delisting or seeking a major federal budget appropriation to offset costs, which are very important for policymakers to explore but which are also beyond the scope of this study.

The policies proposed in this section focus on risk management and creating certainty to promote property transactions and investment in redevelopment of upland properties around the harbor. To protect this regional economic asset, Portland and the state could work with the USEPA to modify Superfund policies to allow upland property owners to expeditiously reach regulatory closure and remove a dark cloud over land transactions and redevelopment on industrial lands. These policy proposals are targeted toward upland properties that are considered to be in the "Superfund shadow"; they are not on the waterfront, but could be connected to sediment contamination in the harbor through the stormwater system. As the owner and operator of the stormwater system, Portland has some interest in reducing these potential sources of historical and ongoing contamination.

Pooled or Subsidized Environmental Insurance—To address Superfund Shadow upland properties, Portland could allow project proponents to make a payment to the government as closure for tailing environmental liability, specifically. The government could in turn use those funds to buy insurance policies to cover a pooled group of sites. To be eligible for the insurance pool, participants would be required to complete upland cleanup actions and implement stormwater best management practices. If the USEPA or other potentially liable parties seek a contribution from that party, the claim would be directed to the environmental insurance policy. If Portland offered a tax incentive equivalent to the extra cost of the environmental insurance, the result would be the effective nullification of the disincentives for investment that are attributable to the Superfund designation.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) de Minimis Settlements—The concept behind this policy is simply for the USEPA to use its existing authority to provide expedited settlement agreements for owners of properties that are likely to cause only minor or insignificant impacts to the Portland Harbor.

Federal PPAs—The DEQ manages a highly effective PPA program that allows innocent buyers of property to enter into an agreement with the state that defines cleanup requirements and limits liability before they actually take title. The USEPA also has the authority under CERCLA to execute PPAs. To make implementation of this tool efficient, the USEPA could establish a memorandum of agreement (MOA) with the DEQ that recognizes and provides federal support for state PPAs executed for properties around the harbor that meet certain conditions. The eligibility criteria could include source control and completion of cleanup actions, and could even incorporate application of sustainable stormwater solutions such as rain gardens and pervious pavements.

It is important to note that such an MOA would work only for non-National Priority List (NPL) sites. However, to initially eliminate the stigma of a site's Superfund status, Portland could use the current delisting process, or the equivalent determination process for acquiring a USEPA decision that a site is not part of an NPL site..

One potentially promising avenue to creation of a template for PPA agreements is the use of green infrastructure to reduce stormwater-related contributions to sediment contamination.

Complementary Options

- Corps of Engineers Urban Rivers Restoration Initiative—An innovative approach to cleanup of an urban waterway is under way on the Passaic River in northern New Jersey in which the U.S. Army Corps of Engineers is taking a lead role in planning for remediation and restoration of the river. Engaging the Corps of Engineers through an MOA with the USEPA could shift the paradigm of the cleanup to a large public works project, establish a more collaborative process, and position the remediation for a large federal appropriation through the Water Resources Development Act.

6.4 Cumulative Benefit of Policy Tools

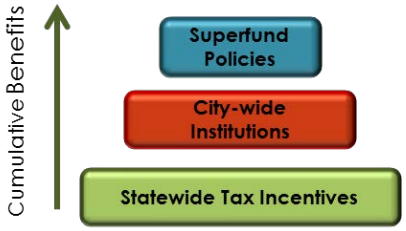


Figure 6-2. Cumulative Benefits of Policies

Implementation of the policies in the three bundles would have an additive effect. The tax incentives would be applicable to brownfield properties across the state. Contaminated properties in Portland would benefit from those tax incentives and also utilize the environmental insurance pool and Historical Insurance Recovery Support. Additionally, the properties that have the largest financial gap, those associated with the Portland Harbor Superfund site, would capitalize on all those tools and the additional policies that create certainty and lead to settlement of federal liability.

It is not likely that one policy tool will resolve the range of issues and the financial barriers for all brownfield sites in Portland. Adoption of a

set of mutually supportive tools will have a more dramatic impact in putting these properties back into productive use.

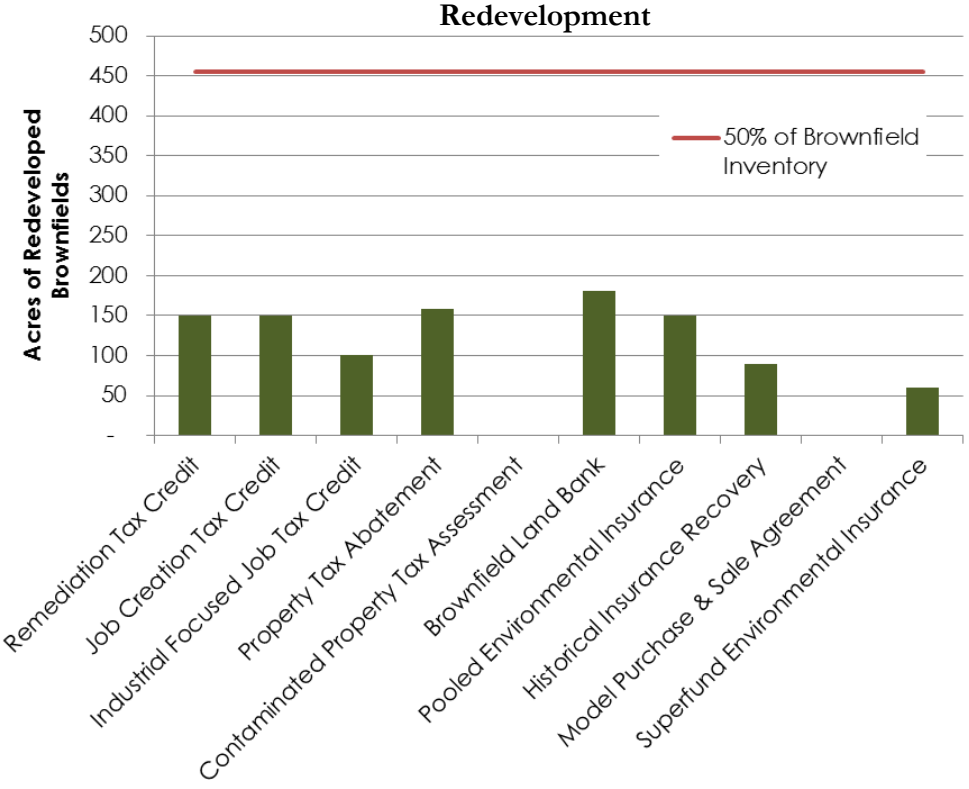
6.5 Return on Investment

An ROI analysis was conducted to compare the relative impacts of these tools. Because the policies have not yet been fully developed and it is uncertain what eligibility criteria, geographic constraints, or other factors might affect their influence on redevelopment outcomes, the results should be considered order-of-magnitude estimates. The analysis examined how many acres of brownfield property are likely to be redeveloped through application of the particular policy tool and the corresponding employment and tax revenue benefits associated with that redevelopment. A ten-year period was used for the analysis, with tax revenues estimated for one year (to conservatively account for absorption rate for bringing a property to market).

Key Findings

- No single policy incentive likely will be sufficient to catalyze redevelopment of all the brownfields or even achieve the 50 percent target. The Remediation Tax Credit, Job Creation Tax Credit, Redeveloped Brownfield Property Tax Abatement, Pooled Environmental Insurance, and Public Land Bank appear to have the largest potential impact, with each accounting for about 150 acres of brownfield redevelopment (see Figure 6-3).

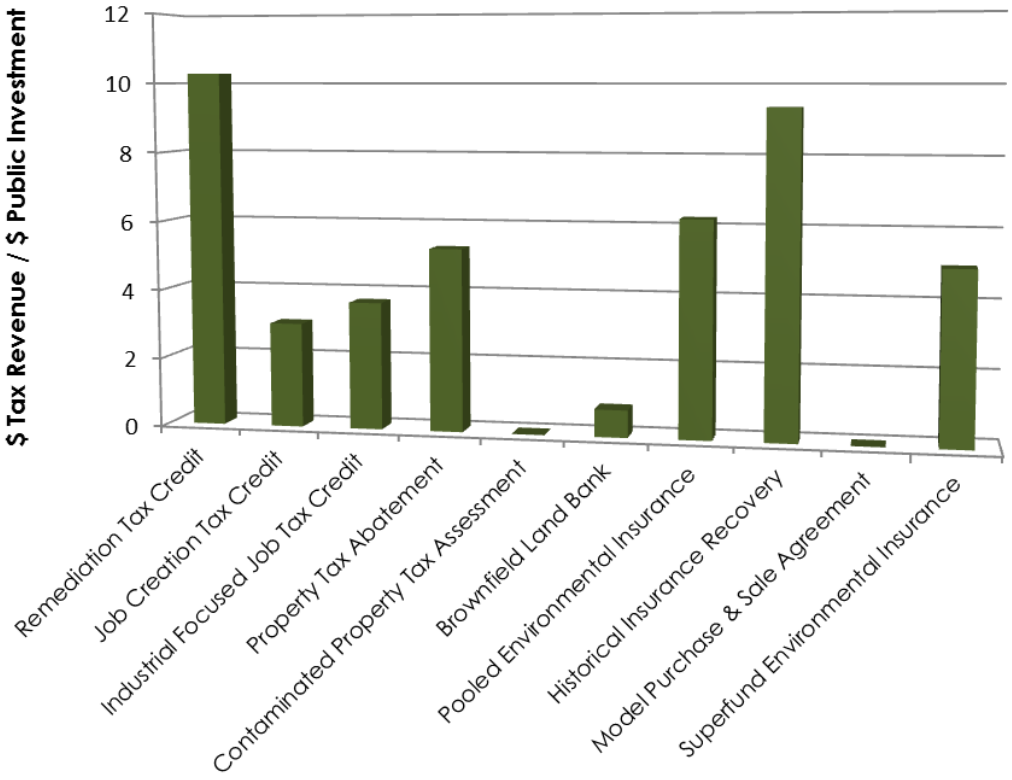
Figure 6-3. Potential for Policy Tools to Catalyze Brownfield Redevelopment



- The Remediation Tax Credit, Pooled Environmental Insurance, and Historical Insurance Recovery Support programs provided the greatest return on total tax revenues relative to public investment. Each approaches a $10 return in annual state and local tax revenue for every $1 invested in the brownfield incentives (see Figure 6-4).
- Differences in tax return relative to public investment are driven by the mechanics of the policy. Some, such as the Remediation Tax Credit, essentially provide funds to fill the financial feasibility gap. The Historical Insurance Recovery Support program leverages outside funding sources. The Public Land Bank has a relatively low ROI because funds are used for acquisition as well as gap financing. An acquisition strategy, although more expensive, facilitates the redevelopment of more difficult and upside-down properties, including port and industrial properties.
- Much of the employment and tax revenue benefit of brownfields is focused in office, commercial, and mixed-use development in strong markets. These areas are also the most likely to redevelop with little to no public investment.
- Brownfield incentives have the potential to reduce the projected industrial land supply shortfall, but will require significant investment with relatively low increase in Portland tax revenues. However, the tax revenues generated to Multnomah County and the State of

Oregon for industrial redevelopment are substantial and support a rationale for shared investment in Portland industrial lands as a regional economic asset.

Figure 6-4. Rate of Return on Public Investment



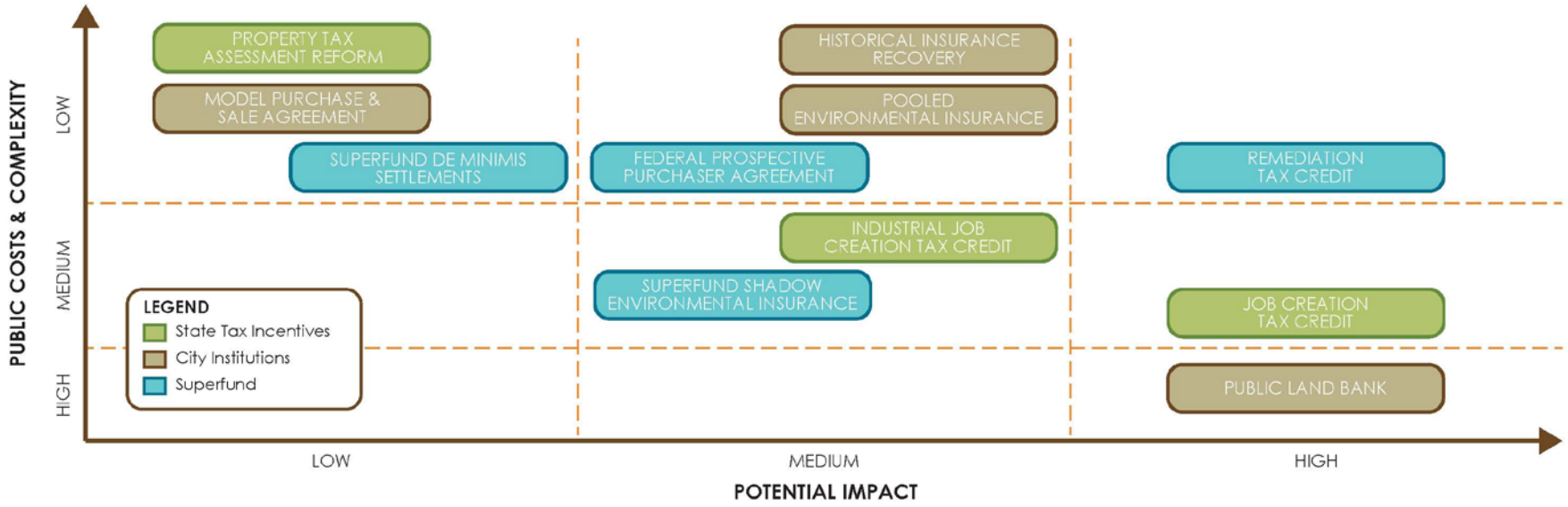
6.6 Policy Implications

In setting policy, the potential financial returns of a policy should be considered with a number of other factors, including costs and complexity to implement. Figure 6-5 provides a conceptual graphic of how the brownfield policy options align in terms of potential impact and public cost and complexity. The highest-rated policies are the Remediation Tax Credit and Historical Insurance Recovery Support. The Public Land Bank has a high potential impact over a long-term time horizon, but likely will require significant investment of public resources for it to be successful. Several low-cost, low-impact policies, such as creating a Model Purchase and Sale Agreement, represent actions that Portland may want to take to build momentum for larger endeavors.

Figure 6-5

PORTLAND BROWNFIELD ASSESSMENT

PUBLIC BENEFIT & RETURN ON INVESTMENT SUMMARY ANALYSIS



POLICY ROI SUMMARY

POLICY TOOL	ACRES	JOBS	TOTAL COST	PORTLAND TAX REVENUES	TOTAL STATE & LOCAL TAX REVENUES	TAX REVENUE/COST	$ PUBLIC INVEST./ ACRE	$ PUBLIC INVEST./ JOB
Remediation Tax Credit	150	9,800	$7,221,000	$13,970,000	$ 74,237,000	10	$ 48,000	$ 700
Job Creation Tax Credit	150	9,800	$24,557,000	$13,969,500	$ 74,237,000	3	$ 163,000	$ 2,500
Industrial Focused Job Tax Credit	100	1,600	$4,028,000	$2,133,500	$ 14,840,500	4	$ 40,000	$ 2,500
Property Tax Assessment Reform	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Public Land Bank	180	8,000	$55,000,000	$6,525,300	$ 43,456,400	1	$ 305,000	$ 6,900
Pooled Environmental Insurance	150	1,850	$2,500,000	$ 2,271,400	$ 15,584,850	6	$ 17,000	$ 1,400
Historical Insurance Recovery	90	2,200	$2,000,000	$2,725,700	$ 18,701,800	9	$ 22,000	$ 910
Model Purchase & Sale Agreement	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Superfund Environmental Insurance	60	1,500	$2,500,000	$1,813,300	$ 12,466,20	5	$ 42,000	$ 1,670

7 IMPLEMENTATION

Developing a strategy for implementation of an effective package of brownfield policy tools requires consideration not only of the potential fiscal ROI, but also of political, program development, and procedural factors. A summary of these factors is provided in Table 7-1.

7.1 Industrial Focus

There is a particular focus on tools that could help meet the forecasted 720-acre shortfall of industrial land supply in the next 20 years. Most of the policy tools can be designed to focus on industrial properties by limiting eligibility to lands in industrial zones or other specifically designated areas. The Remediation Tax Credit is estimated to have the potential to promote redevelopment of approximately 70 acres of land in the Standard Industrial typology, but only 17 and 8 acres of land in the Superfund Shadow and Portland Harbor Waterfront typologies, respectively. The Remediation Tax Credit is assumed to support redevelopment of properties that are relatively close to financial feasibility. To address more challenging properties, a combination of targeted tools may be needed, such as:

- The Brownfield Land Bank has the potential to be a powerful tool to target individual properties or designated areas.
- Historical Insurance Recovery Support can be a critical tool for bringing outside resources to offset the costs of site assessment and cleanup.
- Pooled Environmental Insurance tailored to address potential Superfund liability could have a transformative impact on the perception of risk associated with properties in the Superfund Shadow.

7.2 Synergies

There is potential for synergy between the proposed policies. For example, the effectiveness of a Public Land Bank would be greatly enhanced by brownfields-focused TIF, a Remediation Tax Credit, and/or Pooled Environmental Insurance to offset the costs of addressing contamination and other project feasibility gaps.

Table 7-1
PORTLAND BROWNFIELD ASSESSMENT
POLICY TOOL SUMMARY

Policy Tools	Advantages	Disadvantages	Considerations	Enacting Agency
		TAX INCENTIVES		
Remediation Tax Credit	• Provides a financial incentive for private and public sectors. • Dependable and predictable. • Implementation and administration can be streamlined. • Strong potential impact and return on public investment. • Broadly applicable for many brownfields.	• Short-term impact to state budget. • May be critiqued as a financial windfall for potentially responsible parties.	• Fewer administrative constraints are more attractive for private sector. • Limits on credit amount per project or per year can constrain impact. • Define eligible costs and eligible entities. • Important to make credits transferable.	State (Statutory Change)
Job Creation Tax Credit	• Incentive directly tied to economic benefit. • Does not require establishing a new tax or fund. • Broadly applicable for many types of brownfields. • High potential for promoting brownfield redevelopment.	• Implementation and administration may be cumbersome. • Relatively low potential return on public investment. • May be critiqued as a financial windfall for potentially responsible parties.	• Consider limited eligibility to industrial projects. • Eligibility criteria and reporting requirements may make it unappealing to private sector and difficult to administer.	State (Statutory Change)
Property Tax Abatement	• Builds on existing Enterprise Zone tax abatement program. • Provides a financial incentive for private and public sectors. • Dependable and predictable.	• Short-term impact to local tax revenues.	• Coordinate with PDC on policy development and operation.	Portland (Ordinance)
Tax Increment Financing Reform	• Expands a financial incentive program that has a track record of effectiveness. • Provides funding source to support public-private partnerships and leverage outside investment. • Works in conjunction with other tools, such as the land bank, environmental insurance pool, and/or a HUD 108 brownfields loan pool.	• Current market conditions create risk that incremental tax revenue generation will not meet expectations.	• Leverage outside funding, such as HUD Section 108, to support financial capacity. • Tailor to complement other tools such as environmental insurance.	State (Statutory Change)

Table 7-1
PORTLAND BROWNFIELD ASSESSMENT
POLICY TOOL SUMMARY

Policy Tools	Advantages	Disadvantages	Considerations	Enacting Agency
Contaminated Property Tax Assessment Reform	• Removes a perceived financial disincentive to cleaning up contaminated properties. • Potentially increases local tax revenues.	• Reforms may encounter resistance from affected property owners.	• Review legal constraints to changing property valuation rules. • Couple with Remediation Tax Credit to limit impact on property owners.	State (Administrative Rule)
		INSTITUTIONAL		
Brownfield Land Bank	• Potential to become financially self-sustaining over time. • Provides patient capital and long-term vision. • Establishes an alternative to local governments taking title of contaminated properties through tax foreclosure. • Potential to leverage state and federal grants. • High potential to promote brownfield redevelopment.	• Requires substantial initial public investment in challenging budget climate. • Relatively low projected ROI rate.	• Define focus (geographies, types of properties). • Effectiveness would be greatly supported by Remediation Tax Credit and Pooled Environmental Insurance.	Portland or State (Statutory Change)
Pooled Environmental Insurance	• Makes a proven risk management tool more broadly available. • Pre-negotiated policy terms reduce transaction costs and time frames. • High potential benefit for relatively low public investment.	• Public investment to subsidize premiums needed to maximize effectiveness.	• Coordinate with private environmental insurance industry to refine proposal. • Connect public subsidy for premiums to TIF.	Portland or State (Policy Change)
Historical Insurance Recovery	• Potential to bring substantial new resources to support site investigation and cleanup. • High potential return on public investment.	• Successful settlement of claims is not guaranteed. • Potential opposition from insurance carriers.	• Structure program to recoup public costs upon settlement of insurance claims. • Contract services or build capacity internally.	Portland or State (Policy Change)
Model Purchase and Sale Agreement	• Low-cost solution to help facilitate a large number of property transactions.	• Likely to have limited quantifiable impact.	• Coordinate with specialized attorneys and regulatory agencies in crafting model agreement. • Separate model agreement for sites with potential Superfund liability.	Portland

Table 7-1
PORTLAND BROWNFIELD ASSESSMENT
POLICY TOOL SUMMARY

Policy Tools	Advantages	Disadvantages	Considerations	Enacting Agency
Dedicated Cleanup Fund	• Increases financial capacity for conducting cleanups. • Provides state or local control of funds in contrast to competing with priorities of federal funding. • Large potential impact. • Potential to support other tools such as Brownfield Land Bank.	• Challenging economic and political conditions for establishing a new tax or issuing large bonds. • Competition with other funding priorities (e.g., infrastructure, education, salmon recovery).	• Consider wide range of potential revenue sources (bond, targeted commodity fee, etc.).	Portland or State (Statutory Change)
SUPERFUND				
Superfund Insurance Pool	• Empowers Portland to provide risk management to facilitate transactions impacted by uncertainty of Superfund liability.	• Portland takes on greater responsibility and risk associated with Superfund liability. • Policy designed for a special type of brownfield, so not applicable across city.	• Coordinate with insurance industry and regulatory agencies to refine proposal.	Portland
Federal Prospective Purchaser Agreement	• Builds on successful model of Oregon State PPAs. • Creates incentive without direct public financial investment.	• Requires commitment and staff resources of USEPA.	• Pursue MOA between state and USEPA rather than process for individual sites.	USEPA and State
De Minimis Settlement	• Provides certainty and closure. • Creates incentive without direct public financial investment.	• Requires commitment and staff resources of USEPA.	• Potential for broad applicability of this tool.	USEPA
Corps of Engineers Urban River Restoration Initiative	• Positions project for federal funding. • Potential for more collaborative and expedited cleanup process.	• Requires USEPA to share more control over the cleanup process. • Portland Harbor may be too far into the Superfund process for a structural change to be viable.	• Viability of federal funding through Corps of Engineers versus appropriation under Superfund.	USEPA and Corps of Engineers

ACRONYMS AND ABBREVIATIONS

CERCLA	Comprehensive Environmental Response, Compensation and Liabilities Act
DEQ	Oregon Department of Environmental Quality
EOA	Economic Opportunities Analysis
MOA	memorandum of agreement
NPL	National Priority List
PDC	Portland Development Commission
Portland	City of Portland
PPA	Prospective Purchaser Agreement
R2V	remediation to redevelopment value
ROI	return on investment
TIF	Tax Increment Financing
USEPA	U.S. Environmental Protection Agency

APPENDICES TO THE PORTLAND BROWNFIELD ASSESSMENT—FINAL REPORT

A—INVENTORY AND EXISTING CONDITIONS ANALYSIS

B—FINANCIAL ANALYSIS REPORT

C—PUBLIC BENEFIT REPORT

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APPENDIX A

INVENTORY AND EXISTING CONDITIONS ANALYSIS

PORTLAND BROWNFIELD ASSESSMENT INVENTORY & EXISTING CONDITIONS ANALYSIS

Prepared for

CITY OF PORTLAND BUREAU OF PLANNING AND SUSTAINABILITY

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CONTENTS

ACRONYMS AND ABBREVIATIONS IV

1 INTRODUCTION 1
1.1 CONTEXT 1
1.2 PURPOSE AND APPROACH 1
1.3 LINKAGE TO PORTLAND ECONOMIC OPPORTUNITY ANALYSIS 2

2 BROWNFIELD INVENTORY 3
2.1 BROWNFIELD INVENTORY METHODOLOGY 3
2.2 REFINED BROWNFIELD INVENTORY FINDINGS 9

3 BROWNFIELD TYPOLOGIES 12
3.1 PURPOSE OF BROWNFIELD TYPOLOGIES 12
3.2 KEY FEATURES FOR DETERMINING TYPES 12
3.3 BROWNFIELD TYPOLOGIES 16
3.4 FINANCIAL FEASIBILITY (BROWNNESS) 18

4 DEVELOPMENT TRENDS 19
4.1 NATIONAL TRENDS & FORECAST 19
4.2 PORTLAND DEVELOPMENT TRENDS & FORECAST 20
4.3 BROWNFIELD REDEVELOPMENT RATE ANALYSIS 32

5 BARRIERS TO BROWNFIELD REDEVELOPMENT 41
5.1 NATIONAL PERSPECTIVE 41
5.2 MARKET & NON-MARKET BARRIERS TO REDEVELOPMENT 42
5.3 EXISTING BROWNFIELD INCENTIVES 45

6 SUMMARY IMPLICATIONS 56

ACRONYMS AND ABBREVIATIONS

BES	Bureau of Environmental Services, City of Portland
BPS	Bureau of Planning & Sustainability, City of Portland
CERCLA	Comprehensive Environmental Response, Compensation and Liabilities Act
DEQ	Department of Environmental Quality
DLCD	Department of Land Conservation and Development
ECSI	Environmental Cleanup Site Information
EOA	City of Portland's Economic Opportunities Analysis
EPA	Environmental Protection Agency
EZ	Enterprise Zone
GIS	Geographic Information Systems
Harbor ReDi	Portland Harbor Redevelopment Initiative
HiFAR	No vacant sites with a floor area ratio above 20% pf zoned maximum potential
ICP	Independent Cleanup Pathway
LoFAR	Non vacant sites with a floor area ratio of up to 20% of zoned maximum potential
NFA	No Further Action
OAR	Oregon Administrative Rule
ORS	Oregon Revised Statute
PDC	Portland Development Commission
PPA	Prospective Purchaser Agreement
STAMP	Site Technical Assistance for a Municipal Project, National Brownfield Association
TIF	Tax-Increment Financing
TGM	Transportation and Growth Management
TOD	Transit-Oriented Development
UGB	Urban Growth Boundary
URA	Urban Renewal Area
USEPA	United States Environmental Protection Agency
VCP	Voluntary Cleanup Pathway
VHDZ	Vertical Housing Development Zone

1 INTRODUCTION

1.1 Context

Brownfields Defined

The term "brownfield" refers to real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of hazardous substance contamination.

The cleanup and redevelopment of brownfield properties is an important tool for sustainable economic development in the City of Portland (Portland). Continued economic development within the Urban Growth Boundary (UGB) requires adaptive reuse and infill redevelopment of properties. The draft Economic Opportunity Analysis (EOA) found that buildable employment land supply in Portland is inadequate to meet forecasted demand in 2035; and that "potential brownfields" account for about one-third of the growth capacity in Portland's industrial, commercial and other employment areas. However, brownfields face significant challenges in the marketplace. Recent trends indicate that most of Portland's brownfield land will continue to sit idle despite increasing economic growth and demand for new real estate development. The EOA forecasts that only 40% of brownfield acreage in industrial areas and 50% in neighborhood commercial areas are expected to redevelop by 2035.

The brownfield issue inherently involves both the cleanup and redevelopment of property. To generalize, brownfields are sites where cleanup is hindered due to development constraints, and development is hindered due to high or uncertain cleanup liability, resulting in prolonged contamination and underutilization.

The Portland Plan and Comprehensive Plan Update provide opportunities to consider far-reaching new directions for how Portland develops over the next 25 years, including actions to encourage more brownfield redevelopment. The goals of the Portland Brownfield Assessment are to:

- Refine the understanding of the scope, scale, and impact of brownfields in Portland;
- Characterize the challenges to cleanup and redevelopment of these properties;
- Review policy tools to promote revitalization; and
- Evaluate the potential benefit of adopting new policies.

1.2 Purpose and Approach

This report summarizes the findings of Task 2 of the Portland Brownfield Assessment project. It is intended to provide background for subsequent financial feasibility and public benefit analysis together with policy

recommendations to facilitate increased redevelopment of brownfields in Portland.

Key work elements in this initial report include:

- Inventory of brownfield properties in Portland;
- Identification of preliminary brownfield typologies;
- Assessment of development trends and their relationship to brownfields in Portland; and
- Perspective on barriers to brownfield development.

1.3 Linkage to Portland Economic Opportunity Analysis

In March 2012, a proposed draft EOA was released for review with the Portland Planning and Sustainability Commission. As part of its Periodic Review process to update Portland's Comprehensive Plan, the City is required to complete an EOA in compliance with Oregon Statewide Planning Goal 9.

Key elements of EOA documentation include: evaluation of trends, opportunities and market factors; employment land needs and supply analysis; and alternative choices for policy changes, public investments, development incentives and other public interventions needed to accommodate forecasted employment growth to 2035 consistent with the Portland Plan. Development trends and projections reviewed with this report, including preliminary brownfield redevelopment assessments, are consistent with the EOA methodology and results.

2 BROWNFIELD INVENTORY

To understand the brownfields challenge for Portland, it is important to quantify the scale of the issue. It is inherently difficult to precisely count the number of brownfields in a community. While properties that are vacant or underutilized can be identified visually, it is often not entirely apparent if there are contamination concerns that are usually underground in soil or groundwater. Land owners are often very reluctant to notify public agencies about potential contamination because of anxiety over legal liability, cleanup costs, and stigma that may impact property value. Given these challenges, Portland has made an extensive effort to develop an inventory of potential brownfield sites to provide a foundation of information upon which to develop policy.

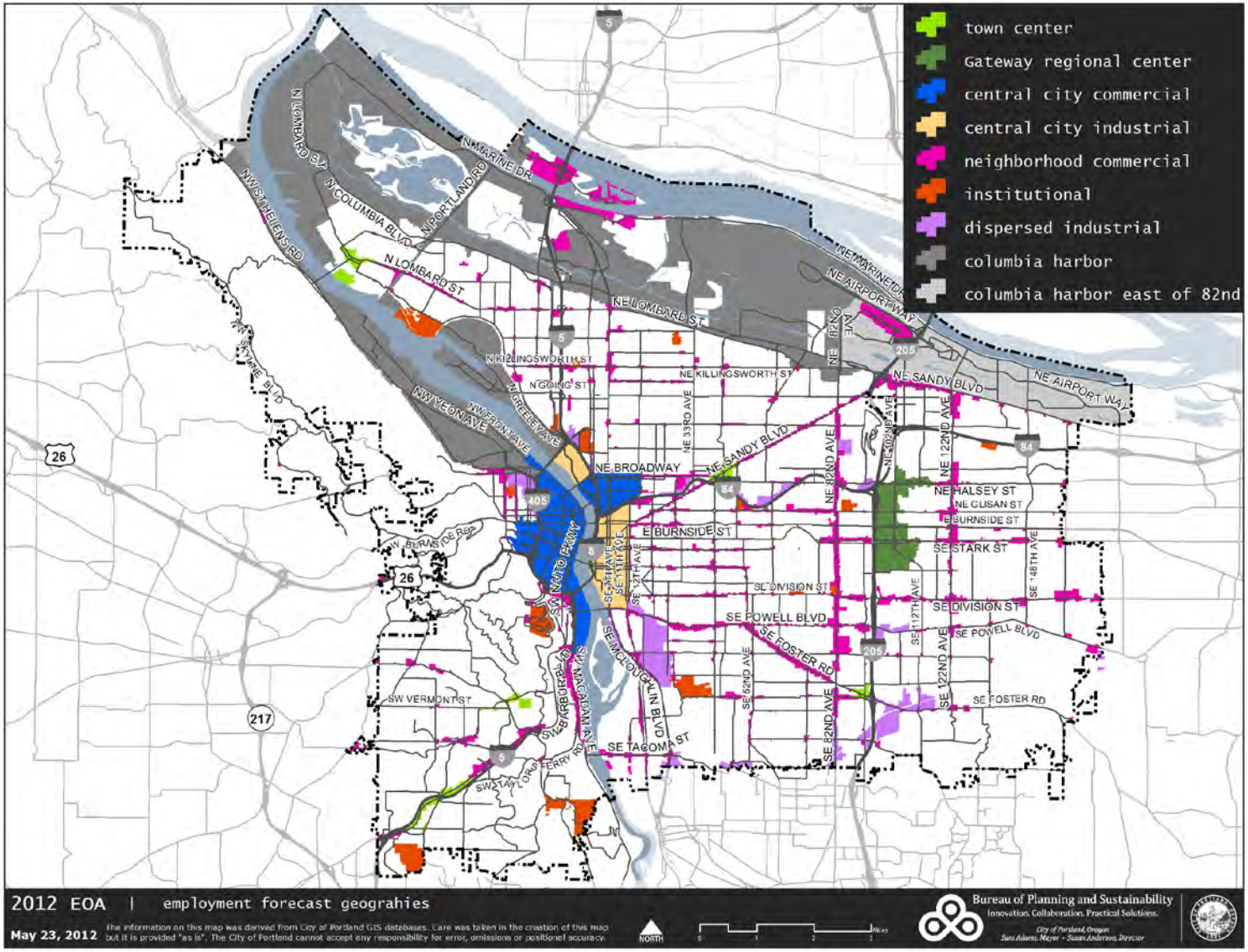
The EOA prepared for the Portland Plan includes a brownfield inventory of the city's business districts. The current draft of the EOA found approximately 1,050 acres of potential brownfields in Portland. These sites were identified as the intersection of the Portland Bureau of Planning and Sustainability (BPS) buildable lands inventory (unimproved or under-improved properties) and the Oregon State Department of Environmental Quality (DEQ) inventory of environmental cleanup sites and leaking underground storage tanks. The qualifier "potential" means that, while these sites have been identified by DEQ, contamination has not been confirmed on many of them. Because the brownfield inventory focuses on employment lands, residential properties with contamination from underground heating oil tanks have been excluded from this analysis. Analysis conducted for the EOA indicated that approximately 350 brownfield acres, 29 percent of the potential brownfield inventory, is forecasted to be cleaned up and redeveloped by 2035, based on development trends and market factors under current programs.

In order to address the land demand shortfalls identified in the EOA, it is important to take a more comprehensive approach to identifying the scale of the brownfield issue across employment geographies throughout Portland. The Portland Brownfield Redevelopment Assessment is the first step in developing an expanded brownfield inventory to make the policy and regulatory decisions to return these sites to a more productive use.

2.1 Brownfield Inventory Methodology

The first step in developing the expanded brownfield inventory was to create a spatial database containing all sites within employment geographies (Figure 2-1) that are identified in the buildable lands inventory (BLI) as having development capacity. The employment geographies were developed for the EOA based on zoning and market potential among other factors.

Figure 2-1. Employment Geographies.



The characteristics of the employment geographies are discussed in more detail in Section 4 of this report. Portland has refined the BLI developed by Metro to estimate development capacity and describe where growth might occur in the future. Development capacity is defined as the likely number of new dwelling units or jobs that could be accommodated in Portland under existing regulations, assuming the continuation of recent development trends. The BLI by itself does not consider or predict market demand for new construction. It only identifies lands that could potentially be available for development, should a market demand exist. The BLI is one of the key assumptions in Portland's comprehensive planning process.

The employment capacity analysis analyzes the difference between existing and allowed development to determine the remaining development capacity under the current comprehensive plan. The first step to inventory buildable land is a relatively straightforward process to identify vacant sites or land utilizing tax assessment data, Metro's vacant land inventory, and verification process utilizing aerial photos and field checking. Parcels under 0.5 acres were not considered viable for industrial uses and parcels less than 1,500 square feet (0.03 acres) were not considered viable for commercial development.

The BLI has a sophisticated process for identifying developed parcels that are significantly under-developed or underutilized and are likely to redevelop. Within the Central City, a parcel must have less than 20% of the allowed floor area and have an improvement-to-land ratio of less than 50%. Outside the Central City, parcels within 500 feet of a "frequent service" transit line are mapped as underutilized if they are using less than 20% of their allowed floor area (regardless of the improvement-to-land ratio). Improvement and land values are not as accurate or consistently recorded outside Portland's Central City, so they are not used in other parts of the city at this time. Frequent service transit lines are defined as bus and light rail lines that run every 15 minutes or better during weekday peak hours. All other parcels are mapped as underutilized if they are using less than 10% of their allowed floor area (regardless of the improvement-to-land ratio).

Figure 2-2 shows the final inventory of sites within employment geographies that have been identified as having development capacity.

The next step in developing the expanded brownfield inventory was to apply sites identified in the DEQ Environmental Cleanup Site Information (ESCI) and Leaking Underground Storage Tank (LUST) databases that intersect the sites identified in the BLI as having capacity for development (Figure 2-3).

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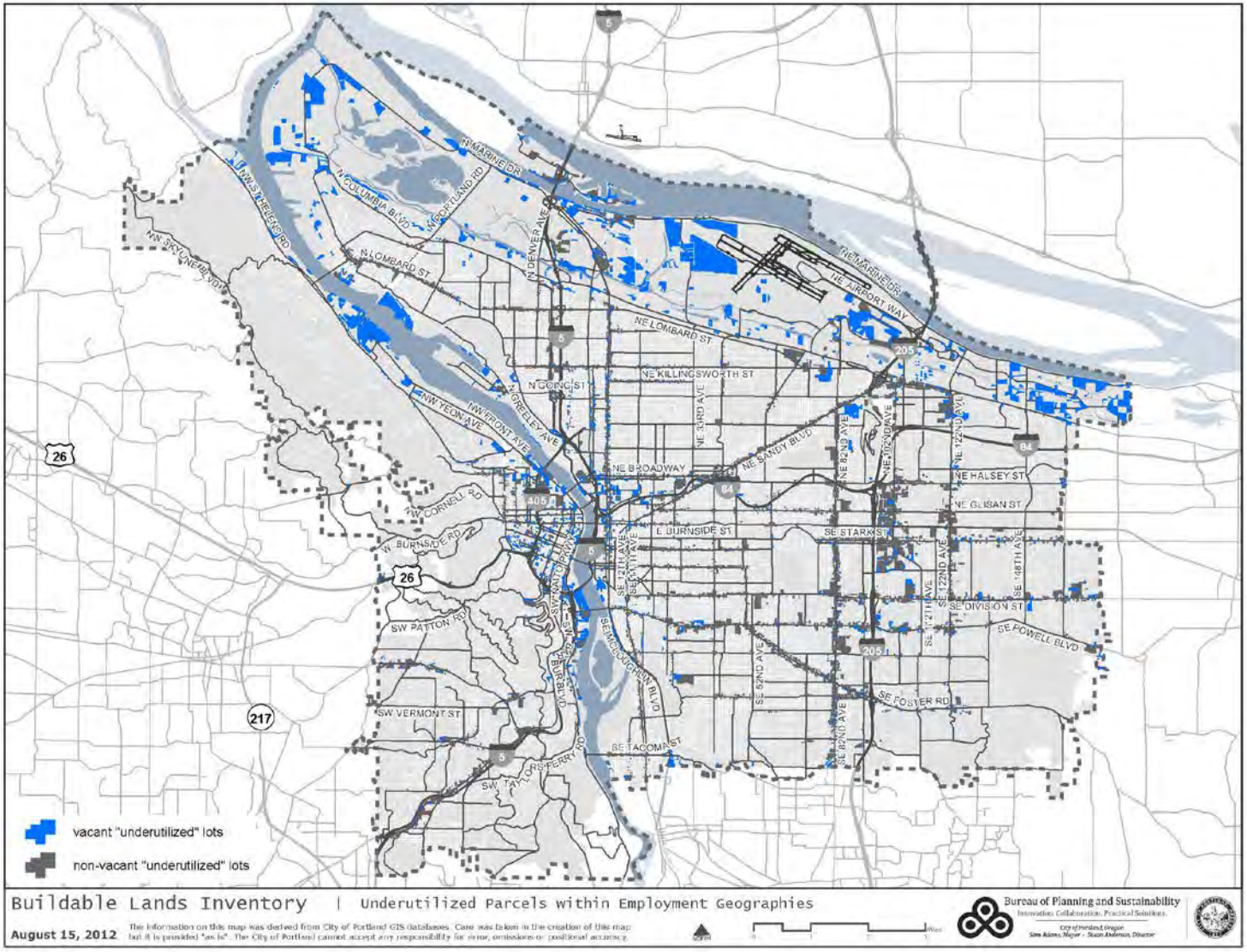
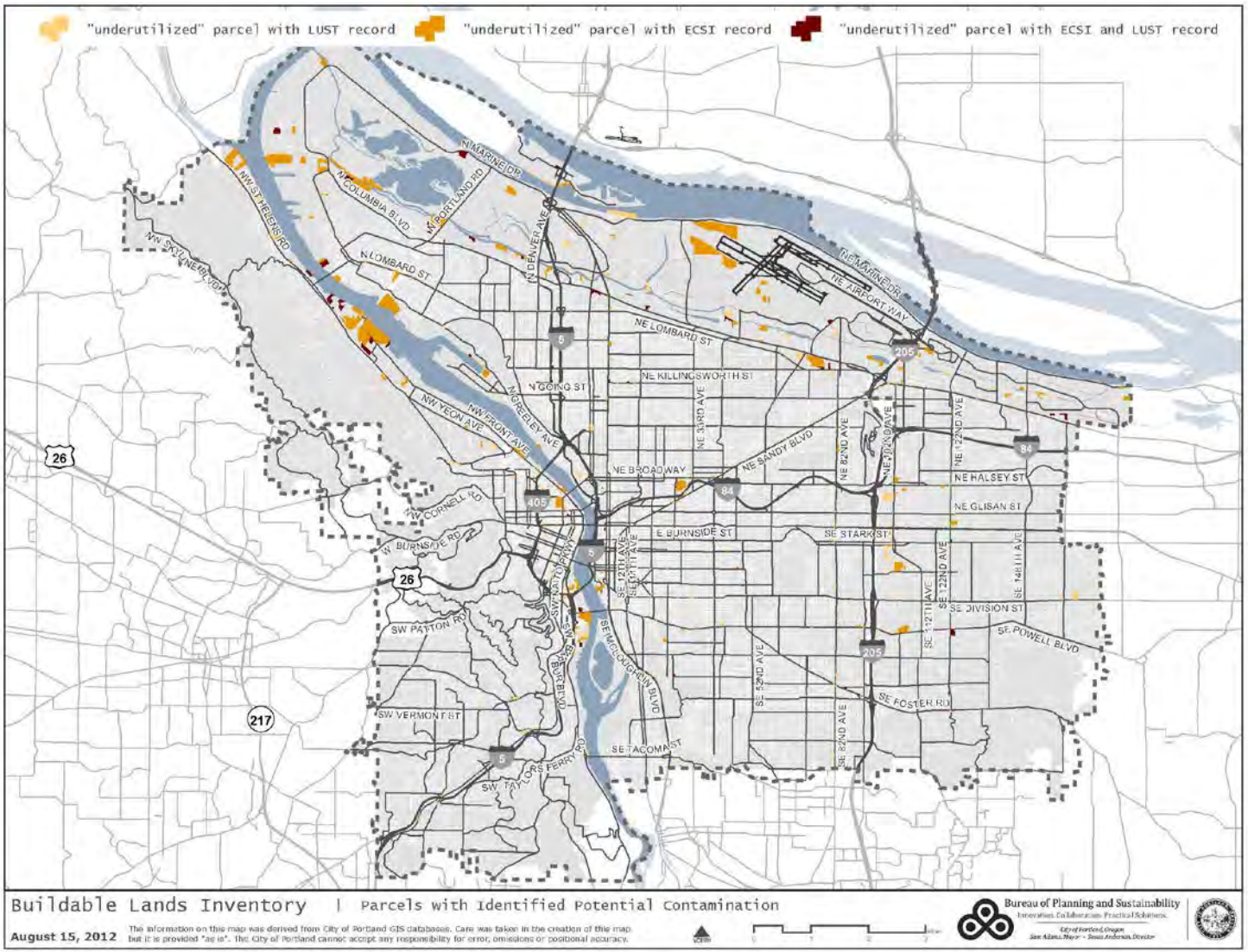
Figure 2-2. Buildable Lands Inventory



The ESCI database records sites with known or potential contamination from hazardous substances. ECSI generally excludes sites with petroleum releases from underground storage tanks. This data includes all sites in the ECSI database regardless of status. ECSI data was mapped by the Portland Bureau of Environmental Services (BES) using DEQ data updated in April 2012. The LUST database is a listing of all sites with reported releases of petroleum products from regulated underground storage tanks (USTs), unregulated USTs, and home heating oil tanks.

The Development Capacity Model in the BLI uses several parameters, such as a vacant land dataset, to split parcels. The ECSI and LUST dataset compiled by BES and BPS is a parcel-level dataset. No attempt was made by BPS to locate or identify the portion of individual parcels impacted by ECSI or LUST status. Rather, if any portion of a parcel contained an ECSI or LUST record the entirety of the parcel was included in the brownfield inventory.

Figure 2-3. Buildable Lands with Identified Contamination Concerns



The final step in developing the brownfield inventory was the creation of a database of historical land uses. The DEQ databases only include records of sites that have been reported to have hazardous material concerns, so they are not a comprehensive inventory of all potentially contaminated properties. It is not possible to definitively know if there are contaminants above cleanup standards on a property without actually collecting soil and groundwater samples and analyzing them in a laboratory. Since that level of effort is not feasible across the entire city, historical land use was used as an indicator to estimate this shadow inventory of unreported potentially contaminated sites. This estimation is based on the assumption that certain industries are known to handle, process, or dispose of hazardous materials, and that properties that have been used for those activities have a high potential for legacy environmental contamination.

BPS staff analyzed historic economic trends to identify three peak years in the economic cycle to represent peak years for industry in Portland. BPS identified the years 1936, 1955, and 1973 as appropriate points in time to compile data from diverse business types and to also represent a broad spectrum of the economy roughly every twenty years.

Historic land use data was collected for the targeted years from Polk City Directories. BPS worked with Portland staff and agency partners to create a list of business types that included processes or products that are known to have potentially contributed to site contamination. BPS staff collected individual business records from the Polk City Directories within these business type categories. These business records include business name, business type, and business address. A historic land use database was developed for each year using these business records.

BPS staff then geocoded the historic land use database and joined the resulting point level data to the appropriate parcel in a tax lot dataset. The result of these efforts is a citywide historic land use inventory that can be applied for use along with the ESCI and LUST datasets for an expanded potential brownfield inventory that can be used to estimate the extent of potential brownfields citywide.

2.2 Refined Brownfield Inventory Findings

Estimate of Potential Brownfields in Employment Geographies

Sites that have identified ECSI and/or LUST status and are unimproved or under-improved in the development capacity model account for 910 acres of potential brownfields on 1,086 parcels throughout the employment geographies. The development and inclusion of the historic land use dataset adds an additional 378 estimated acres of potential brownfields on 531 sites in employment geographies. The development of this updated and refined brownfield inventory estimates that there may be approximately 1,288 total acres of potential brownfields on 1,586 parcels throughout Portland.

To get a more nuanced perspective on how brownfields impact economic potential, further analysis was conducted only on sites that have identified ECSI and/or LUST contamination concerns and are unimproved or under-improved in the development capacity model. Previous analysis conducted for the EOA identified parcels within employment geographies impacted by ECSI and LUST status as a development constraint which estimated a total of 1,050 acres of potential brownfields in employment geographies throughout the city. The refined brownfield inventory employs an alternative approach that estimates there may be approximately 910 acres of brownfields in the employment geographies. The decrease in total estimated brownfield acres can be attributed to alternative approaches in the brownfield inventory methodology that account for brownfield redevelopment on land per acre basis for commercially zoned sites as opposed to a capacity per acre basis as identified in the EOA. Additionally, 297 acres were added to the ESCI and LUST datasets between March 2009 and April 2012 which accounts for some of the changes to the brownfield inventory totals.

Table 2.1. Employment Geography Potential Brownfield Inventory

Database	# of Parcels	Acres
ECSI and LUST	1,055	910
Historic Land Use	531	378
Total Potential Brownfield Inventory	1,586	1,288

Source: Oregon Department of Environmental Quality, Bureau of Environmental Services, Bureau of Planning and Sustainability; 2012.

Analysis conducted to examine development constraints and development trends has indicated there are a variety of issues that impact brownfield properties in different employment geographies in different ways. As such, it is important to examine the scale of potential brownfields in each of these geographic areas. Brownfields occur in each of the employment geographies. The greatest number of potential brownfield properties occurs in the Neighborhood Commercial areas. By total area, the Columbia Harbor employment geography is the highest with approximately 55% of total acres in the brownfield inventory. This analysis demonstrates that there are a large number of small brownfield properties (under one acre), but that a limited number of large properties account for the vast majority of the areal extent of brownfields.

Table 2.2. Potential Brownfields by Employment Geography

Employment Geography	# of Parcels	Acres	Avg. Size	% of Total Acres
Town Centers	57	19	0.5	2%
Gateway Regional Center	35	41	1.3	5%
Central City Commercial	166	94	0.5	10%
Central City Industrial	27	4	0.3	<1%
Neighborhood Commercial	328	194	0.6	21%
Dispersed Industrial	22	16	1.0	2%
Columbia Harbor	368	496	2.3	55%
Columbia Harbor East of 82nd	83	46	.7	5%
Total	1,086	910	1.2	100%

Source: Oregon Department of Environmental Quality, Bureau of Environmental Services, Bureau of Planning and Sustainability; 2012.

Table 2.3. Potential Brownfields by Brownfield Typology

Employment Geography	# of Parcels	Acres	Avg. Size	% of Total Acres
Downtown High Density	188	94	0.5	10%
Mixed Use Hub	76	58	0.9	6%
Main street Com W of 82nd	237	137	0.6	15%
Main street Com E of 82nd	90	58	0.7	6%
Central City Industrial	27	4.2	0.3	<1%
Standard Industrial	270	326	1.6	36%
Superfund Shadow	43	79	2.3	9%
Harbor Waterfront	155	154	2.0	17
Total	1,086	910	1.2	100%

Source: Oregon Department of Environmental Quality, Bureau of Environmental Services, Bureau of Planning and Sustainability; 2012.

3 BROWNFIELD TYPOLOGIES

3.1 Purpose of Brownfield Typologies

While all brownfields share common characteristics of environmental concerns and underutilized development condition, they are not all the same. Understanding the different types of brownfields will allow policy makers to refine and target tools to support revitalization of these properties. The brownfield typologies also serve as an analytical tool for evaluating the range of impact that different categories of sites have on the region. Grouping brownfields by certain key criteria will facilitate the evaluation of challenges faced by impacted sites and will help the prioritization of potential solutions to address the unique issues faced by discreet groups of properties.

3.2 Key Features for Determining Types

The traditional approach for categorizing brownfield properties has been to focus on the contamination issues. However, experience with revitalization of these properties demonstrates that redevelopment typically drives cleanup actions. Therefore, an integrated approach that considers both market potential and contamination provides a more accurate and meaningful categorization.

The fundamental guiding principle underlying the brownfield typologies is that the potential for redevelopment of a property is driven primarily by market factors and that the type and level of contamination need to be considered in the context of property value. Brownfield properties with high market potential are commonly remediated and redeveloped by the private sector, even if cleanup costs are relatively high. The Pearl District in Portland includes many examples of these kinds of properties. Alternatively, a property that is relatively simple to clean up may still remain vacant if there is no viable redevelopment use that can create value to offset even a low remediation cost. This paradigm of financial feasibility informs the brownfield typologies and characterization of the 'level of brownness' of a property. The relationship between redevelopment potential and cost to remediate is the remediation to redevelopment value (R2V). This relationship will be the basis for financial feasibility analysis conducted in subsequent tasks of the Portland Brownfield Assessment.

Brownfield typologies were developed based on analysis of the expanded brownfield inventory, the EOA, and the Portland's land use database. These resources provide information on known contamination issues, historical uses that may be correlated to environmental concerns, and land use characteristics. The main factors used to develop the brownfield typologies

included location, size, zoning, historical use, and listing on state ECSI and LUST databases.

Location and Zoning

Employment geographies were developed as part of the EOA process as a way to account for different market conditions within the various sectors of the city. The employment geographies take into account location and zoning, which are two critical factors for determining the redevelopment potential of a specific property. Location represents a number of market factors such as land value, accessibility, infrastructure capacity, and amenities. Zoning is a major determinant in intensity of development allowed on a property which correlates strongly with potential redevelopment value. The financial feasibility of many successful brownfield redevelopment projects hinges on a zone change from a historically industrial use to a higher value commercial or mixed use. For this reason the brownfield typologies separate properties limited to redevelopment for industrial uses and those with potential for commercial uses under current land use regulations.

Historical Use

As mentioned in Section 2, "historical use" provides an indication of potential for environmental contamination on a property. Certain economic activities, such as gas stations, dry cleaners, chemical plants, and manufacturing have historically been associated with legacy environmental contamination. The period of time when these uses occurred is very important, since with the passage of modern regulations on the use, handling, and disposal of hazardous materials, these same industry sectors continue to operate today with strict procedures to prevent and respond to releases of hazardous materials.

The most common historical uses often associated with contaminated properties that were identified in the brownfield inventory are listed in Table 3-1 below:

Table 3-1. Historical Uses Commonly Associated with Brownfields

Historical Use Category	Percentage of Parcels
Auto services (gas stations and repair shops)	38%
Manufacturing (including a wide range of fabrication and assembly operations)	34%
Commercial laundries (including dry cleaners)	17%
Chemical manufacture and processing	11%

Source: Oregon Department of Environmental Quality, Bureau of Environmental Services, Bureau of Planning and Sustainability; 2012.

It is interesting to note that each of these categories of uses occurred in nearly every employment geography. As one would expect, there were few commercial laundries in the industrial lands along the Willamette and Columbia Rivers, but auto services, manufacturing, and even chemical processing has historically occurred with some frequency in each of Portland's traditional areas of commercial and industrial activity.

Identified Contaminated Sites

The Oregon Department of Environmental Quality maintains an extensive database of sites that where contamination have been identified and reported. The Environmental Site Cleanup Index (ECSI) database of known and suspected contaminated sites and the Leaking Underground Storage Tank (LUST) databases were used to characterize the location of potential brownfield properties in Portland.

Some contaminants are generally considered more toxic or more difficult to remediate, which impacts financial feasibility of a project. For the purposes of developing typologies, historical use is used as an indicator for potential contamination rather than records of specific types of hazardous materials. The primary reason for using this approach is that characterizing properties by types of use more readily translates to land use and economic planning policy than distinguishing sites by chemicals of concern. Historical use was employed based on the assumption that specific industries typically use certain hazardous materials with similar practices for use and disposal and given the fact that information on past activities is more widely available than data on specific contaminants. The ECSI database does contain information on specific types of toxics found on known contaminated sites. However, this information is not consistently available due to a number of factors,

including changes in reporting requirements and protocol, variation in data entry, and consistency in record keeping. Therefore, this study was reluctant to use specific contaminant types as a feature for determining typologies.

Size

The size of properties was evaluated as a potential factor for determining typologies. While the size of a property is fundamentally important for designing a specific redevelopment proposal, it did not appear to be a significant factor for the general typologies. While some historical uses, such as gas stations and dry cleaners, have typical sizes, most of the former industrial uses of concern have a wide range of property sizes that do not lend themselves to meaningful categorization.

Metro Brownfield Typologies

A concurrent study of brownfields led by the Metro regional government has developed typologies for the same purpose of understanding the character of the issues of these properties on a regional scale. The Metro typologies were considered in this analysis and the summary table below indicates how they relate to the Portland typologies. In general, the smaller geographic extent of Portland lends itself to a more detailed dissection of typologies than the Metro study.

Metro Draft Brownfield Typologies

Type 1—Small Commercial Sites. Common historical uses were gas stations, repair shops, and dry cleaners, characterized by small parcel size and location along highways, arterials, and commercial centers.

Type 2—Formerly Industrial Properties in City and Town Centers. Properties range in size and historically housed various uses in areas that have transitioned from industrial to office, retail, and mixed use centers. Change of zoning and use often drives redevelopment of these properties.

Type 3—Industrial Area Sites. Properties in areas with an industrial past that continues today. Constraints on land value and types of use can be a challenge to redevelopment of these properties.

Type 4—Heritage Sites. Properties associated with rural residences and natural resource extraction industries and agriculture. These properties are typically large and located on the edge of the urban growth boundary. Structural economic changes can make these properties difficult to redevelop.

3.3 Brownfield Typologies

Based on analysis of land use and environmental factors, the following types of brownfields have been categorized for Portland.

1. **Downtown High Density**—Characterized as former industrial and commercial operations in an area of increasing high-density development. High property values drive redevelopment and often result in conversion to commercial and residential mixed use properties. Examples: Pearl District, South Waterfront, Downtown.

2. **Mixed Use Hub**—Significant neighborhood centers that contain a mix of uses and represent historic and planned town centers. Redevelopment typically results in commercial and mixed use projects at a higher level of density. Examples: St. Johns, Gateway.

3. **Main Street**—Commercial corridors characterized by mixed uses and smaller-scale commercial activity. Redevelopment of these type of brownfields typically results in conversion to commercial and mixed use projects at a higher level of density. (This typology is further subdivided into East of 82nd and West of 82nd for analytical purposes. The uses are the same, but market conditions are significantly different) Examples: SE Hawthorne, NW 23rd, NE Alberta.

4. **Central City Industrial**—Large-scale industrial operations typically including historic and current manufacturing activities. Redevelopment is driven by changing land use patterns and increased land values through zoning. Redevelopment of this brownfield type generally results in industrial and flex space. Examples: Central Eastside industrial, Albina.

5. **Standard Industrial**—Variety of industrial uses, ranging in size and intensity and located in multiple areas within Portland. Redevelopment typically is constrained by location, land value, and regulatory requirements such as environmental overlays and industrial sanctuary. Examples: Johnson Boulevard, Brooklyn/Milwaukie Rail Yard.

6. **Superfund Shadow**—Properties located upland from the Portland Harbor Superfund area. These sites may be impacted by the Superfund designation and therefore are limited in their redevelopment potential. Redevelopment would result in industrial and flex space uses, but is hindered by regulatory uncertainty. Examples: Areas within NW Industrial and Portland Harbor.

7. **Portland Harbor Waterfront**—Sites located on the Willamette River with direct connection to the areas identified as having sediment contamination. Sites in this type are typically large-scale and current or former heavy industry operations. Examples: Portland Harbor sites from Columbia River South to Fremont Bridge (approximately).

Table 3-2. Brownfield Typologies

	City of Portland Typology	Metro Typology	Historical Use	Employment Geography	Future Use	Financial Feasibility (Brownness)		
						Brown	Neutral	Green
COMMERCIAL	1. Downtown High Density	Type 1 & 2	Auto, Dry Cleaner, Manufacturing, & Chemical	Central City	Commercial, Mixed Use, Multi-Family	N/A	High Land Value & Medium Cleanup Cost	High Land Value & Low Cleanup Cost
	2. Mixed Use Hubs	Type 1 & 2	Auto & Dry Cleaner,	Town Center	Commercial, Mixed Use, Multi-Family	N/A	High Land Value & Medium Cleanup Cost	High Land Value & Low Cleanup Cost
	3. Main Street (subdivided into East of 82nd and West of 82nd)	Type 1 & 2	Auto, Dry Cleaner, Manufacturing, & Chemical	Neighborhood Commercial, Gateway Regional Center	Commercial, Mixed Use, Multi-Family	Medium Land Value & High Cleanup Cost	Medium Land Value & Medium Cleanup Cost	Medium Land Value & Low Cleanup Cost
INDUSTRIAL	4. Central City Industrial	Type 3	Auto, Manufacturing, & Chemical	Central City	Industrial, Flex Space	High Land Value & High Cleanup Cost	High Land Value & Medium Cleanup Cost	High Land Value & Low Cleanup Cost
	5. Standard Industrial	Type 3	Auto, Manufacturing, & Chemical	Columbia Harbor & Dispersed Industrial	Industrial	Low Land Value & High Cleanup Cost	Low Land Value & Medium Cleanup Cost	Low Land Value & Low Cleanup Cost
	6. Superfund Shadow s	Type 3	Auto, Manufacturing,& Chemical	Columbia Harbor	Industrial	Low Land Value & High Cleanup Cost	Low Land Value & Medium Cleanup Cost	Low Land Value & Low Cleanup Cost
	7. Portland Harbor Waterfront	Type 3	Auto, Manufacturing, & Chemical	Columbia Harbor	Industrial	Low Land Value & High Cleanup Cost	Low Land Value & Medium Cleanup Cost	N/A

3.4 Financial Feasibility (Brownness)

The financial feasibility of redevelopment of a property within any of the brownfield types depends primarily on two factors, the redeveloped value of the property and the cost of the environmental remediation. The relationship of these two factors can be characterized as the redevelopment to remediation value (R2V). The R2V is positive for properties that have a high enough potential value to offset the costs of remediation, and it is negative for properties with low market value and high cleanup liability. An evaluation of the R2V for any property places it on a spectrum of 'brownness' from being financially upside down to profitable. For the purposes of characterizing the financial feasibility of the different brownfield typologies, this spectrum can be simplified into three categories:

Brown—Properties where the cleanup costs far exceed the potential value that can be generated on the property.

Tan—Properties where the redevelopment value is financially close to offsetting the costs of addressing environmental contamination.

Green—Properties that have great enough potential to generate revenue that the costs of remediation can be covered and still generate a profit.

Since the brownfield typologies are informed by location and redevelopment potential, the potential value each category can be assumed to lie within a relatively narrow range. The level of contamination and costs for remediation can vary widely on any given brownfield property. It is challenging to narrow the cleanup cost range without detailed study of an individual property. It can be generally assumed that properties with higher redevelopment potential will generally fall into the Tan and Green categories of financial feasibility, while properties with lower value more commonly fall into the Brown.

Methodology

A financial analysis of the brownfield typologies will be conducted in the next phase of this project. This analysis will develop a model that incorporates land values based on location in different employment geographies along with cleanup costs. The analysis will be based on a combination of study of the real estate market, cost analysis of brownfield cleanup projects, and assumptions based on best professional judgment.

4 DEVELOPMENT TRENDS

This section is focused on outlining development trends and forecast expectations for Portland through the year 2035. The analysis is based on the recently released draft Portland Economic Opportunities Analysis (EOA). This analysis begins with a brief review of national economic experience and employment forecasts. This is followed by discussion of economic development trends and forecast expectations specific to Portland and a review of brownfield redevelopment experience city-wide in recent years. Review of development trends concludes with consideration of barriers to brownfield development experienced nationally as well as locally.

Note: It is important to note that the figures used in this analysis were based on the draft EOA dated March 2012. There has been a continued effort by the City and its consultants to refine and finalize the EOA subsequently; however the March figures represent the most complete analysis available at the time of this writing.

4.1 National Trends & Forecast

Both nationally and regionally, employment growth has not occurred at an even pace over time. While this discontinuity of experience over the last approximately 30 years has made it more difficult to forecast future conditions, the expectation remains that job growth over the long-term will match needs of the population for labor force participation and employment. Of specific note is that:

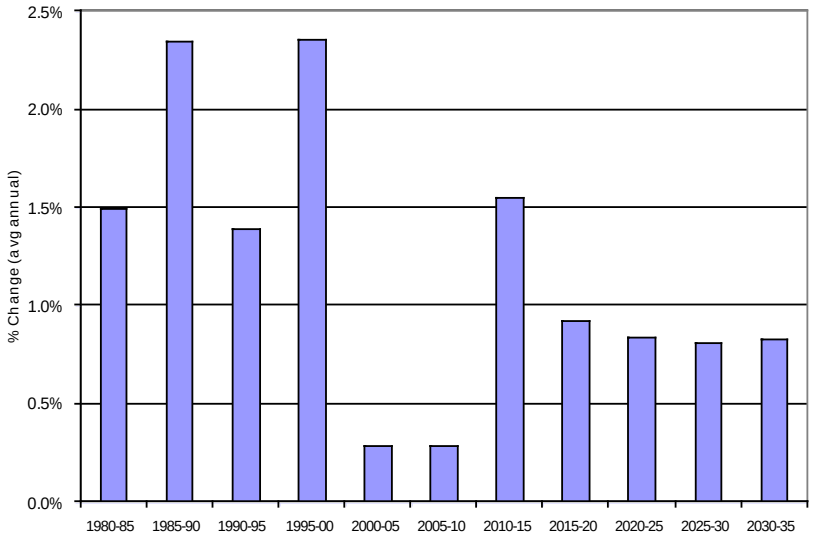
- Over the 25-year period of 1980-2005, employment across the U.S. increased at an average annual rate of 1.6% per year, reflecting a particularly rapid 1.9% rate of job growth during the 1980s. The 1980-90 time period also coincided with entry of a large baby boom cohort into the job market.

- Since 1990, job growth nationally has slowed to a more modest 1.3% annual rate from 1990-2005. During the first half of this decade (2000-2005), job growth was even more modest averaging 0.3% per year, reflecting a post-2001 period of economic contraction followed by a slow recovery.

- Looking forward, Metro's regional forecast is based on national job growth remaining at a similarly anemic pace through 2010 (reflecting rapid run-up to 2007 followed by the current recession). The national forecast predicts an economic recovery period for 2010-2015 with relatively strong anticipated job growth (1.5-1.6% per year) that declines over time to a rate of about 0.9% by 2025-2035 (Figure 4-1).

At these rates of projected employment growth, the U.S. would have about 173.5 million non-farm jobs by 2035, an increase of just under 40 million jobs (or 30% gain) compared to 2005 conditions.

Figure 4-1. U.S. Non-Farm Employment Growth Rates (1980-2035)



Source: Global Insight, 2008 QR US Long-Term Outlook, as compiled by Metro and used as a basis for regional employment growth projections.

4.2 Portland Development Trends & Forecast

Portland's EOA began with an analysis of recent employment trends within Portland over the last employment cycle of 2000-2008. Some citywide job changes clearly have paralleled those of the nation and/or region. However, this review clearly indicates that Portland's position as the largest city in the region and state has created distinctive market niches with opportunities, as well as limitations, affecting future job and development prospects.

4.2.1 Employment & Development Trends of Last Decade

In 2000, an estimated 389,520 persons worked at jobs within Portland. By 2008, the in-city job count increased to 392,640 for a net gain of 3,120 jobs over the last economic cycle. Table 4-1 reports employment at the detailed sector level with the 2008 distribution and net change both in terms of numerical change and annual average growth rate (AAGR).

As noted, this 2000-08 time period of the last decade corresponded to the most recent economic cycle of the region and nation, representing a peak-to-peak period in employment both citywide and for Multnomah County. This was a period of economic downturn early in the decade, followed by rebounding job growth through mid-decade and then substantial job losses with the recession after 2008.

Table 4-1. Portland Citywide Employment (2000-08)

	NAICS		2000	2008	2008 Distrib.	Change Net	AAGR
Industrial	11	Agriculture	180	210	0%	30	1.9%
	22	Utilities	3,960	2,580	1%	(1,380)	-5.2%
	23	Construction	19,840	18,380	5%	(1,460)	-1.0%
	31	Man: food, textile, apparel	5,990	5,800	1%	(190)	-0.4%
	32	Man: wood, petrol, chemicals	9,120	6,740	2%	(2,380)	-3.7%
	33	Man: metal, machine, computer	24,670	17,800	5%	(6,870)	-4.0%
		Manufacturing subtotal	*39,780*	*30,340*	8%	*(9,440)*	*-3.3%*
	42	Wholesale Trade	25,510	20,380	5%	(5,130)	-2.8%
	48	Transportation	19,770	15,650	4%	(4,120)	-2.9%
	49	Transport & Warehousing	9,160	8,010	2%	(1,150)	-1.7%
		Industrial subtotal (21-42, 48,49)	*118,200*	*95,550*	*24%*	*(22,650)*	*-2.6%*
Retail	44	Retail	22,130	22,200	6%	70	0.0%
	45	Retail: Dept, misc.	14,940	10,830	3%	(4,110)	-3.9%
		Retail subtotal (44,45)	*37,070*	*33,030*	*8%*	*(4,040)*	*-1.4%*
Services	51	Information	12,350	11,570	3%	(780)	-0.8%
	52	Finance & Insurance	21,390	18,810	5%	(2,580)	-1.6%
	53	Real Estate	9,870	8,580	2%	(1,290)	-1.7%
	54	Prof., Scientific, Tech Services	25,530	27,200	7%	1,670	0.8%
	55	Management	6,820	14,590	4%	7,770	10.0%
	56	Admin Support, Waste	14,020	21,770	6%	7,750	5.7%
	61	Education	29,640	35,510	9%	5,870	2.3%
	62	Health & Social Asst.	40,960	49,150	13%	8,190	2.3%
	71	Arts, Enter., Recreation	6,200	6,280	2%	80	0.2%
	72	Accommodation & Food	30,410	35,770	9%	5,360	2.0%
	81	Other Services	17,190	17,210	4%	20	0.0%
		Service subtotal (51-81)	*214,380*	*246,440*	*63%*	*32,060*	*1.8%*
Public	92	Public Administration	17,110	17,500	4%	390	0.3%
Other	99	Unclassified?	2,760	120	0%	(2,640)	-32.4%
		Total	389,520	392,640	100%	3,120	0.1%

Source: Oregon Employment Department, E. D. Hovee & Company. Data is rounded to the nearest 10 jobs and reflects jobs covered by unemployment insurance, equating to about estimated 85% of the workforce.

For the entire 2000-08 time period, overall job growth was experienced at relatively low rates for Portland as well as for the state and nation, certainly in comparison with the prior decade of the 1990s. In effect, Portland captured only about 5% of the net job growth in the region, well below its current share of 38% of all jobs in the 7-county Portland Primary Metropolitan Statistical Area (PMSA).

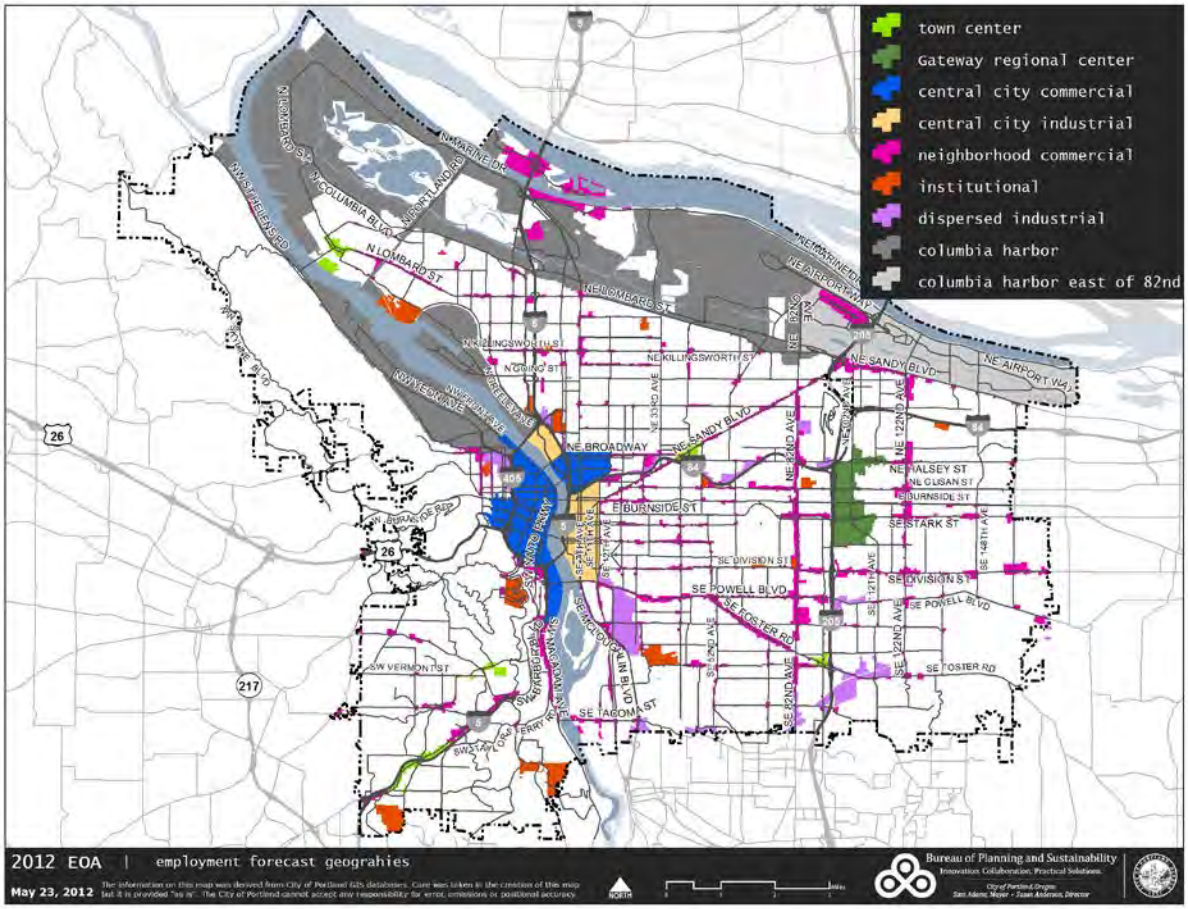
Numerically and in percentage terms, the strongest employment growth was experienced in the service sectors. In contrast, declining employment was

noted for industrial and retail sectors with little change in public administration job levels.

4.2.2 Portland Employment Geographies

Changes in employment by sector are also reflected in varied patterns of development by employment geography across Portland. With the EOA, employment geographies have been broadly grouped into Central City, Industrial, Neighborhood Commercial, Institutional, and Residential categories (Figure 4-2).

Figure4-2. Portland Employment Geographies



Key observations of note include the following:

Central City—With 107,600 jobs, the Central City Commercial geography encompassed 27% of Portland's job base in 2008. With a 0.1% average annual growth rate between 2000-2008, employment increased at about the same rate as employment increased citywide over the same time period.

- With nearly 66,400 jobs, the Central Business District + South Waterfront comprises the largest Central City subarea, although this core submarket experienced a loss of an estimated 3,100 jobs from 2000-08. The most rapid job growth occurred within the River District submarket (up by 2.1% per year), followed by the Lloyd District.

- Two Central City sub-districts, Central Eastside and Lower Albina, are included within the Central City Incubator geography. These are often referred to as "incubator" rather than heavy industrial districts and have out-performed the overall Central City area with annual job gains of nearly 3% and 2% per year respectively.

Urban Centers—Comprised just 5% of citywide employment in 2008 and experienced job growth averaging 1.4% per year. Of the six urban center submarkets profiled, Gateway has the largest employment base with about 9,500, followed by Hollywood at 6,500 and West Portland at 2,600.

- The highest levels of employment growth since 2000 are indicated for Hollywood and Lents Town Center, both averaging employment gains of better than 5% per year. Gateway also experienced employment growth, but at a much lower growth rate. The other urban centers experienced relatively flat to declining employment.

Institutions--Excluding PSU and Adventist Hospital, accounted for over 35,200 jobs in 2008 (nearly 9% of citywide employment), with job growth averaging 3.6% per year from 2000-08.

Industrial Areas--Comprise a total of 119,500 jobs (or better than 30% of employment citywide). Overall job growth has occurred at about the citywide average of 0.1% per year but with wide variation between districts.

- With more than 61,600 employees, the Columbia Harbor geography accounts for more than one-half (52%) of the Industrial total (or 16% of all employment citywide). The Columbia Corridor east of NE 82nd Avenue accounts for more than 19,400 jobs with Dispersed Industrial at 17,200. The two Central City Industrial (or incubator) districts account for 18,000 and 3,300 jobs respectively.

- Columbia Harbor reports some job loss averaging close to 1% per year, with even more rapid attrition for Dispersed Industrial. Job gains of close to 3% per year are noted for Columbia East of 82nd. Employment has increased 0.1% per year in all the Industrial areas combined. As noted, both the Central City Incubator districts have experienced employment gains.

- Harbor Access Lands are shown as a subarea (or subset) to the Columbia Harbor employment area. Harbor Access Lands are

riverfront industrial lands in the Portland Harbor and along the Columbia River. As of 2008, Harbor Access Lands accounted for an estimated 9,300 jobs, approximately 15% of Columbia Harbor employment. From 2000-08, Harbor Access Lands experienced declining employment at a rate averaging 2.4% per year, a substantially more rapid rate of job loss than for the entire Columbia Harbor geography. Reported employment losses were most substantial in manufacturing, followed by transportation, warehousing and wholesale trade. It is notable that a separate analysis indicates that the economic activity in the Portland Harbor grew at 1.6% per year during approximately the same timeframe (2002 to 2008). During that same time period, cargo volumes increased by 4.8% per year.1 As addressed more directly with the EOA land demand analysis, employment may not be the best indicator of land needs in the harbor area which fulfills a major transportation role both locally and regionally.

Neighborhood Commercial—With 70,400 jobs or 18% of citywide employment, the Neighborhood Commercial geography has experienced net job loss since 2000. Of the neighborhood-related employment activity, nearly 56% of jobs are indicated as located in Commercial Corridors, followed by Dispersed Commercial.

- Commercial Corridors account for the largest base of neighborhood activity with just over 39,000 jobs, but lost jobs at a rate averaging 1.5% per year. Commercial Nodes (about 20 key intersections) supported 9,600 jobs in 2008 or 14% of the neighborhood-related jobs total. Taken together, Neighborhood Commercial areas experienced a net loss of 1,900 employees from 2000 to 2008 coming primarily from reduced employment in Commercial Corridors.

- More than 38,900 jobs are reported for Residential areas plus open space. The majority of these jobs are in Residential areas which account for just under 10% of citywide employment. Job losses are exhibited in every employment sector, except public sector employment.

4.2.3 Portland EOA Forecast

Review of past employment trends set the stage for the primary purpose of the EOA, the determination of future employment growth and related needs for industrial and commercial land. Key steps in this forecast process involved consideration of Portland's capture of regional employment growth, resulting in-city forecast allocations, and reconciliation of land needs with vacant and redevelopable supply (including brownfield sites).

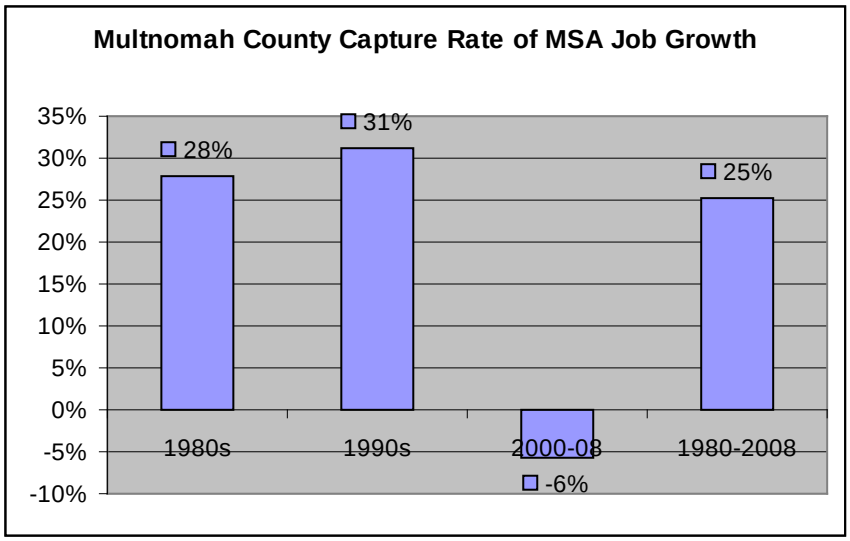
[1] EcoNorthwest, *Portland Harbor Industrial Land Supply Analysis*, February 2012.

Portland Capture of Regional Employment Growth

A key economic and policy question addressed by the EOA is whether future employment growth and development will reflect conditions of the last decade or the longer term experience of the last several decades, coupled with region-wide growth management expectations.

This long-term retrospective is based on county employment data because reliable, comparable data for Portland is not available before 2000, due both to changes in data reporting and major annexations by Portland in the 1980s and 1990s. Figure 4-3 illustrates the degree to which short-term (2000-08) job losses countywide appear inconsistent with long-term trends.

Figure 4-3. Multnomah County Capture Rate of Regional Job Growth (1980-2008)



Source: City of Portland Bureau of Planning and Sustainability, from Oregon Employment Department Quarterly Census of Employment and Wages (QCEW) data.

The EOA forecast is predicated on a long-term linear trend of employment change that includes, but extends beyond, what appears to be the anomalous experience of 2000-08. In effect, if Multnomah County's long-term linear job growth pattern were to continue along the full 28-year time line, 184,000 new countywide jobs would be added between 2010 and 2035, reflecting a 34% anticipated capture rate of new PMSA covered employment.

In 2008, Portland accounted for 87% of Multnomah County employment, up from 86% in 2000. Assuming Portland has a slightly declining share of county jobs over time, estimated at 82% of new Multnomah County jobs from 2010 to 2035, 151,000 new Portland jobs would be added in the forecast period, representing a 28% Portland capture rate of PMSA job growth to 2035.

Separate from this BPS analysis, Metro forecast modeling resulted in an employment allocation of an added 147,000 jobs for Portland between 2010-35, indicating a slightly smaller 27% capture of forecast PMSA job growth. Based on this comparison, the Portland EOA is consistent with the Metro projection.

Employment Forecast

Metro's updated baseline forecast anticipates that regional employment increases from just under 1 million jobs in 2010 to nearly 1.5 million in 2035, a gain of over 537,000 jobs, with an average annual growth rate in the range of 1.8% per year over the 2010-2035 period.

Metro allocates 517,000 of these future jobs by 2035 to Portland. When compared with actual 2010 employment of 370,000 jobs, the projected Portland job gain is approximately 147,000 jobs over the 2010-35 forecast period which represents an annual average growth rate of 1.3% and a 27% capture rate of regional employment growth.

In effect, the forecast reflects an expectation of a continued, but relatively slower, decline in the Portland's overall share of regional employment. In 2010, Portland had nearly 39% of the region's job base. With the EOA forecast, the in-city share of the region's job base would decline somewhat to 35% by 2035.

While each of Portland's job sectors has varied shares of regional employment, the allocation assumes that each sector's proportion of corresponding regional employment declines at a similar rate over the 25-year forecast period (Table 4-2). As has occurred over the last 2-3 decades, the institutional sectors (health and education) account for a substantial share of forecast employment growth at nearly 53,000 new jobs or 36% of the net increase. While the manufacturing sector declines slightly as consistent with national and regional forecast expectations, the warehousing and distribution sectors are expected to see strong growth with over 16,000 net new jobs by 2035.

Table 4-2. City of Portland Employment Forecast by Sector (2010-35)

Employment Sector	2010	2035	Job Change 2010-35	Avg Rate of Growth 2010-35
Agriculture & Mining	392	357	(35)	-0.4%
Construction	14,224	21,765	7,541	1.7%
Manufacturing	25,035	24,328	(707)	-0.1%
Wholesale Trade	18,009	23,250	5,241	1.0%
Retail Trade	31,060	33,309	2,249	0.3%
Transportation, Warehousing & Utilities	23,676	35,345	11,669	1.6%
Information	9,640	13,906	4,266	1.5%
Finance	17,048	24,524	7,476	1.5%
Real Estate	7,946	15,527	7,581	2.7%
Professional Services	26,943	39,268	12,325	1.5%
Management	14,322	21,910	7,588	1.7%
Administrative & Waste Services	18,449	28,404	9,955	1.7%
Educational Services	37,937	61,838	23,901	2.0%
Health & Social Services	50,616	79,702	29,086	1.8%
Arts, Entertainment & Recreation	6,741	8,582	1,841	1.0%
Accommodation & Food Services	35,102	44,686	9,584	1.0%
Other Services	16,802	23,318	6,516	1.3%
Government (Civilian)	15,498	16,422	924	0.2%
TOTAL EMPLOYMENT	**369,440**	**516,440**	**147,000**	**1.3%**
City Share of Portland Metro Employment	39%	35%		

Source: E. D. Hovee & Company, LLC based on Metro Gamma forecast, November 2011.

Industrial & Commercial Land Demand

Portland's EOA translates this forecast employment growth into demand for additional employment related development and land demand (Table 4-3). After accounting for jobs that locate in residential areas (schools, home occupations, non-conforming uses), there is an estimated demand for 2,660 acres of employment land in Portland, with over half of it in industrial areas.

Portland serves as a key freight distribution hub on the West Coast. As a result, in addition to the building space and related land needed for employment uses, additional land is needed for shipping/transportation related facilities. Air, marine, and rail terminals are needed to support the overall traded sector economy, where land needs relate more directly to increasing transportation throughput than on-site employment growth.

These types of freight transportation drivers are treated as separate line items of land demand, because they are estimated primarily by transportation throughput. They also represent specialized, land-intensive building types that do not match the typical building needs of other transportation sector employment growth. With these transportation-driven factors included, an additional 580 acres of land is identified as needed for these facilities and is added to the demand for industrial land.

Table 4-3. 2035 Employment Forecast and Land Demand

Aggregate Geography	Jobs	% of Total		Acres	% of Total
Central City	46,480	32%		160	6%
Industrial	32,910	22%		1,410	53%
Commercial	36,210	25%		710	27%
Institutions	23,360	16%		380	14%
Residential	8,040	5%		NA	
Total	147,000			2,660	100%

Traded Sector Support Facilities	Acres
Rail Yards	200
Marine Terminals	350
Airport Facilities	30
Total	580

Note: Aggregate employment geographies reflect combinations as follows: Central City includes Central City Commercial and Incubator geographies; Industrial includes the Columbia Harbor, Columbia East of 82nd Avenue, and Dispersed Industrial; Commercial includes Gateway Regional Center, Town Centers and Neighborhood Commercial. Also noted is that modest adjustments to geographically based allocations may be made pending BPS Commission review of the March 2012 draft EOA.

Source: E.D. Hovee & Company, LLC.

Employment Land Supply

The EOA compares Portland industrial and commercial land needs with the existing inventory of vacant and redevelopable property, the Buildable Lands Inventory (BLI) described in Section 1 of this report. The BLI looks at the difference between existing and allowed development to determine the remaining development capacity under the current comprehensive plan (Table 4-4). The capacity is reduced to account for constraints such as infrastructure, brownfields, and natural resource protection areas.

Development capacity is also reduced if the site is likely to be developed as a mixed-use employment/residential building by discounting the portion of building space that would be residential space based on past development trends. For some employment geographies, development capacity is further adjusted for market factors in some areas to reflect zoned capacity that is more than is currently being developed or expected to be developed in the foreseeable future.

Citywide development capacity is distributed across the employment geographies. The employment land supply is calculated in three stages:

- Base supply (of vacant and underutilized parcels)—estimated as having development capacity for up to 251 million square feet.

- *Less* constrained supply (for identified environmental, infrastructure, historic landmarks, low constraints such as view corridors and historic district designation, greenway designation, and brownfield constraints)—reducing the maximum remaining developable capacity to 183 million square feet

- *Less* market adjustments in development densities (for employment geographies where development is occurring at well below zoned capacity as with Gateway Regional Center, Town Centers and Neighborhood Commercial)—for a final market adjusted capacity of about 101-102 million square feet.

Table 4-4. Summary of 2035 Employment Development Capacity (Adjusted for Constrained Supply & Market FARs)

Aggregate Geography	Bldg Sq Ft	% of Total
Central City	37,837,000	37%
Industrial	19,944,000	20%
Commercial	33,139,000	33%
Institutions	10,676,000	11%
Total	101,596,000	100%

Source: City of Portland Bureau of Planning and Sustainability.

Brownfield redevelopment could add 33% more capacity in the Columbia Harbor

In the absence of brownfield constraints, an added development potential of approximately 6.1 million square feet would be added to the Portland's overall employment development capacity. While this represents an overall 6% add-on across all employment geographies, the potential added development capacity is greatest for the Columbia Harbor area (at an added 33%). For Harbor Access Lands (a subset of the Columbia Harbor), the potential add-on to developable supply is even greater at an added 48%.

Note that industrial development capacity is counted for vacant parcels only and not redevelopment sites. If all vacant and redevelopment sites across Portland are included, the total building square footage capacity affected by brownfield issues is an even more substantial 34 million square feet. This expanded estimate includes existing uses on underutilized properties with brownfield designation as well as the development capacity of vacant properties.

Land Needs Reconciliation

By subtracting effective land supply from demand, it is possible to determine whether and to what extent Portland's employment land base will be adequate to serve forecast needs over the 2035 planning horizon. In cases where there is adequate inventory, a land surplus is indicated; where the inventory is not adequate, a resulting deficit is calculated.

Citywide, forecast employment land demand exceeds vacant and redevelopable land supply by an estimated 146 acres (Table 4-5). However, the extent of land shortages is potentially much greater as land is not necessarily distributed in proportion to where the demand is greatest.

Specifically, additional policy changes, zoning capacity, public investments, and development incentives will be needed to address capacity shortfalls in the **Central City Incubator, Columbia Harbor (especially Harbor Access Lands), Dispersed Industrial, Town Centers,** and **Institutional** geographies (Figure 4-4).

Portland's EOA notes that the Comprehensive Plan update will need to identify changes to policy, regulations or programs to address these deficits and meet the forecast demand. With respect to creation of added industrial capacity, opportunities are identified as including:

- Supporting remediation and reuse of brownfields;
- Making progress on the Portland Harbor Superfund cleanup program;
- Maintaining industrial district sanctuary designations; and
- Giving priority to investments that yield greater utilization of existing industrial properties

All four of these recommendations bear directly on the financial feasibility analysis to be conducted as subsequent phases of this Portland Brownfield Assessment.

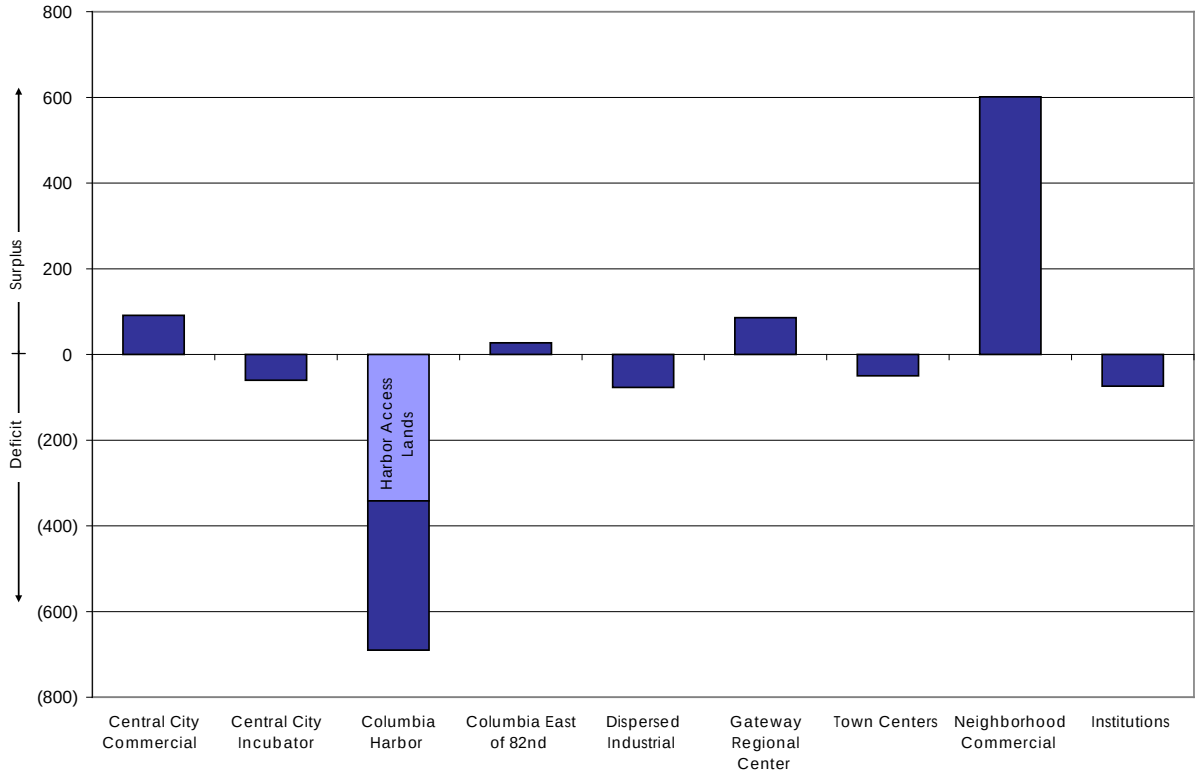
Table 4-5. 2035 Employment Land Needs (Demand-Supply Reconciliation)

Employment Geography	Demand		Land Supply	Surplus/Deficit	% Capacity
Central City Commercial	60		151	91	252%
Central City Incubator	100		40	(60)	40%
Columbia Harbor	*1,490*		800	(690)	54%
Harbor Access Lands	*450*		*108*	*(342)*	24%
Columbia East of 82nd	360		387	27	108%
Dispersed Industrial	140		63	(77)	45%
Gateway Regional Center	50		136	86	272%
Town Centers	140		90	(50)	64%
Neighborhood Commercial	520		1,121	601	216%
Institutions	380		306	(74)	81%
Total	3,240		3,094	(146)	
Aggregate Geography					
Central City	160		191	31	119%
Industrial	1,990		1,250	(740)	63%
Commercial	710		1,347	637	190%
Institutions	380		306	(74)	81%
Total	3,240		3,094	(146)	

Note: Columbia Harbor includes 630 acres and Harbor Access Lands 400 acres for regional transportation needs.

Source: Bureau of Planning and Sustainability.

Figure 4-4. 2035 Employment Acreage Surplus/(Deficit) by Geography



Source: E.D. Hovee & Company, LLC and Bureau of Planning and Sustainability.

Columbia Harbor has the greatest land supply deficit, but it can be largely offset by putting brownfields back to productive use.

Employment Land Supply & Brownfields Significance

In terms of acreage, the potential added land that could be put into productive use if all further brownfield constraints were removed is estimated at 326 acres city-wide. The Columbia Harbor employment geography is most affected by brownfields – at an added 267 acre potential. Currently, the EOA estimates that approximately 40% of industrial brownfields will redevelop through 2035 consistent with past experience. The 267 net add figure represents the maxed added potential of going from 40% brownfield redevelopment to 100%.

4.3 Brownfield Redevelopment Rate Analysis

Pivotal to Portland's capacity to accommodate forecast growth is the ability for development to occur not only on vacant and unconstrained greenfield sites but, increasingly, on constrained and previously developed sites, as well. The question has been: how much redevelopment can reasonably be expected to occur on sites with varied constraints and with varied experience in terms of greenfield status or previous development?

To ground-truth observed experience, redevelopment rates were calculated using Metro's Regional Land Information System (RLIS) tax lot data for the years 1999 and 2011. Constraints evaluated included environmental, infrastructure, historic landmarks, low constraints such as view corridors and historic district designation, greenway designation, and brownfields as defined by the BLI.

Properties were also differentiated by employment geography and level of prior development, as vacant or previously developed at low or higher levels of development intensity. The focus of this discussion is on redevelopment experience with sites partially or fully constrained by brownfields as defined by the BLI.

4.3.1 Redevelopment Analysis Methodology

As noted, the redevelopment analysis is based on development activity from 1999-2011 based on the development status of a tax parcel in 1999 – Vacant, LoFAR, or HiFAR. The LoFAR category comprises sites determined to be underutilized or redevelopable and is defined as sites with less than 20% of the building square footage allowed by zoning (based on applicable zoned floor area ratios (FARs)) calculated on existing building square footage in 1999. HiFAR properties are defined as sites with existing (1999) FARs in excess of 20% of zoned capacity.

Metro RLIS data is used to create a side-by-side comparison of tax lots with a new year built or for which there was more than 50% building square footage added (as opposed to a minor addition). A review of the RLIS data revealed a number of parcels for which there was no building square footage indicated in 1999 but had a 1999 building value of over $25,000, indicating some kind of improvement. Tax parcels greater than 10,000 square feet in size with missing data were cross-checked with development permit data to better determine which parcels were: a) previously developed in 1999 with no added building space developed through 2011, or b) previously developed but added some amount of net new building space since 1999.

This analysis was limited to parcels for which there was comparable data regarding building square footage and land and improvements valuation by matching parcel numbers in 1999 and 2011. Excluded were parcels for which there was not a matching tax parcel identifier or for which other data is missing in either year.

Also excluded are parcels for which building square footage was increased by less than 50% or no indication of a change in the year built from 1999-2011. For these reasons, the analysis should be viewed as a conservative representation of development activity on employment lands over this time period.

Using this revised parcel dataset totaling 10,779 acres citywide, development activity was assigned to the type of site in 1999 – Vacant, LoFAR, or HiFAR. The proportion of development activity that occurs on Vacant or LoFAR is development that would occur on underutilized sites.

There is an added caveat that properties within an industrial sanctuary are limited to vacant sites and that commercial outside of the Central City and transit corridors was subsequently assigned to sites with less than 10% rather than 20% of zoned capacity. While of interest for analysis, development that has taken place on HiFAR parcels is on sites not considered underutilized with the BLI.

4.3.2 Redevelopment Analysis Findings

Out of 10,779 commercial and industrial acres evaluated citywide, 2,346 acres (including both undeveloped and developed sites) were identified as potential brownfield sites (with matching parcel numbers for both 1999 and 2011). Of this acreage, an estimated 915 acres are noted as having experienced new development or substantial redevelopment over the 1999-2011 time period.

As illustrated by the following chart, brownfield redevelopment rates were then calculated by employment geography and by development status of the property in 1999 (Table 4-6).

Table 4-6. Brownfield Redevelopment Rates

Forecast Geographies	Development Rates Vacant	LoFAR	HiFAR	Total	Vac+Lo
EOA Geographies					
Central City Commercial	89.0%	0.0%	55.4%	62.1%	76.8%
Central City Incubator	94.8%	2.3%	0.0%	8.3%	9.0%
Columbia Harbor	20.2%	32.5%	0.0%	30.3%	30.5%
Columbia East	56.5%	17.6%	0.0%	41.1%	41.4%
Dispersed Industrial	100.0%	14.2%	14.2%	39.7%	44.3%
Neighborhood Commercial	65.5%	0.0%	22.5%	24.6%	44.5%
Town Centers	100.0%	0.0%	0.0%	10.9%	70.7%
Regional Center	63.1%	NA	12.2%	13.3%	63.1%
Institutions	NA	NA	100.0%	100.0%	NA
Total	**35.8%**	**30.9%**	**64.5%**	**39.0%**	**31.9%**
Aggregate Geographies					
Central City	89.5%	2.0%	52.8%	46.0%	39.0%
Industrial	31.3%	31.6%	5.3%	31.2%	31.6%
Commercial	70.0%	0.0%	19.1%	21.6%	48.8%
Institutions	NA	NA	100.0%	100.0%	NA
Total	35.8%	30.9%	64.5%	39.0%	31.9%

Note: For purposes of this analysis, vacant sites are those designated as vacant by RLIS data as of 1999, including parcels with less than $25,000 building value. LoFAR sites are those with floor area ratio of less than 20% of zoned FAR, HiFAR sites are sites with floor area ratios of more than 20% of zoned FAR – as of 1999. Industrial redevelopment rates are calculated for vacant sites only.

Source: E.D. Hovee & Company, LLC and Bureau of Planning and Sustainability.

Citywide, approximately 39% of brownfield constrained properties that were evaluated exhibit new development or significant redevelopment between 1999-2011. However, the experience is widely varied depending on employment geography and 1999 vacant or development status of the property:

- Approximately 36% of brownfield constrained properties identified as Vacant in 1999 experienced some level of new development from 1999-2011 with the highest levels of redeveloped (at virtually 100%) noted for the Town Center and Dispersed Industrial geographies (where very little vacant acreage was available). In contrast only 20% of Columbia Harbor vacant sites with brownfields exhibited new development from 1999-2011.

- Just under 31% of LoFAR brownfield constrained properties indicate significant new development (where building square footage increased by at least 50%). For commercial geographies, this proved to be a category of limited application as there was very little

previously developed commercial property with 1999 FARs at less than 20% of zoned capacity.

- For industrial properties, redevelopment rates on previously developed LoFAR properties ranged from 14% for the Dispersed Industrial geography to about 33% in Columbia Harbor. The Columbia Harbor LoFAR rate exceeds that of vacant brownfield properties, perhaps reflecting greater willingness of existing uses on contaminated properties to invest (where there is an existing liability) than new owners on vacant sites to take on this liability.

- Overall, a relatively high 65% redevelopment rate is indicated for HiFAR properties citywide. However, this is strongly influenced by the Institutional geography, which had over 80% of the HiFAR but brownfield constrained property and where there was no vacant or LoFAR opportunity.

- High redevelopment rates for brownfield sites were also indicated for Central City Commercial, where vacant and LoFAR land is extremely limited. Examples would include brownfield redevelopment in the Pearl and South Waterfront districts of the Central City. HiFAR is not applicable to industrial sanctuary properties where there is no maximum zoned capacity—all redevelopment sites are classified as LoFAR.

Sites constrained by brownfields are often also associated with other infrastructure and/or environmental constraints. For the EOA, redevelopment rates for sites with an added constraint were discounted by an added 10%. Sites with two or more added constraints were discounted by 20% (in addition to the redevelopment rate indicated for brownfields).

4.3.3 Redevelopment Rates Applied to EOA Forecast

A follow-on question addressed by the EOA is the degree to which redevelopment of sites constrained by brownfields should be anticipated over a 2010-35 forecast horizon. While serving as a starting point for this determination, the 1999-2011 development experience on vacant and LoFAR sites was refined in several respects for application to future forecast expectations.

A process similar to that illustrated for brownfield properties was followed in determining redevelopment rates for the five other categories of development constraints considered across Portland's employment geographies. An initial refinement for all constraints was to apply the experience of the aggregate geographies rather than more detailed employment geographies, where "outliers" could substantially influence results.

Other key assumptions are illustrated by the columns provided with the following EOA brownfield development rate chart:

- Column A begins with the actual redevelopment rates observed over the 1999-2011 time frame for brownfield sites as compared with sites that have no development constraints.

- Column B calculates the development rate for brownfield sites in relation to the rate observed for unconstrained sites. Where the brownfield rate exceeds that of the unconstrained sites, the relationship is capped at 100% of unconstrained sites.

- Column C shows the incremental FAR at which brownfield sites developed as compared with unconstrained properties.

- Column D calculates the FAR development rate for brownfield sites as a percentage of the FARs for unconstrained sites. For all aggregate geographies, the incremental FARs associated with brownfield sites are below what was experienced for unconstrained sites.

- Column E calculates a composite rate of land developed (column B) multiplied by FAR experienced with incremental development (column D).

- Column F provides EOA adjusted constraints reflecting rounding and other BPS testing based on review of project files to control for outlier experience.

Table 4-7. EOA Brownfield Development Rate Calculations (2010-35)

	(A) 99-11 Land Development Rate	(B) Development Rate as % of Unconstrained	(C) 1999-2011 FAR	(D) 1999-2011 FAR % of Unconstrained	(E) 2010-2035 Composite Rate	(F) EOA Adjusted Constraint
Brownfields						
Central City	39.0%	100.0%	2.14	92.1%	92.1%	**90%**
Industrial	31.3%	61.8%	0.20	62.9%	38.9%	**40%**
Commercial	48.8%	100.0%	0.19	47.9%	47.9%	**50%**
Unconstrained						
Central City	16.6%	100.0%	2.32	100.0%	100.0%	
Industrial	50.6%	100.0%	0.32	100.0%	100.0%	
Commercial	46.6%	100.0%	0.39	100.0%	100.0%	

Note: Industrial rates are calculated for vacant properties only. Central City and Commercial district rates are calculated for vacant and LoFAR properties. Institutional rates were excluded from the final analysis due to the unique characteristics of these large site holdings and reliance on campus master plans.

Source: E.D. Hovee & Company, LLC and Bureau of Planning and Sustainability.

The results of this analysis are that Central City properties with brownfields are expected to develop at 90% of the level of intensity as unconstrained properties through 2035. This reflects limited land availability of remaining vacant and LoFAR property in the Central City combined with the high desirability of brownfield sites (as in the Pearl and South Waterfront areas).

For other Commercial geographies citywide, development on brownfields is expected to occur at about 50% the level of development on unconstrained sites. For industrial, development is anticipated to occur at 40% of what could be expected with unconstrained properties.

4.3.4 Adjusted Findings

The redevelopment rates calculated with the EOA may be viewed as representing a conservative estimate of commercial and industrial brownfield sites in Portland. To this might be added other sites with historical uses often associated with some level of contamination. Depending on determinations of a more aggressive brownfields inventory, it may be possible to estimate redevelopment rates realized for these added sites over the 1999-2011 time period, as well.

4.3.5 Added Potential Capacity to Reach EOA Job Targets

As previously described, brownfield redevelopment rates applied with the EOA already have been targeted at 40% for industrial, 50% for commercial and 90% for Central City geographies. Best case, the ability to go from the redevelopment rates as currently applied to **100% redevelopment** of BLI brownfield sites would be the effective gain of 6.1 million square feet of development affecting an approximately 326 acres of added development capacity (Table 4-8).

The greatest added gain in development potential is noted for the Columbia Harbor geography (including Harbor Access lands). With 100% redevelopment of vacant brownfield sites, an estimated 267 acres of land capacity would be added the Columbia Harbor geography (including 52 acres for Harbor Access lands).

The next greatest acreage potential is noted for Columbia east of 82nd Avenue (at 25 acres). Lesser acreage gains are noted for commercial geographies. Central City commercial shows added potential of only an added 4 because 90% redevelopment is already factored into the EOA.

Table 4-8. Maximum Added Capacity With Brownfield Redevelopment to Reach EOA Jobs Targets

Employment Geography	EOA Sq Ft Market Adjusted Capacity	Added Sq Ft Potential @ 100% B-field Redevelopment	% Added Potential Supply @ 100%	EOA Acreage Surplus / (Deficit)	Added Acreage Potential @ 100%
Central City Commercial	35,664,000	849,434	2%	91	4
Central City Incubator	2,173,000	44,860	2%	(60)	1
Columbia Harbor	12,203,000	4,067,249	33%	(690)	267
Harbor Access Lands	*1,600,000*	*772,206*	*48%*	*(342)*	*52*
Columbia East of 82nd	6,747,000	435,881	6%	27	25
Dispersed Industrial	994,000	134,077	13%	(77)	8
Gateway Regional Center	5,617,000	285,181	5%	86	7
Town Centers	2,124,000	62,396	3%	(50)	3
Neighborhood Commercial	25,398,000	262,610	1%	601	12
Institutions	10,676,000	-	0%	(74)	-
Total	101,596,000	6,141,689	6%	(146)	326

Source: E.D. Hovee & Company, LLC and Bureau of Planning and Sustainability. Data is preliminary and subject to refinement.

It is possible that greater non-Central City gains would be shown for Portland commercial geographies if sites with historic use indicating potential for brownfield issues were added to sites in the current Portland BLI. This represents a potential step for added consideration depending on the outcome of discussion regarding adding other non-BLI indicated brownfield properties.

Table 4-9 illustrates the change in Portland's anticipated surplus / (deficit) of industrial and commercial lands at alternative levels of brownfield development: 50%, 70% and 90% as well as a theoretical maximum of 100%. With 100% or 90% brownfield redevelopment, Portland's land shortage (in aggregate) goes from a deficit to a surplus of land. However, this assumes fungibility of land between industrial and commercial sites which may be possible for commercial uses between employment geographies but not as likely for industrial uses to expand into commercial areas.

Table 4-9. Added Capacity to Reach EOA Jobs Targets

Employment Geography	Acreage Surplus / (Deficit) @ 100%	Acreage Surplus / (Deficit) @ 50%	Acreage Surplus / (Deficit) @ 70%	Acreage Surplus / (Deficit) @ 90%
Central City Commercial	95	91	91	92
Central City Incubator	(59)	(60)	(60)	(60)
Columbia Harbor	(423)	(662)	(567)	(471)
Harbor Access Lands	*(290)*	*(342)*	*(326)*	*(302)*
Columbia East of 82nd	52	31	40	48
Dispersed Industrial	(69)	(75)	(73)	(70)
Gateway Regional Center	93	86	86	89
Town Centers	(47)	(50)	(50)	(48)
Neighborhood Commercial	613	601	601	604
Institutions	(74)	(74)	(74)	(74)
Total	180	(112)	(6)	111

Source: E.D. Hovee & Company, LLC and Bureau of Planning and Sustainability. Estimates are preliminary.

The ability to increase redevelopment rates above current EOA projections has the most dramatic effect for the Columbia Harbor area where it could reduce the land deficit from 690 acres (assuming 40% redevelopment) to a smaller deficit of 471 acres (assuming 90% redevelopment).

5 BARRIERS TO BROWNFIELD REDEVELOPMENT

Increasingly, local governments are exploring the role that brownfield redevelopment could play in achieving policy goals ranging from reducing the cost of infrastructure provision to reducing greenhouse gas emissions. However, the challenges associated with brownfield redevelopment continue to affect outcomes and demand practical solutions. This section articulates those challenges, and describes some of the approaches that local governments have taken to overcome them.

5.1 National Perspective

From a market point of view, brownfields redevelopment is generally regarded as a sub-set of urban redevelopment, i.e. the infill/smart growth alternative to suburban sprawl. While this paradigm ignores small town and rural sites, it is still a useful perspective for the majority of brownfields sites.

Real estate analysts have documented several trends that are favorable to urban infill redevelopment. In summary, demographic trends favor the urban marketplace because:

- Young people, in general, are waiting longer to form families and have children;
- Gen Y ("twenty-somethings"), in particular, shows strong preferences for living in walkable neighborhoods, with work easily accessed via transit, walking, or short car trips;
- At the other end of the age spectrum, empty nesters are also in the urban demographic, looking for stimulating living situations, contrasted with suburban environments seen as sterile.
- Businesses that rely on a "creative class" workforce are increasingly locating in downtown or in-town settings that are convenient to urban dwellers and the educated workforce.
- In many cities, the outward push of suburban and ex-urban development may have reached a point of diminishing returns. The combination of land use controls, protective measures for natural areas, developer impact fees, and the practical limits of commuting times are all working to reduce the outward push and thereby increase interest in infill/urban redevelopment.
- The generally upward trend of gas prices also favors commute-friendly urban locations.

Residential Trends—The 2012 Urban Land Institute Market Trends report classifies "Infill and in-town housing" as the most promising residential investment and development category.[2] A 2010 US Environmental Protection Agency (USEPA) report on residential construction trends in the 50 largest metro areas found, "In more than half of the largest metropolitan areas, urban neighborhoods had dramatically increased their share of new residential building permits (from 1995 – 2000 to 2003 – 2008)."[3] Portland was one of 12 metro areas where the center city share more than doubled.

Targeted consumer preference surveying by the Robert Charles Lesser group documents the strong urban bias of "Gen Y", and predicts that many urban demand projections will prove to be far too conservative. Adding more evidence, a recent National Association of Realtors survey found that Americans favor walkable, mixed-use neighborhoods, with 56 percent of respondents preferring smart growth neighborhoods over neighborhoods that require more driving between home, work and recreation.

Northeast-Midwest Institute in 2008 tracked a number of brownfields surveys and reports and concluded that, in the mid-2000's there had been a fairly dramatic shift in brownfields reuse, with residential and mixed use now predominant, where industrial projects had comprised a plurality of reuse plans in the 1990's[4]. This change aligns brownfields redevelopment even more closely with smart growth objectives and the previously cited trends that favor urban infill for residential development.

Commercial Trends—The news is not as favorable on the commercial development side. A Brookings Institution report outlines the continuing suburbanization of jobs, despite the creative class niche that many cities have successfully mined: "In the largest metropolitan areas between 1998 and 2006, jobs shifted away from the city center to the suburbs in virtually all industries.[5]"

5.2 Market & Non-market Barriers to Redevelopment

The brownfields marketplace is now maturing, with regulatory issues, in particular, becoming more efficient and predictable. Further, the private sector has responded to the need for investor certainty, providing an array of

[2] Urban Land Institute, Emerging Trends in Real Estate® 2012, available at: http://www.uli.org/sitecore/content/ULI2Home/ResearchAndPublications/EmergingTrends/Americas.aspx

[3] US EPA, Residential Construction Trends in America's Metropolitan Regions, 2010, available at: http://www.epa.gov/smartgrowth/construction_trends.htm.

[4] Paull, Evans. 2008. The Environmental and Economic Impacts of Brownfields Redevlopment. Northeast-Midwest Institute.

[5] Brookings Metropolitan Policy program, Job Sprawl and the Suburbanization of Poverty, March, 2010, available at: http://www.brookings.edu/research/reports/2010/03/30-job-sprawl-stoll-raphael

environmental insurance products, fixed price cleanups, and even three-party transactions (a buyer, a seller, and a third entity that accepts liability).

However, brownfield sites still face greater risk, liability, and regulatory hurdles than non-brownfield sites—the playing field is still unequal. Following are some of the challenges to redevelopment faced on brownfield sites identified through analysis for case studies in the Portland Metropolitan region, discussion with experts in the field, and professional experience.

Financial—To state the obvious, financing is the controlling factor that determines project success or failure. The additional direct costs of remedial actions and the indirect increased carrying costs associated with longer timelines make many brownfield properties financially infeasible to cleanup and redevelopment without some public subsidy. Some of the factors that enter into the financing picture are:

- **Competition with Greenfield Sites**—The added costs and complexity of redeveloping a brownfield site generally makes them financially less attractive than comparable undeveloped (greenfield) properties[6].

- **Cost Overruns**—The uncertainty involved in characterizing and remediating a contaminated site often leads to cleanups exceeding their cost estimates.

- **Timing—**Cleanup costs are typically incurred at the front end of a project before there is any offsetting revenues from a project. Extended project schedules can pose an obstacle to delivering clean property at an appropriate time relative to the real estate market cycle. The interest costs of financing projects over a longer timeframe can also create a significant impact on large projects.

- **Limited Financial Resources to Conduct Investigation and Cleanup—**Obtaining financial participation from responsible parties and/or insurance companies can consume significant amount of time, energy, and cost. There are also complications associated with leveraging and multiple funding sources on a single project.

- **Limited Public Cleanup Funds**—Oregon DEQ, Business Oregon, and the City of Portland have grant and loan programs that can support environmental assessment and cleanup, but these programs have relatively small budgets.

[6] Brownfield/Greenfield Development Cost Comparison Study. 2004. Prepared for Port of Portland, Portland Development Commission, City of Portland, METRO.

- **Property Tax Disincentive**—Oregon property tax assessment rules reduce the taxable value of property for the cost of environmental liability. This effectively makes inaction on contamination financially advantageous and encourages mothballing of properties

- **Other Property Constraints**—Many brownfield sites are located in areas that are already market-challenged for redevelopment. Some sites may have poor access to transportation facilities, be poorly located proximate to the amenities that support higher density redevelopment, or otherwise be unlikely to redevelop, even in absence of the higher costs associated with brownfield clean up.

Uncertainty and Risk—Redevelopment of a contaminated property inherently involves uncertainty and risk related to potential extent of contamination, lack of predictability in regulatory decisions, and potential for federal liability. Uncertainty is a serious liability in the development context, because it has the potential to affect the development timeline, funding sources, and even site design and engineering costs. This uncertainty discourages development, sometimes more than the actual cost of clean-up.

- **Fear of the Regulatory Web.** Owners of contaminated sites are sometimes reluctant to discuss environmental issues with regulatory staff for fear of triggering legal obligations, fines or liability. Rather than proactively addressing potential contamination issues, many property owners have a perception that it is more cost effective to maintain a low profile and delay taking remedial actions.

- **Superfund Overlay**. The designation of the Portland Harbor as a Superfund Site has added a significant layer of complexity and uncertainty to redevelopment of properties on the waterfront and properties that contribute stormwater runoff to the harbor. There is uncertainty regarding remedial actions that may be required and assigned liability.

- **Transaction costs of regulatory process**. Process for site investigation, risk assessment, and study of cleanup alternatives requires a high level of time and resources.

Linking Cleanup & Redevelopment—The most successful brownfields programs are closely tied to economic and community development, i.e. cleanup is not an end in and of itself, but is rather a piece in the redevelopment puzzle. Note the following considerations:

- **Lack of agency coordination.** Uncoordinated or potentially conflicting requirements from multiple agencies involved in

permitting and approving cleanup and redevelopment cause challenges and time delays.

- **Cleanup in Context of Redevelopment.** Requirements for remediation often occur without consideration for demands of redevelopment.

- **Lack of knowledge**. Property owners and developers might not understand the tools and finance mechanisms available to help realize site cleanup and redevelopment, and may not understand the degree to which contamination actually affects redevelopment potential and development costs. Most property owners only go through the process once, so there is always a learning process.

Regulatory Process—A few states have excellent reputations for making the brownfields regulatory process predictable and customer friendly. Some perceptions of the Oregon process are:

- **Land supply and competition**—If the process is too difficult, developers might go elsewhere in the region or country to buy and redevelop property.

- **Outcome-based management and unified permitting**—The process of arriving at an acceptable remediation solution is currently often characterized by delay and poor communication between parties. Additional challenges arise from permitting requirements that require coordination and negotiation with multiple agencies, sometime simultaneously.

- **Liability Release**—The Voluntary Cleanup Program provides a No Further Action letter when cleanup is determined to be complete but does not provide a legal settlement of liability. The lack of a timely pathway to liability settlement can deter property developers from investing in contaminated sites.

5.3 Existing Brownfield Incentives

The State of Oregon, Metro Regional Government, and the City of Portland provide a number of programs that support cleanup and redevelopment of brownfield properties. These programs attempt to address many of the challenges identified in section 5.2, including risk management, financial capacity, education, and agency coordination. The programs can be grouped into those that provide support from regulatory, financial, and technical perspectives (See Figure 5-1).

Figure 5-1

EXISTING BROWNFIELD INCENTIVES IN OREGON

REGULATORY

VOLUNTARY CLEANUP PROGRAM (PPA)
- Streamlined administrative process
- Private party sets schedule and level of state oversight
- No Further Action Letter upon completion (generally suitable documentation for commercial finance underwriting, but not a legal settlement of liability

PROSPECTIVE PURCHASER AGREEMENT (PPA)
- Available to innocent purchasers of contaminated properties that bring financial resources and create substantial public benefit.
- Negotiated agreement between state and private parties on extent of liability, required cleanup actions, and schedule for completion.
- Provides certainty of regulatory decision and liability protection.
- Three types available that provide range of administrative expediency and extent of liability protection.

FINANCIAL

US ENVIRONMENTAL PROTECTION AGENCY (USEPA)
- Assessment Grants (Up to $400K per site)
- Cleanup Grants (Up to $200 K per site)
- Eligible Applicants: Local governments & non-profit organizations

BROWNFIELD REDEVELOPMENT FUND
- Managed by Business Oregon
- Loans & Small Grants
- Eligible Applicants: Public & private entities
- Eligible Expenses: Site assessment & cleanup

OREGON COALITION BROWNFIELD CLEANUP FUND
- Managed by Business Oregon
- Loans & Small Grants (20% Cost Share Required)
- Capitalized by USEPA
- Eligible Applicants: Public & private entities
- Eligible Expenses: Cleanup only

PORTLAND BROWNFIELD REVOLVING LOAN FUND
- Managed by Bureau of Environmental Services Brownfield Program
- Capitalized by USEPA
- In process of being established, eligibility criteria under development

TAX INCREMENT FINANCING
- Urban Renewal Areas

TAX ABATEMENTS
- Enterprise Zone

TECHNICAL

PORTLAND BROWNFIELD PROGRAM
- Phase I & Phase II Environmental Site Assessments on public or private properties
- Outreach & education
- Technical assistance and agency liaison

METRO BROWNFIELD RECYCLING PROGRAM
- Phase I & Phase II Environmental Site Assessments on public or private properties *(No funds currently)*
- Outreach & education
- Technical assistance and agency liaison

DEQ BROWNFIELD PROGRAM
- Site Specific Assessments
- Outreach & education
- Technical assistance and agency liaison

Legend
- Regulatory
- Financial
- Technical

MAUL FOSTER ALONGI

5.3.1 Regulatory

The Oregon Cleanup Law (Oregon Revised Statute 465 and Oregon Administrative Rule 340-122), which is implemented by the state DEQ, is the primary law regulating remediation of brownfields in the state. It establishes the procedural and technical requirements for remediation of contaminated properties. The Cleanup Law incorporates several fundamental policies designed to promote cleanup and redevelopment of brownfields. The most important of these are the Voluntary Cleanup Program, and Prospective Purchaser Agreements.

5.3.1.1 Voluntary Cleanup Program

The Voluntary Cleanup Program (VCP) provides an expedited administrative process in which the schedule and level of involvement of the DEQ is controlled by the project proponent. The VCP Program was authorized by the 1991 Legislature in order to provide willing parties DEQ oversight while they investigate and, if necessary, cleanup contamination from their properties. This cooperative process helps parties move through the process efficiently, and meet sometimes tight funding and redevelopment deadlines. VCP sites may be of low, moderate, or high environmental priority. In this program, DEQ provides active oversight throughout the investigation and remediation through a collaborative process with the participant. DEQ also provides the Independent Cleanup Pathway, a subprogram of the VCP designed for property owners of low- to moderate- risk sites. The Independent pathway is similar to the VCP program in that participants voluntarily enroll. However, DEQ provides little to no oversight in the Independent Pathway, thereby leaving the participant responsible for more liability and risk.

The Voluntary Cleanup Program is the most common administrative pathway for cleanup of brownfield properties. In 2010, DEQ reported that there were approximately 400 active Voluntary Cleanup Program sites, with approximately 300 sites following the traditional VCP, and approximately 100 in the Independent Cleanup Pathway program[7].

The end goal of the VCP is to achieve a No Further Action (NFA) determination. DEQ will issue a NFA letter to the responsible party it if

[7] DEQ. 22nd Annual Environmental Cleanup Report, January 2011. http://www.deq.state.or.us/lq/pubs/docs/cu/AnnualCUReporttoLegislature2011.pdf

determines that the chemicals of concern have been adequately characterized and restored to a level protective of human health and the environment[8]. NFAs are only issued after cleanup activities are completed, reviewed, and approved by a public comment process. The NFA is not a legal settlement of liability, however it is generally accepted by commercial lenders as sufficient assurance that environmental issues have been addressed to allow underwriting of loans. However, NFA determinations may be rescinded or reopened under specific circumstances.

In some instances, NFAs are issued on a conditional basis whereby the property owner must complete specific remediation efforts, engineering, and institutional controls as outlined by the NFA letter. If DEQ finds that these measures have not been successfully completed, the NFA may be revoked. Additionally, NFAs may specifically address individual contaminants and certify successful cleanup as it relates to those toxins mentioned by name in the NFA. If new hazards are discovered on-site, or advancements in scientific knowledge raise new concerns, DEQ may reopen the NFA and impose additional cleanup requirements.

5.3.1.2 Prospective Purchaser Agreement

Prospective Purchaser Agreements (PPA) create a mechanism for innocent parties to negotiate the extent of cleanup and liability settlement with the State before purchasing a brownfield property[9][10]. A PPA is a legally binding agreement between the DEQ and a prospective purchaser or prospective lessee, which limits the purchaser's or lessee's liability under state law for environmental cleanup at the property in exchange for providing a "substantial public benefit" (ORS 465.327).

From the purchaser's perspective, the PPA is a risk management tool that provides certainty about the requirements for cleanup and protection from potential claims. With these protections, a purchaser can have greater certainty about cleanup costs and liability for past releases. PPAs can also satisfy lender concerns and make it easier for a project to obtain outside financing.

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[8] DEQ. Information About DEQ No Further Action Decisions Fact Sheet, updated 2007. http://www.deq.state.or.us/lq/pubs/factsheets/cu/NoFurtherActionDecisions.pdf

[9] Prospective Purchaser Program Guidance. Oregon Department of Environmental Quality. December 2011. http://www.deq.state.or.us/lq/pubs/docs/cu/GuidanceProspectivePurchaserProgram.pdf

[10] Fact Sheet: Key Information About Prospective Purchaser Agreements in Oregon. Oregon Department of Environmental Quality. December 2011. http://www.deq.state.or.us/lq/pubs/factsheets/cu/ProspectivePurchaserAgreement.pdf

PPAs are a frequently used tool for promoting cleanup and redevelopment of brownfields in Oregon. Between 1995 and 2010, DEQ had negotiated 128 PPAs.[11]

Eligibility—The state places a number of requirements on a purchaser to allow them access to the protections provided by a PPA.

- Innocent Purchaser—The prospective purchaser must not be responsible for contaminating the property. Under the strict, joint, and several liability regime, this means they cannot have caused the contamination as an operator of a facility or the transporter of hazardous materials, or be responsible as an owner of the property.
- Future Use—The proposed future use of the property will not exacerbate the contamination or interfere with necessary cleanup actions.
- Significant Public Benefit—This factor is evaluated on a case-by-case basis, but typically involves
  - Substantial new resources to facilitate cleanup
  - Substantial environmental cleanup activities
  - Productive reuse of a vacant or abandoned industrial or commercial facility
  - Development of the property by a public agency or non-profit to addresses an important public purpose

Legislative Enhancements to PPAs in 2011 – New legislation signed by Gov. Kitzhaber and effective January 01, 2012 protects "innocent purchasers" (i.e., persons not responsible for prior contamination at a site) from litigation by third parties. It also expanded PPAs to include the release or spilling of oil (in addition to hazardous substances), and allows DEQ the option to streamline the process for PPAs by providing greater liability protection through administrative order than judicial decree.

Type of PPAs—The legislation described above has resulted in three different forms of PPAs: Administrative Agreement PPA, Consent Order PPA, and Consent Judgment PPA. The Administrative Agreement version is the simplest and quickest, but cannot provide third-party liability protection. The Consent Order and Consent Judgment versions do provide third-party protection, but both require a 30-day public notice and comment period. The fundamental difference between these two types is that a Consent Judgment is formally reviewed and executed in court while the Consent Order is accomplished administratively by the DEQ. Prospective purchasers decide which type to use based on their risk tolerance and schedule constraints.

[11] Landman, C. Oregon Department of Environmental Quality. Personal communication. May 25, 2011.

Table 5.1 Summary Comparison of PPA Types

Elements	Administrative Agreement PPA	Consent Order PPA	Consent Judgment PPA
State Liability Protection	State agrees not to require purchaser or future owners to perform or pay for cleanup actions beyond those defined in the PPA.	Same	Same
Contribution Protection	No contribution protection under state law.	Protects purchaser and future owners from contribution claims	Protects purchaser and future owners from contribution claims
Third-Party Liability Protection	No protection provided	Protects purchaser and future owners from third-party liability claims.	Protects purchaser and future owners from third-party liability claims.
Public Notice Requirements	None required for PPA. Future remedial action may require notice.	30-day public notice period required before executing PPA.	30-day public notice period required before executing PPA.
Administrative Process	Negotiated and executed by DEQ	Negotiated and executed by DEQ	Negotiated by DEQ. Attorney General's Office files with Circuit Court to be approved by a judge.

5.3.2 Financial Programs

A number of public grants and loans are available in Oregon through various federal, state, and local government agencies to help overcome financial obstacles associated with brownfield redevelopment (See Figure 5-1). Successful brownfield projects often combine funding from a number of sources that are targeted for both cleanup and redevelopment. The following section provides a brief overview of the primary public funding sources for brownfield projects in Oregon. While these are identified as the primary funding sources, brownfield projects are often able to leverage funds from a variety of sources beyond those discussed in this report.

5.3.2.1 U.S. Environmental Protection Agency (USEPA) Assessment and Cleanup Grants

The USEPA provides separate grants for site assessment and for cleanup of brownfields. These grants are awarded through a highly competitive national application process on an annual basis.

Assessment Grant—The Assessment grants provide funding to inventory, characterize, assess, and conduct planning and community involvement related to brownfield sites. Applications are solicited on an annual basis. The maximum award is $400k for a single applicant or $350k for a single assessment.

Cleanup Grant—These grants provide funding for the cleanup activities on brownfield sites. Applications are solicited on an annual basis. The maximum award is $200k per site.

5.3.2.2 Brownfield Redevelopment Fund

This fund, managed by Oregon Business, provides for loans and grants for site assessment and cleanup projects in varying amounts to local governments, nonprofits, public, and private entities. This fund was recapitalized with $9 million in 2008 by state appropriation. This program has great flexibility in financing structure to make it effective for applicants, however it is decreasing in its capacity.

5.3.2.3 Oregon Coalition Brownfield Cleanup Fund

Through a second revolving loan fund, Business Oregon awards loans and grants for brownfield site cleanup to local governments, nonprofits, public, and private entities as a 20% cost share award in amounts up to $1 million. This program was originally capitalized by $2 million in USEPA funds and received and additional $575,000 in 2011. Because of the USEPA funding, it

carries federal requirements such as National Environmental Policy Act review and federal prevailing wage compliance.

5.3.2.4 Portland Brownfield Revolving Loan Fund

The City of Portland was recently awarded $1 million from USEPA to capitalize its own brownfield revolving loan fund. This program is currently being established, so specific criteria for eligibility and loan amounts are under development.

5.3.2.5 Tax Increment Financing

Tax Increment Financing (TIF) is the primary redevelopment and economic development tool associated with urban renewal areas (URAs). It helps Oregon cities and counties revitalize public and private properties and provide development-supportive infrastructure within URA boundaries (ORS Chapter 457). As such, TIF has been used to address environmental cleanup as this is one example of a blighting condition. TIF investments are guided by the goals outlined in the urban renewal plan for each URA. Urban renewal and tax increment financing enable local governments to focus resources on a particular area and stimulate much larger private investments. TIF offers a number of advantages over other funding alternatives: it is locally created and controlled; it can be invested more flexibly than general fund dollars; it provides a more certain and stable source of funding; and it leverages other public and private investments.

Urban renewal funds are primarily used to update and improve an area's infrastructure, including capital expenditures on transportation improvements and parks, and to provide incentives for desired development such as mixed-use projects, affordable housing, storefront improvement, and building rehabilitation. By leveraging TIF with private and other public investments these improvements help revitalize blighted areas.

Limitation Issues

Though they are a powerful tool for urban redevelopment, URAs are restricted in their application[12]. Oregon law limits the percentage of land in a city that can be designated for urban renewal. In a large cities (population greater than 50,000), the area inside URAs may exceed neither 15% of a city's total area nor 15% of its assessed valuation. Portland has approached 14% of its land (15% total allowance), effectively meaning that an existing URA district would need to be reduced or discontinued before a large new one is established.

[12] Oregon Department of Revenue. Urban Renewal, December 2007. http://www.oregon.gov/DOR/PTD/docs/504-623.pdf?ga=t

Other restrictions on urban renewal dictate that area boundaries cannot be expanded by more than 1% without new voter approval under Portland charter amendment approved by voters in 2008.

Changes to tax laws over the past two decades have also placed limitations on TIF. Measures 5 (1990) and 50 (1997), affected how TIF is collected and categorized three types of urban renewal areas.

5.3.2.6 Tax Incentives

Tax incentives are financial tools that governments implement to encourage private investment to accomplish various economic and social objectives. The State of Oregon does not have tax incentives specifically targeted to brownfield cleanup and development, but there are several business tax credit and property tax abatement programs that may be applicable to certain brownfield projects. Tax incentives offer advantages to local governments by providing financial support to developers without directly taking money out of the current budget.

Property tax abatements allow cities or counties within the state to temporarily reduce property taxes for certain housing development and rehabilitation projects. These tax incentives are often connected to designation of special districts. These programs can be used to offset front end costs and support financial feasibility of brownfield redevelopment projects in these designated areas. Examples of these programs include:

Enterprise Zones—Enterprise zones exempt businesses from local property taxes on new investments for a period of three to five years (ORS 285C.050). Sponsored by municipal or tribal governments, an enterprise zone typically serves as a focal point for local development efforts. Portland has established an Enterprise Zone that encompasses North and Northeast areas of the city. The Portland Enterprise Zone is managed by the Portland Development Commission and provides five-year property tax abatements for industrial-based businesses making new investments.

A new building/structure, structural modifications or additions, or newly installed machinery and equipment may qualify for exemption, but not land, previously used property value and miscellaneous personal items. To qualify for the tax exemption, businesses need to meet a number of criteria, including:

- Increase full-time, permanent employment of the firm inside the enterprise zone by the greater of one new job or 10% (or less with special-case local sponsor waivers);

- Generally have no concurrent job losses outside the zone boundary inside Oregon;

- Maintain minimum employment level during the exemption period;
- Enter into a first-source agreement with local job training providers;
- Compensate new workers at or above 150% of the county average wage.

Tax Assessment for Contaminated Properties

Oregon's property tax assessment framework includes a provision for reducing the assessed value of a property by the cost to cure environmental impacts. This valuation system has been used to reduce property taxes on some contaminated properties to nearly zero and is often critiqued as a policy that discourages cleanup of brownfields.

The Oregon Department of Revenue developed an administrative rule to provide a methodology for valuing contaminated property for the purpose of assessing property taxes (OAR 150-308.205-(E)). The rule defines a "contaminated site" as real property that is on the USEPA National Priority List (a Superfund site), in the DEQ inventory of confirmed releases, an illegal drug manufacturing site, or demonstrated to have had a release of hazardous substances. The rule requires that all three commonly used appraisal methods, the sales comparison approach, the cost approach, and the income approach be used to determine real market value of a contaminated site. The property values derived from these methods are adjusted to account for a number of factors related to the contamination including:

- Cost to cure defined as "the discounted present value of the estimated after tax cost of the remaining remedial work specific to the subject property to remove, contain, or treat the hazardous substance. Cost to cure may include the cost of environmental audits, surety bonds, insurance, monitoring costs, and engineering and legal fees. The costs must be directly related to the clean up or containment of a hazardous substance"
- Limitations on use of the property due to the contamination or governmental restrictions
- Fiscal implications such as the increased cost to insure or finance the property.

5.3.3 Technical Assistance

The state DEQ, Metro, and City of Portland each have programs and specialized staff that provide assistance to property owners and prospective purchasers to facilitate cleanup and redevelopment of brownfields. Each of

these programs utilizes site assessment grant funds from USEPA to provide Phase I and Phase II Environmental Site Assessments on public or private properties. The ability to provide that service is limited by the amount of federal funding. These programs also provide important functions as liaisons between the various government agencies involved in a brownfield project and the property owner. The brownfield programs also conduct outreach and education to develop capacity in the local government, real estate, financial, and environmental professional communities.

6 SUMMARY IMPLICATIONS

While the conditions and trends analysis included in this report is intended to serve primarily as background information, summary implications can be drawn on a preliminary basis for further discussion with the Brownfield Advisory Group.

Initial Substantive Observations

- The pivotal importance of brownfields to achieve Portland EOA forecast projections for a strong and growing local as well as regional employment base.

- The greatest concentration of brownfield sites is within the industrial areas of the city. Industrial land also represents the greatest deficit in terms of land needs for employment uses in the city. Industrial lands are a critical component of providing employment uses to a growing population. However, the redevelopment of industrial land to other industrial uses is the most challenged from a development perspective.

- Successful brownfield redevelopment is of particularly critical importance for Portland's Columbia Harbor employment area including Harbor Access Lands. Not only is this the area with the city's most significant deficiency of employment land, the Columbia Harbor comprises regional transportation functions that cannot be readily duplicated elsewhere regionally or statewide.

- Changed development perception for commercial areas with potential historic uses that further magnify the brownfield stigma, even on smaller sites. This is particularly the case for Portland's Neighborhood Commercial employment geography which shows a relatively small number of brownfield sites through the BLI, but may have numerous historic uses, such as gasoline stations and dry cleaners, that dampen marketability for now vacant or underutilized sites.

Implications for Portland Brownfield Assessment Study Tasks

- Continued analysis of the brownfield inventory as key to an informed assessment of policy solutions best-suited to the Portland market and property context.

- Applying the results of the feasibility / financial gap analysis to typologies in a way that can be extrapolated across the full range of industrial and commercial brownfield sites city-wide (with both the base case and expanded inventories)

- Need to better understand the impact of financial risk and feasibility on effective redevelopment capacity. This is important to better understand public policy and incentive mechanisms that could make a difference—establishing conditions for higher rates of redevelopment in the years ahead.

- Since state and local/regional funding is fundamental to addressing brownfield cleanup and redevelopment study. Further discussion should include analyzing a viable resource that can invest in brownfields that can spawn redevelopment.

- Extend the brownfield redevelopment analysis as conducted for the Portland EOA to also cover the expanded brownfield inventory

APPENDIX B

FINANCIAL ANALYSIS REPORT

PORTLAND BROWNFIELD ASSESSMENT
FINANCIAL FEASIBILITY ANALYSIS

Prepared for
CITY OF PORTLAND BUREAU OF PLANNING AND SUSTAINABILITY

December 18, 2012
Project No. 0559.02.01

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ECONorthwest

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CONTENTS

ACRONYMS AND ABBREVIATIONS			IV
1	INTRODUCTION		1
2	FINANCIAL FEASBILITY ANALYSIS		2
	2.1	METHODOLOGY STATEMENT	2
	2.2	ALTERNATIVES ANALYSIS	7
3	PUBLIC BENEFIT ANALYSIS		24
	3.1	LOST ECONOMIC OPPORTUNITIES	24
4	NATIONAL BEST PRACTICES		36
	4.1	TACOMA	38
	4.2	MINNEAPOLIS-SAINT PAUL	39
	4.3	NEW BEDFORD	40
	4.4	MILWAUKEE, WISCONSIN	41
	4.5	GENESEE COUNTY	42
	4.6	POLICY TOOLS	43
	4.7	PORTLAND-BASED POLICY OPTIONS	58
	4.8	SUPERFUND POLICY OPTIONS	63
APPENDIX A			68

ACRONYMS AND ABBREVIATIONS

BES	Bureau of Environmental Services, City of Portland
BPS	Bureau of Planning & Sustainability, City of Portland
BLI	City of Portland Buildable Lands Inventory
CERCLA	Comprehensive Environmental Response, Compensation and Liabilities Act
DEQ	Department of Environmental Quality
DLCD	Department of Land Conservation and Development
ECSI	Environmental Cleanup Site Information
EOA	City of Portland's Economic Opportunities Analysis
EPA	Environmental Protection Agency
EZ	Enterprise Zone
FAR	Floor Area Ratio
GIS	Geographic Information Systems
Harbor ReDi	Portland Harbor Redevelopment Initiative
HiFAR	No vacant sites with a floor area ratio above 20% of zoned maximum potential
ICP	Independent Cleanup Pathway
LoFAR	Non vacant sites with a floor area ratio of up to 20% of zoned maximum potential
MFA	Maul Foster Alongi
NOI	Net Operating Income
NFA	No Further Action
OAR	Oregon Administrative Rule
ORS	Oregon Revised Statute
PDC	Portland Development Commission
PPA	Prospective Purchaser Agreement
RLIS	Metro Regional Land Information System (a GIS database)
RMV	Real Market Value as determined by Multnomah County Assessor for tax assessment purposes
ROI	Return on Investment
SMA	Sediment Management Area
STAMP	Site Technical Assistance for a Municipal Project, National Brownfield Association
TIF	Tax-Increment Financing
TGM	Transportation and Growth Management
TOD	Transit-Oriented Development
UGB	Urban Growth Boundary
URA	Urban Renewal Area
VCP	Voluntary Cleanup Pathway
VHDZ	Vertical Housing Development Zone

1 INTRODUCTION

This report summarizes the findings of analysis completed as part of Task 3 and 4 of the Portland Brownfield Assessment project. It is intended to provide background for subsequent public benefit analysis together with prioritized policy recommendations to facilitate increased redevelopment of brownfields in Portland.

The goal of the Portland Brownfield Assessment is to examine opportunities to incrementally increase the rate of brownfield redevelopment through:

- Identification of barriers to brownfield redevelopment,
- Development of financial feasibility and public benefit analyses,
- Analysis of financial and technical assistance incentives to address barriers to brownfield redevelopment, and
- Developing implementation actions based on proven best practices from around the country.

Key work elements in this draft report include:

- Present the preliminary results from the pro-forma-based financial model designed to estimate redevelopment feasibility by employment area and brownfield type.
- Present an economic estimate of the lost revenue opportunities as a result of idle brownfields by type and employment area.
- Identify national best practices for financial and other incentives to encourage brownfield redevelopment that are appropriate for Portland.

2 FINANCIAL FEASBILITY ANALYSIS

A distinctive feature of the Portland Brownfield Assessment is the focus on evaluating the financial feasibility of brownfield redevelopment across the landscape of Portland employment geographies and associated brownfield typologies. This tailored approach recognizes the varied levels of environmental contamination (or "brownness") as well as the range of market conditions that may affect different types of sites and employment uses in distinctive ways. The results clearly suggest that policy and incentive tools may need to be individualized to respond to the specific needs and opportunities associated with Portland's varied employment typologies.

This analysis begins with an overview of the financial feasibility analysis methodology, followed by evaluation of feasibility results across the full spectrum of the typology alternatives, with resulting discussion regarding critical feasibility barriers.

2.1 Methodology Statement

A financial pro forma represents a means of assessing financial feasibility of a future (not yet built) real estate development. The critical test of financial feasibility lies in the relationship of project *cost* to *valuation* upon completion. If the valuation upon completion and resulting occupancy exceeds the cost of development, the project is viewed as feasible. In situations where valuation is less than cost, the project is viewed as not feasible – unless actions are taken to rectify the resulting "financial gap" – or the amount by which the project is *upside down*.

This analysis is not site or owner specific – but rather relies on prototypical project pro formas generated for each typology under alternative assumptions of market use and brownfield remediation cost. For ease of application across Portland's full employment and brownfield geography, all pro formas are calculated on standard per unit measures of:

- Development cost versus valuation per *building square footage*
- Resulting financial surplus (or gap) per square foot of *land area*

Uses Evaluated

This brownfield assessment addresses the financial feasibility of developments associated with industrial and commercial real estate. The following building types are considered – to the degree applicable with each of the brownfield typologies:

- Manufacturing / Warehouse – with pro formas reflecting real estate costs only and not cost of equipment for on-site processing

- Flex / Business Park – typically multi-tenant building space that includes a combination of industrial space with substantial office build-out

- Office Commercial – typically built on floors above ground level

- Retail – storefront space, typically with ground-level access

- Residential – for multifamily housing as may be included with a mixed use building with ground level retail or other commercial uses

- Structured Parking – for uses that typically require some or all of the on-site parking to be included as a part of a building structure (rather than at-grade)

- Other – generally identified as non-revenue space not associated with a specific user in a multi-tenant building, as with a lobby area

Measures of Cost

Costs of building an industrial, commercial or mixed use project are typically defined as including:

- Land Acquisition – reflecting typical values distinctive to each typology considered; with land values differentiated between sites without constraints and those identified by the BLI as brownfield constrained

- Site Development – covering costs of demolition (of existing structures), site preparation / landscaping, and at-grade parking

- Brownfield Remediation – reflecting alternatives of low, mid and/or high cost of remediation

- Building Construction – covering hard cost of development, specific to each of the uses involved

- Other Project Cost – for costs that might be unique to a specific use or site such as infrastructure (essentially a placeholder not covered with this preliminary analysis but available for analysis refinements)

- Indirect (Soft) Cost – covering variables such as architectural / engineering fees, public fees / permitting, developer profit, and financing during construction

Data for this analysis is drawn from a number of sources. Land acquisition costs are based on Multnomah County assessor's data together with a review of recent vacant land sales transactions (from RLIS, differentiated by typology). Site development costs reflect A/E data from prior comparable projects. Brownfield and superfund remediation cost estimates are based on case study data and other literature as compiled by MFA.

For purposes of this analysis, cleanup of low-cost remediation sites is estimated at $1.50 per square foot of land area. Mid-cost sites are shown at $6.00 and high cost sites at $16.00 per square foot of land area.

Building construction costs reflect comparable pro forma analysis and the Second Quarter 2012 RLB (Rider Levett Bucknall) Quarterly Construction Cost Report. Indirect (soft) cost is drawn from comparable project pro formas. Cost parameters utilized with this analysis (by building use type) are provided with Appendix A to this report.

Measures of Valuation

Valuation of income-producing real estate can be accomplished by determining a property's net operating income (as rental and related income *less* expense) divided by a capitalization (or "cap") rate. This income capitalization approach is one of three methods typically applied by property appraisals – the other two being depreciated cost analysis and comparison of comparable property sales. The income capitalization approach is of particular relevance to projects not yet constructed.

Capitalization rates reflect the amount that an owner or investor is willing to pay for a property with an income stream based on experience and/or projection. These rates are readily observable in the real estate market as may be specific to a point in time for a particular type of investment real estate.

Cap rates may vary between metro areas or within a metro region or city. In the current lending market, cap rates available to investors or owners with "deep pockets" may be substantially less than for more thinly capitalized developers. A well-capitalized investor may be able and willing to pay more for a particular property than a party that will have access to capital at much less generous terms.

In effect, cap rates reflect a combination of current financing terms (interest rate and duration of financing) together with investor expectations regarding risk-adjusted return on required equity. Cap rate expectations applied with this analysis are drawn from Urban Land Institute (ULI) publication *Emerging Trends in Real Estate 2012*.

Some properties are not purchased or developed for capitalized value to an investor or developer, but rather for their end use value to the owner. With

the typologies considered in this pro forma evaluation, end use value is of particular importance in two situations:

- For residential condominium purchasers in a mixed use development. In this situation, the net sales value (price less developer return and sales transaction expense) is shown as a separate line item in the pro forma (in addition to capitalized value for rental uses). Note that for sake of apples to apples comparisons across the typologies that may involve mixed commercial and residential use, a mix of 50/50 owner/renter use is assumed for illustrative purposes (except in typologies of Mixed Use Hubs and Main Street East where values may not currently be adequate to support condo development cost).

- For industrial end users (or operating businesses that own their own real estate), a multi-tenant developer's approach to valuation is of little relevance. The industrial company will consider cost of real estate development in the context of the firm's total business operations requirements and balance sheet together with profit and loss statement. Many end user buildings are also special uses designed for a specific product or manufacturing process. Special purpose buildings are of most value to a specific type of industrial user and often are not as readily adaptable to other generic industrial uses.

  For the industrial end user, what is of importance is the cost of industrial land (a *shovel-ready* site) as compared with other similar sites either in the Portland metro region or globally. Consequently, a special variation of industrial pro formas are run for owner-occupied, end-use buildings that reflect land valuation (with brownfield effects calculated in relation to land cost) rather than as a developer's real estate oriented model to valuation.

Key data inputs and assumptions utilized are provided with Appendix A to this draft feasibility evaluation report. Valuation related inputs covered include rental rates and operating expenses together with cap rates for income producing properties, sales valuation for condo units, and land values for all typologies considered.

Of specific note is that rental rates and condo sales pricing inputs reflect mid-upper range estimates currently associated with each employment / brownfield typology. Rental rates required for new construction feasibility are typically above average rates for a particular market (comprising the full mix of newer and legacy properties).

Also noted is that seemingly small changes in any of a number of data inputs can have substantial effects on resulting development feasibility. The pro formas provided with this analysis are intended to represent what might be considered as typical conditions, but should not be construed as any conclusion of feasibility for a specific use and/or site-specific project.

Site Development

Assumptions regarding how a particular project prototype will be developed on the ground can be of considerable importance for assessing financial feasibility. The following site factors are taken into consideration with each of the seven typologies and 32 associated pro forma alternatives:

- Site Use Intensity – measured as floor area ratio (FAR) with development (including existing use FAR associated with occupied, but underutilized properties, as part of Portland's BLI)

- Site Coverage – measured as the proportion of the site for which there is building footprint (with the remainder of the site used for such purposes as parking / loading, landscaping, storage, remediation area, and/or habitat / open space)

- On-Site Parking – based on a review of minimum and maximum parking ratios by use and zone (generally in a mid-range, also reflecting scale of nearby development and transit accessibility), with parking allocated first to available at-grade site area and second, as needed, to structured on-site facilities

  Added Notes: A need for some proportion of structured parking is assumed with new construction for the Downtown High Density, Mixed Use Hub, Central City Industrial, and mixed use portions of the Main Street typologies. All industrial typology parking is assumed to be accommodated at densities allowing for at-grade parking.

  On-site parking is provided at ratios within the medium to maximum ranges prescribed by zoning designation, at urban ratios well below typical suburban ratios. Parking ratios by use vary by typology in ranges as follows: manufacturing / warehousing (1.00-1.50 spaces per 1,000 square feet of building area), flex / business park (1.00-2.00), office space (1.00-3.00), retail (1.00-2.00), and residential (at 0.75-1.00 spaces per unit).

- Distribution of On-Site Building Square Footage – with some typologies indicated as being developed for a single use and others for multiple or mixed use activity.

- Relationship of Net Rentable to Gross Building Area – a reflection of building efficiency for 85-90% for multi-tenant properties with shared building common area and shown at 100% for stand-alone or in-line building uses.

Data inputs and assumptions related to site development for the pro forma alternatives are as indicated with the assumptions and/or pro forma worksheets provided in Appendix A to this report.

2.2 Alternatives Analysis

This discussion summarizes results of the alternatives analysis by typology, with detailed pro forma worksheets provided with Appendix A.

1. Downtown High Density

This typology covers the commercial and mixed use portion of Portland's Central City area – including the downtown core, River / Pearl district, South Waterfront, and Lloyd District. Four alternative pro formas are considered:

- Mixed Use – office / retail combined with residential use, differentiated between mid-cost and low-cost site remediation alternatives

- Office-Retail – involving high density commercial development without on-site residential, but also differentiated between mid-cost and low-cost site remediation alternatives

Note: The following graphs for Downtown High Density together with subsequent graphs for other brownfield typologies are intended to illustrate the results of detailed pro forma analysis in terms of:

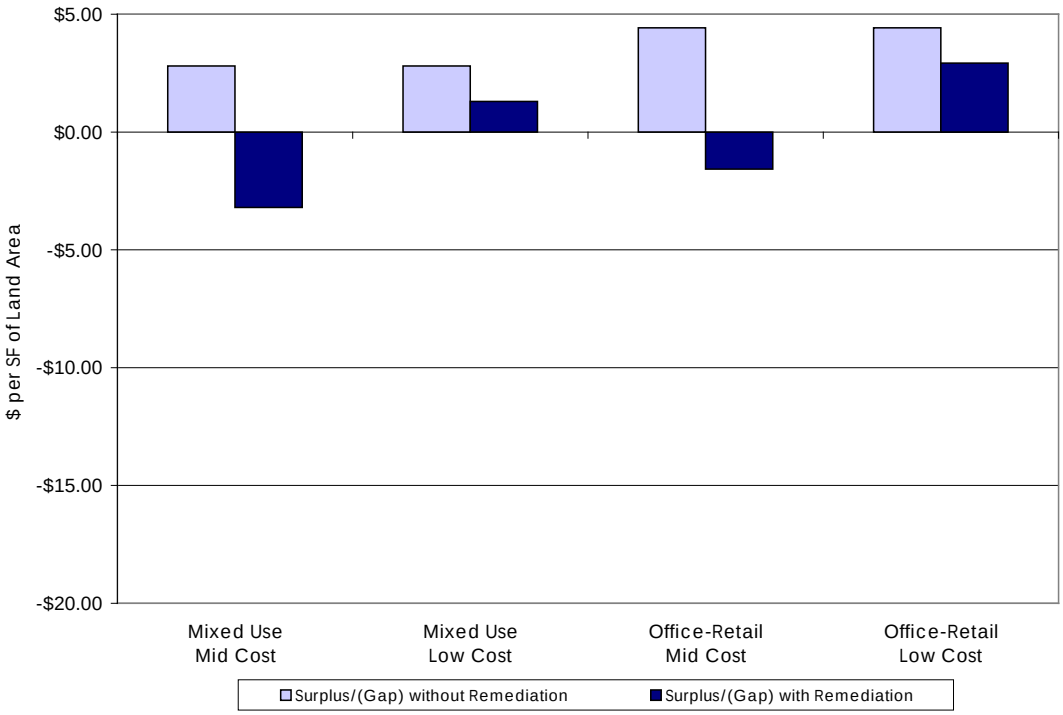
a) Financial feasibility with and without brownfield impacts (first graph of each set). While pro formas with Appendix A are shown in terms of building square footage, the graphs translate financial results to site area metrics (as dollars per square foot of site area). A positive number indicates that the development alternative considered appears feasible based on the data inputs and assumptions applied with this analysis. A (negative) number indicates lack of feasibility – as an indication of the financial gap that might be required to achieve a viable project.

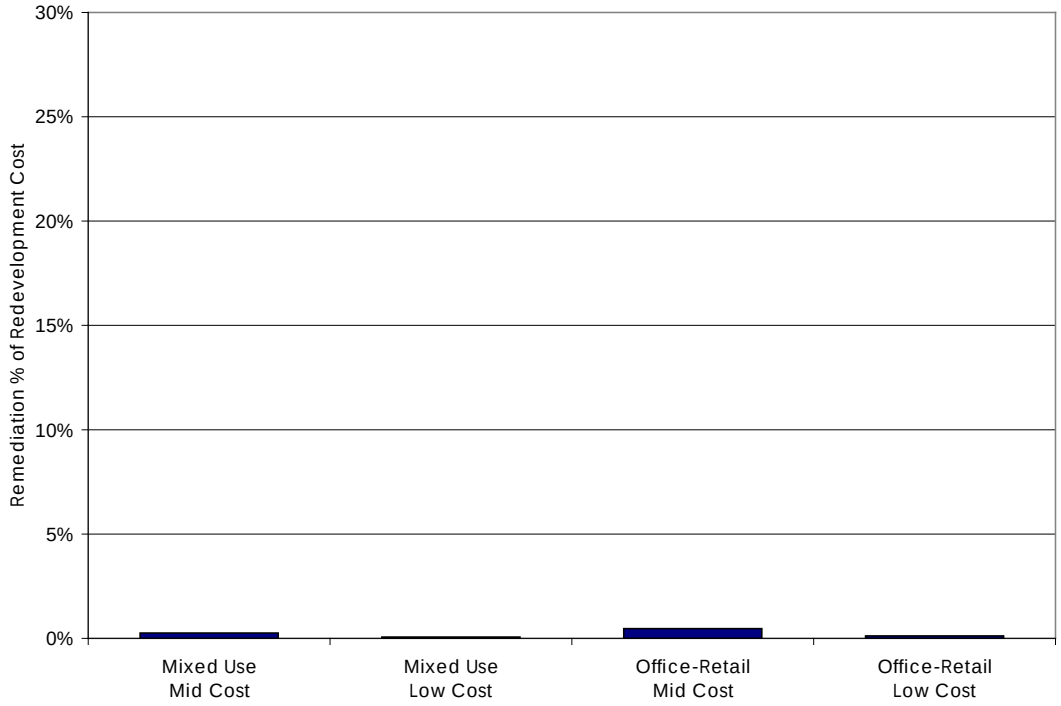
b) Remediation as a % of total project redevelopment cost (second graph of each set). This provides an indicator of the relative significance of environmental cleanup cost to the overall cost of the development project being considered.

The y-axis shown with each graph is based on the ranges for the typology with the most extreme values associated with cost per square foot or remediation as a % of project cost. For example, the downtown typology is associated with the positive values per square foot of land area due to high intensity (or FARs) associated with development. Conversely, the most negative per square foot conditions are noted for the industrial typology where remediation costs are magnified when considered on an FAR basis.

As a % of development cost, remediation is relatively insignificant for the downtown prototypes considered, while much more substantial for other typologies, especially industrial.

Figure 3-1. Downtown High Density Development Feasibility





Specific observations regarding downtown high density feasibility for the mixed use and office-retail prototypes considered include the following:

- For unconstrained sites, both the mixed use and office-retail concepts appear to be within a range of feasibility given current top of market conditions for the Portland metro area – though not by any significant margin. Valuation less cost at a positive figure of less than $5 per square foot of land area represents a slim margin when considered in terms of total project cost of nearly $2,400 per square foot of land area (for the mixed use concept assumed to be developed at an 11:1 FAR ratio).

- Presence or absence of brownfields has a relatively low effect on overall project cost – as other cost and market considerations are more important in a high density environment. In part, this is because no high cost remediation sites are viewed as applicable to remaining brownfield properties in the downtown high density area.

- In effect, brownfield remediation reflects only a relatively small proportion (less than 1% of development budget) in even the mid-cost development alternatives. Viewed from another perspective, downtown area land value is estimated at more than 12 times the expense of a mid-cost remediation scenario.

- However, at the margin, a mid-cost brownfield remediation could shift either the mixed use or office-retail project from slightly positive to slightly negative. Low-cost remediation does not appear to as materially affect feasibility results.

2. Mixed Use Hub

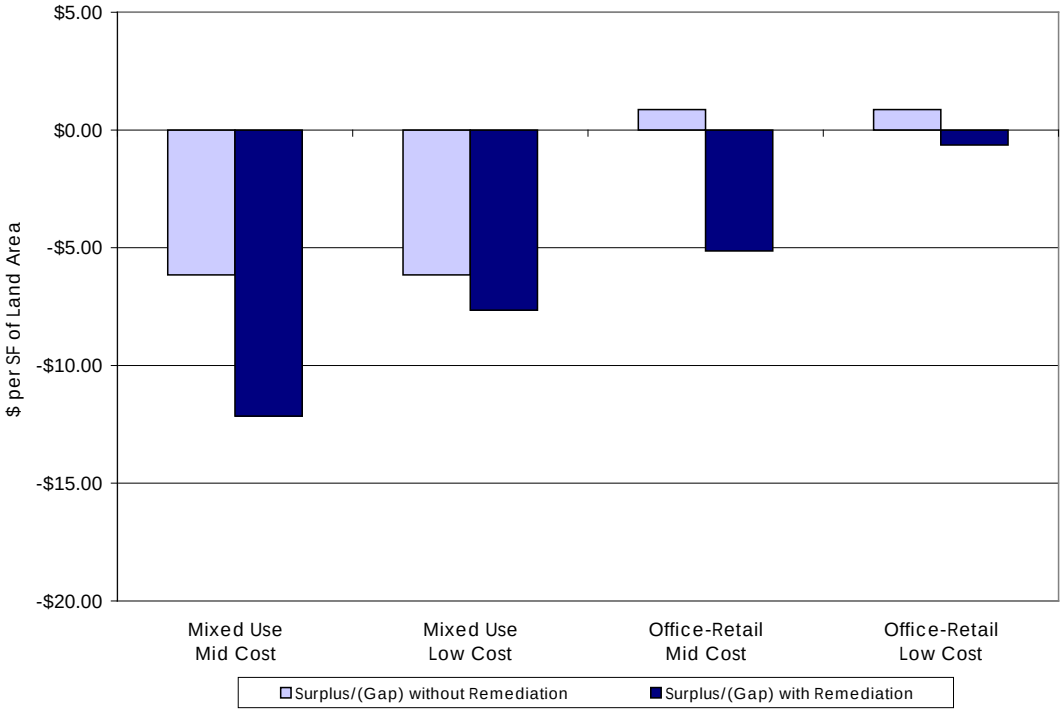
The mixed use hub typology covers Portland's Gateway regional center together with EOA identified town centers of Hillsdale, Hollywood, St. Johns, and Lents. As with the downtown area, four alternative pro formas are considered with this Mixed Use Hub typology:

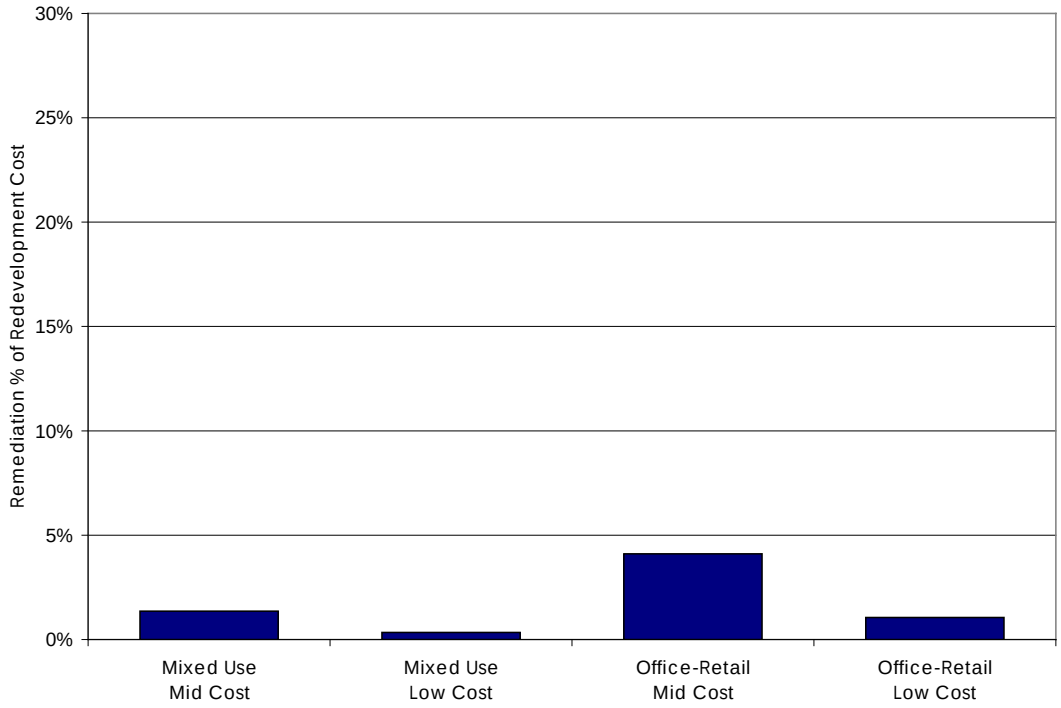
- Mixed Use – with office / retail combined with residential use, further differentiated between mid-cost and low-cost site remediation alternatives

- Office-Retail – involving high density commercial development without on-site residential, but also differentiated between mid-cost and low-cost site remediation alternatives

The following graphs illustrate the results of detailed pro forma analysis for two key variables of interest – financial feasibility with and without brownfield impacts, as well as remediation cost as a percentage of total development costs.

Figure 3-2. Mixed Use Hub Development Feasibility





Overall density of development is considerably below that of the downtown typology. Somewhat different conclusions can be drawn about financial feasibility of Mixed Use Hub development and associated brownfield effects:

- Unlike downtown, the mixed use concept that combines residential with ground floor retail appears less feasible given current apartment rental rates that are well below what is achievable closer in to Central City Portland. While office rents are also below those of closer in properties, retail rents appear stronger making the office-retail combination marginally feasible.

- While low-medium cost brownfield remediation does not appear to be the only factor affecting development feasibility, brownfield cleanup will reflect a greater proportion of overall development costs (at up to 4% of development budget) with the mid-cost development alternatives. This is because the lower scale of development with mixed use hubs provides less development over which a given remediation cost must be spread (than with the Downtown High Density typology).

- With brownfield remediation, feasibility of the mixed use development concepts become more negative. Feasibility of the office-retail concepts go from marginally positive to negative – especially with mid-cost remediation.

3a. Main Street West

The Main Street typology is similar to the Neighborhood Commercial designation of the Portland EOA together with the EOA identified West Portland town center. For purposes of this feasibility analysis, the Main Street typology has been divided into two subsets – Main Street West and Main Street East.

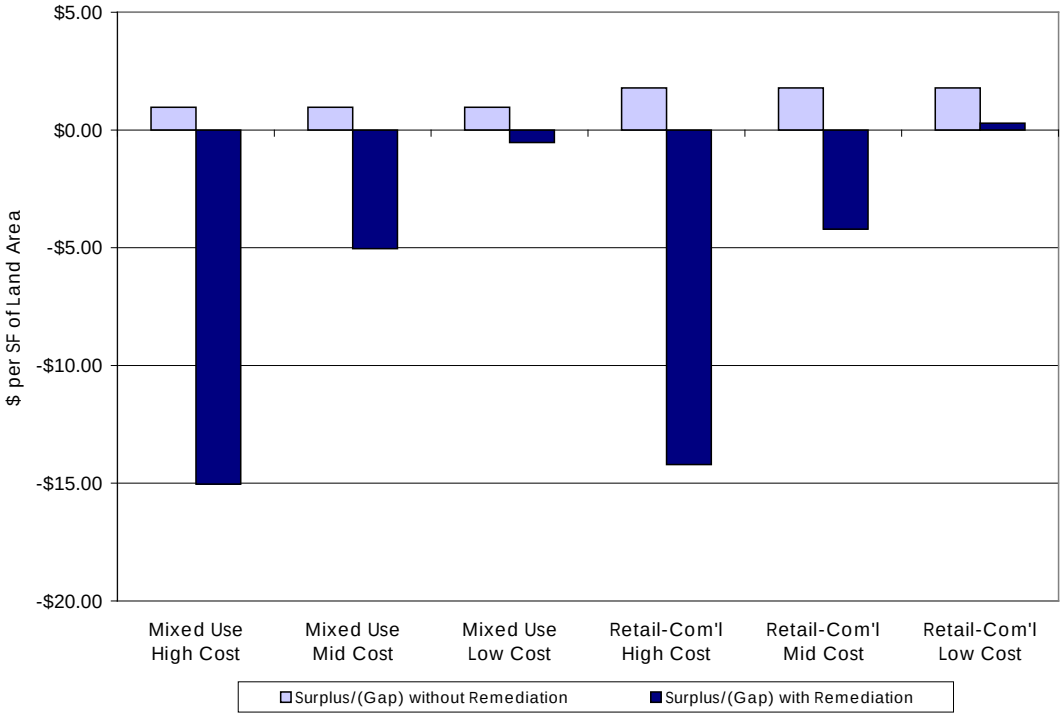
Covering the neighborhood commercial districts generally west of about 82nd Avenue, the Main Street West geography has been generally associated with somewhat higher levels of development density and greater redevelopment activity in recent years – especially in proximity to corridors offering strong transit accessibility. Six alternative pro formas are considered with this Mixed Use Hub typology:

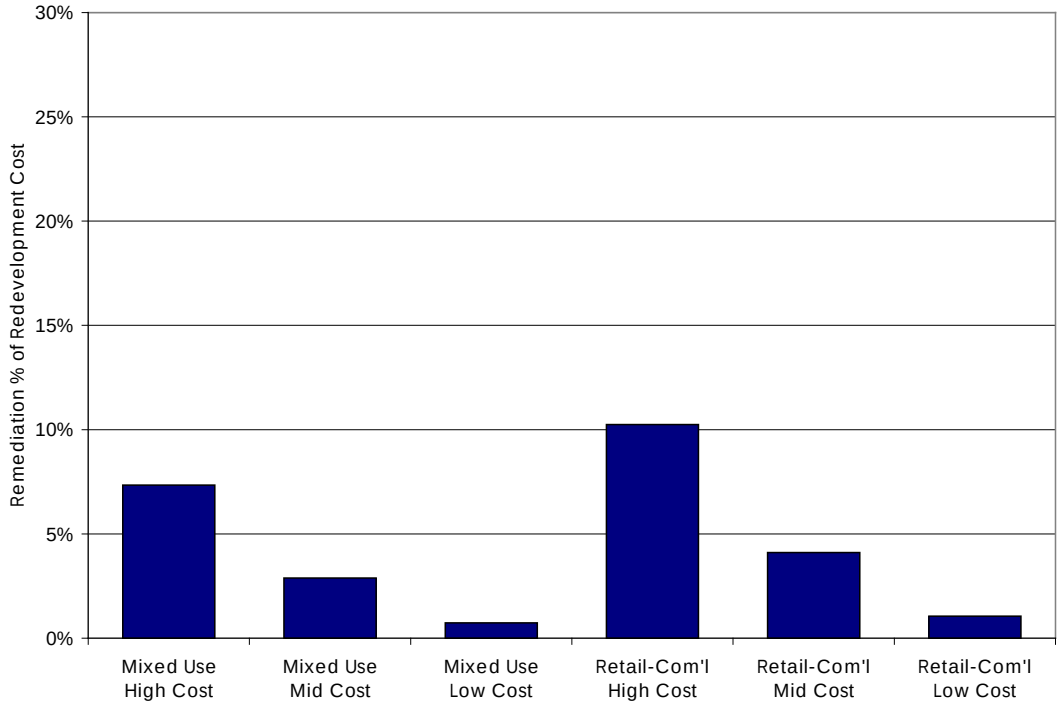
- Mixed Use – with office / retail combined with residential use, further differentiated between high-cost, mid-cost and low-cost site remediation alternatives

- Office-Retail – involving high density commercial development without on-site residential, also differentiated between high-cost, mid-cost and low-cost site remediation alternatives

The following graphs illustrate the results of detailed pro forma analysis for two key variables of interest – financial feasibility with and without brownfield impacts, as well as remediation cost as a percentage of total development costs.

Figure 3-3. Main Street West Development Feasibility





Consistent with experience of the last decade, development potential for this sub-typology appear relatively strong:

- For Main Street West, both mixed use and retail commercial prototypes appear to offer reasonable (and improving) prospects for development feasibility. However, recognizing that rents used with the pro forma represent the mid-upper range of the market, it should be recognized that some neighborhood commercial areas west of 82nd Avenue are accompanied by stronger market activity and higher rents than others. Over the 25-year time horizon of the Portland EOA, there is good opportunity for Main Street revitalization to expand to portions of Portland that have experienced lesser levels of revitalization to date.

- The introduction of mid-high cost brownfield remediation alternatives to this typology represents a definite dampening effect on feasibility for redevelopment prospects of affected sites. Remediation may account for as much as 10% of development cost for these high-cost sites.

- In effect, both the high- and mid-cost brownfield alter feasibility results from positive to negative – substantially negative if high-cost remediation is involved. Low-cost remediation has a generally much lesser effect, but could compromise viability of projects that otherwise are right at the cusp of feasibility.

3b. Main Street East

As noted, the Main Street East grouping comprises neighborhood commercial districts extending from about 82nd Avenue east. This area developed later in time than closer in neighborhoods and generally at lower densities typical of the post-World War II era through the 1970s. Redevelopment activity has also occurred at a slower pace, and rental rates are generally below those of Main Street West.

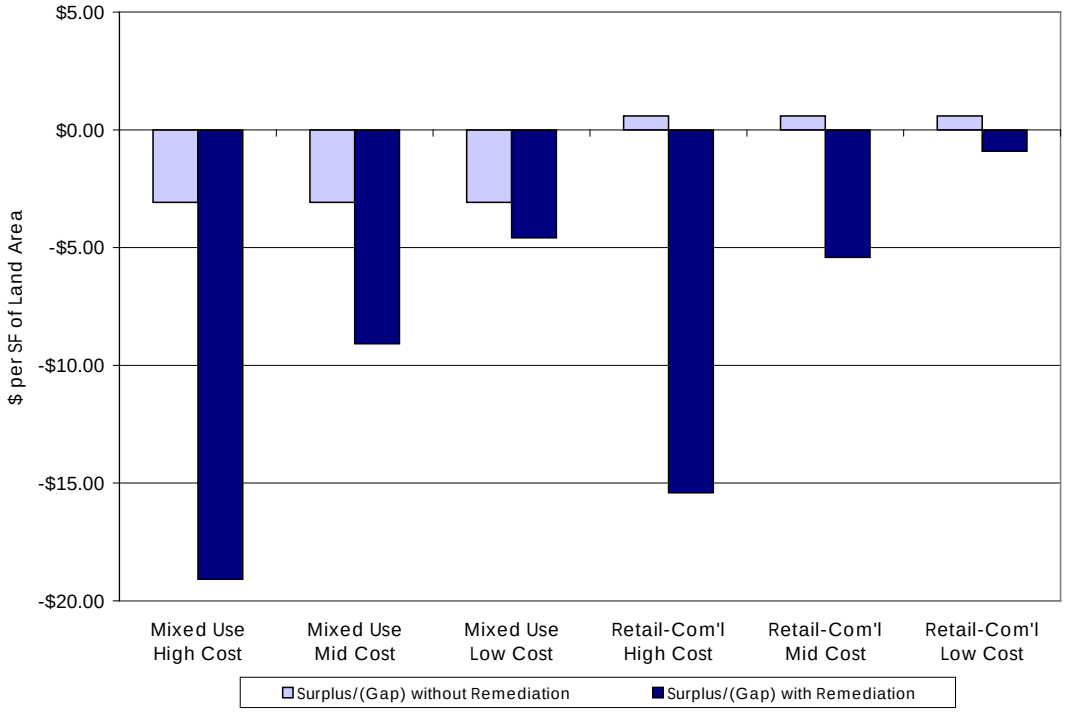
As with Main Street West, six pro forma alternatives are evaluated with the Main Street East sub-typology:

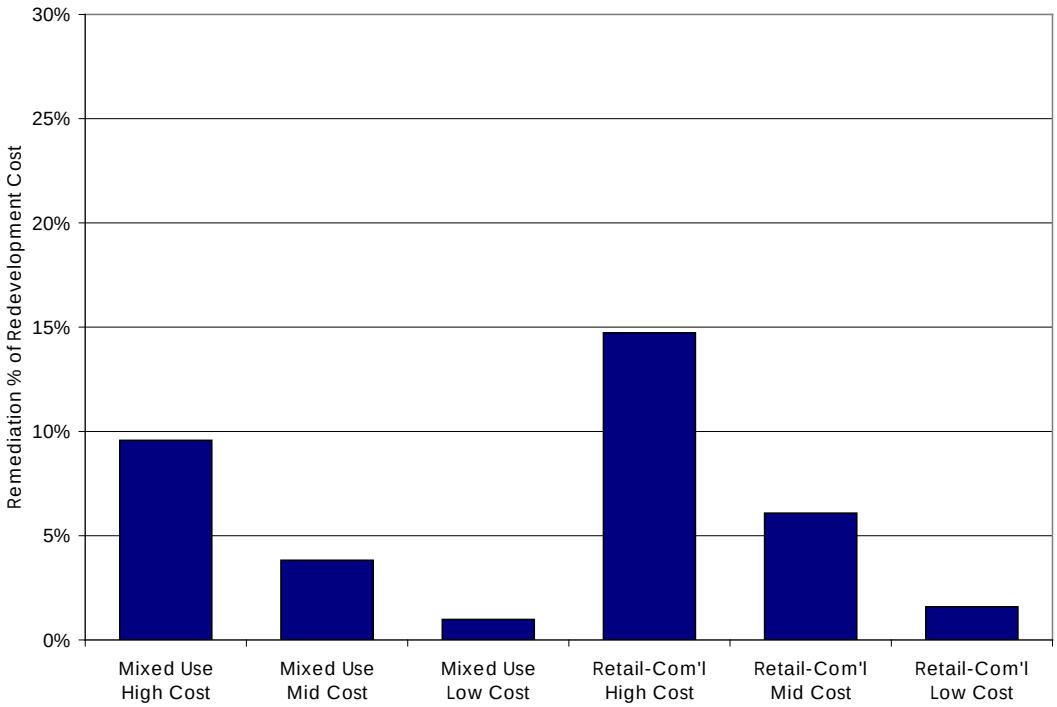
- Mixed Use – with office / retail combined with residential use, further differentiated between high-cost, mid-cost and low-cost site remediation alternatives

- Office-Retail – involving high density commercial development without on-site residential, but also differentiated between high-cost, mid-cost and low-cost site remediation alternatives

Pro forma results are less favorable than for Main Street West for unconstrained properties. And feasibility effects of brownfield conditions can be expected to be even more negative, as illustrated by the following graphs.

Figure 3-4. Main Street East Development Feasibility





Observations of added note regarding Main Street East development feasibility include the following:

- Development feasibility appears challenged, at least in the near-term, due to lower rents achievable east than west of 82nd Avenue. To some extent, this is counterbalanced by lower densities of development allowing for lesser levels of structured parking and lower cost of construction. Over the 25-year time horizon of the Portland EOA, there is good opportunity for Main Street revitalization to expand further east than has been the case to date – especially if accompanied by revitalization initiatives including remediation of contaminated sites.

- Mixed use feasibility appears negative, even for sites without development constraints. Retail-commercial feasibility (without residential mixed use) appears slightly positive for unconstrained sites. If brownfield remediation is involved, no project alternative appears readily feasible, though the low-cost retail-commercial option is only slightly negative.

- As is the cast throughout the Main Street typology, the introduction of either mid- or high-cost remediation represents a definite chilling effect on feasibility for redevelopment prospects of affected sites. Main Street East remediation may account for as much as nearly 15% of development cost for high-cost sites.

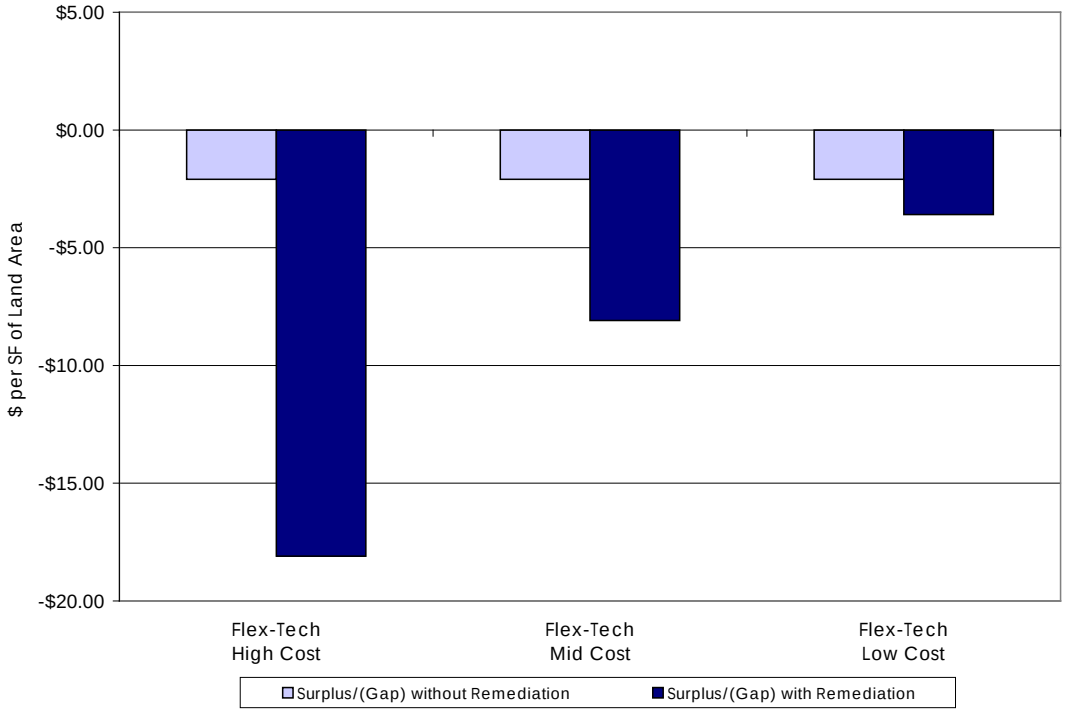
4. Central City Industrial

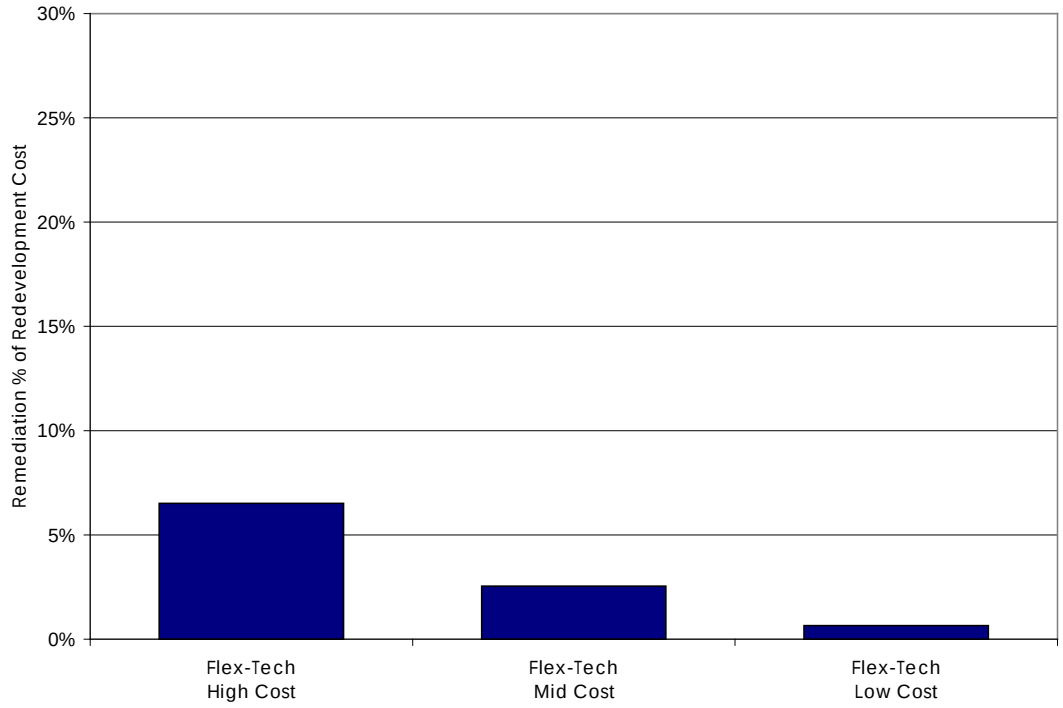
The Central City Industrial typology covers Portland's inner industrial areas of the Central Eastside and Lower Albina districts. These districts have been identified by the EOA as offering increasing opportunity as incubators for small startup and creative firms – supplemented by continued reinvestment in viable, ongoing industrial distribution functions benefitting from a central Portland location.

A single development concept is considered for the pro forma alternatives considered with this typology:

- Flex-Tech – with redevelopment and new construction of a high density, more urban and gritty version of the flex office space product seen, for example, on the Sunset Corridor. As experienced with Central City Industrial, the flex / Class B office approach has appeared particularly attractive for creative service firms. The flex-tech prototype is further differentiated by separate pro formas for high-cost, mid-cost and low-cost site brownfield remediation alternatives.

Figure 3-5. Central City Industrial Development Feasibility





As illustrated by the above graphs, development feasibility of new flex-tech space is still somewhat pioneering, with feasibility extremely sensitive to any added cost pressures at the margin:

- To date, much of the creative / flex space developed in the Central Eastside has involved reuse of existing buildings rather than new construction. Due to the recession and the legacy of this existing space, it is not yet clear that rental rates have stepped up to the levels required for new construction as the supply of potential rehab sites diminishes. Going forward, feasibility of new construction will be materially affected by encouraging non-auto use and accommodation of remaining added parking needs for net new development.

- As is the case with the Main Street Commercial typology, the potential for mid-high cost remediation sites would pose a definite challenge to development feasibility of affected sites, equating to as much as 6-7% of total project cost.

5-7. Industrial

The typologies of Standard Industrial, Superfund Shadow, and Harbor Waterfront are covered as an overall grouping. These properties are assumed to share similar characteristics as to market and site development.

The primary differentiation factor relates to the level of cleanup expenses that may be associated with Superfund (in-water) liability with Harbor Waterfront sites (as Typology 7) and contributing factors with what are termed as Superfund Shadow sites (Typology 6). As there is considerable uncertainty regarding the ultimate determination of potential financial liability, potential amounts are indicated as supplemental costs averaged over all affected properties (but should be viewed as having a considerable margin of potential variability by property owner).

Nine alternative pro formas are considered with the Industrial typologies:

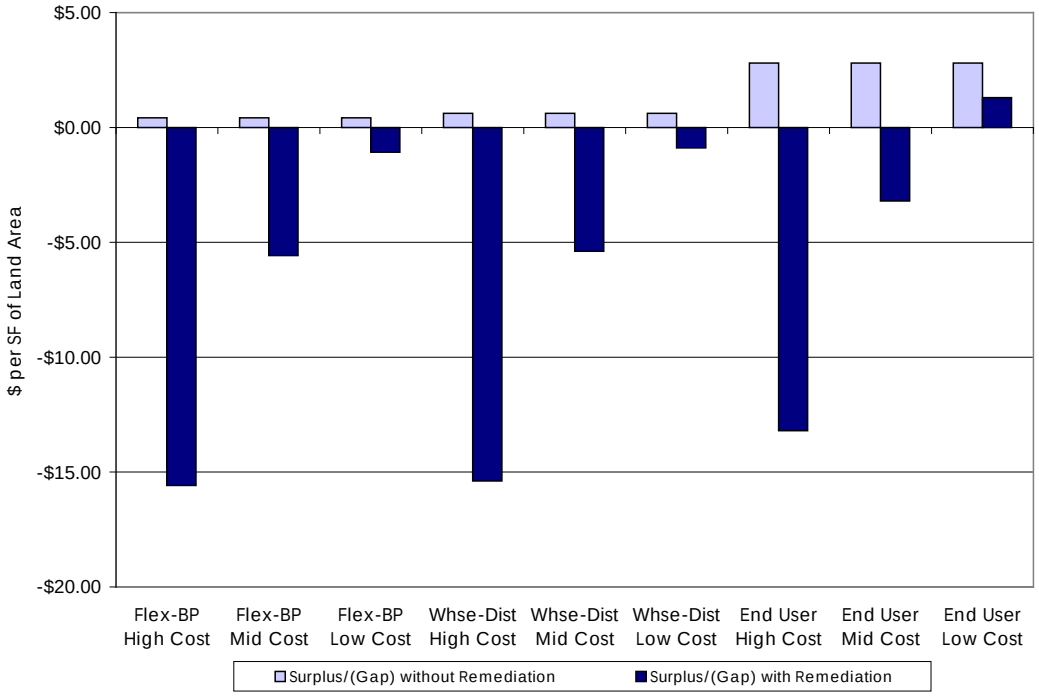
- Flex Space / Business Park – as a multi-tenant development product further differentiated between high-cost, mid-cost and low-cost site remediation alternatives

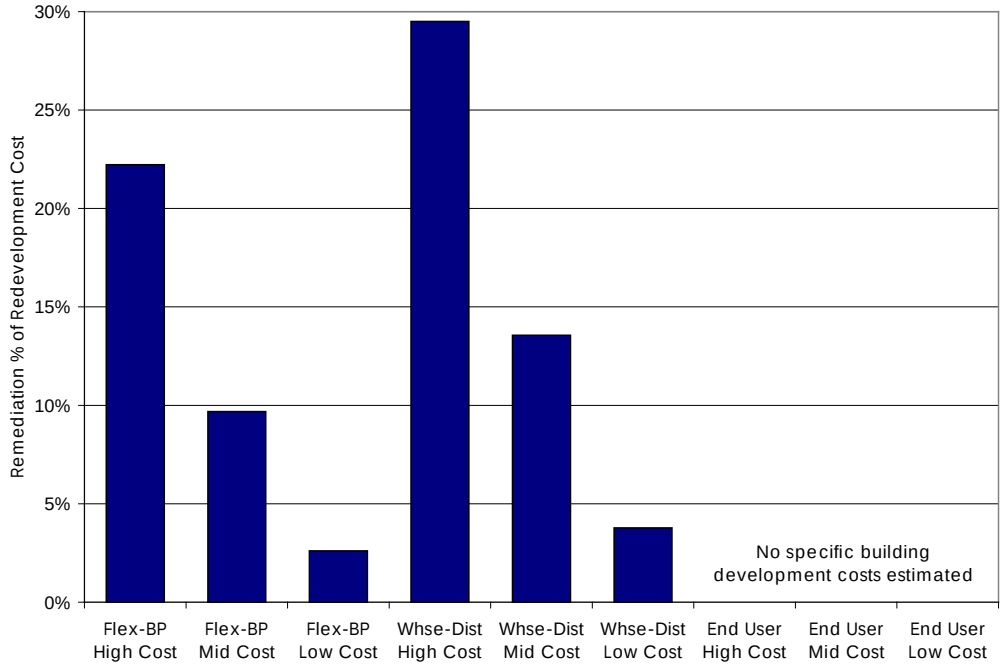
- Warehouse / Distribution – as a lower cost development product (with minimal office build-out), also differentiated between high-cost, mid-cost and low-cost site remediation alternatives

- End User Industrial – considered separately on the basis of land value / cost effects associated with brownfields, but also differentiated between high-cost, mid-cost and low-cost sites

The following graphs illustrate the results of detailed pro forma analysis for industrial sites involving development of rental space for lease to both warehouse / distribution and manufacturing related tenants. Also, shown with the right hand portions of the graph are feasibility effects associated with end user sites. Implications of each are then considered, in turn.

Figure 3-6. Industrial Development Feasibility





Flex & Industrial Rental Space: The pro forma analysis indicates that the feasibility of developing industrial space is fairly challenging under the best of conditions – with brownfields posing an even greater threat to feasibility than with the other typologies considered:

- Even before consideration of potential brownfield effects, development of new industrial space on unconstrained sites is currently challenged by soft rental rates – with recovery from the recession not yet fully in place.

- Introduction of brownfield contamination has a significantly greater effect on reducing development feasibility for industrial property (even before consideration of potential superfund issues). The lower FARs associated with industrial use means that there is less income-producing space with which to recover a given amount of brownfield remediation cost.

- With high cost sites, remediation can amount to as much as an estimated 30% of total development cost (with a wide range of variability depending on site-specific conditions). Mid-cost remediation also represents a significant cost – at 9-14% of an industrial project's development budget.

- In effect, the mid-cost and cleanup alternatives involve a level of added site expense that nearly or fully eliminates any positive land value. The high-cost alternative will invariably result in negative land value – as is further considered with discussion of end user effects described below.

End User Sites: As noted, end user or owner-occupied industrial sites are best considered on a land value basis.

While shovel-ready industrial land is indicated at an overall value of about $7 per square foot, real market values (RMVs) for industrial sites identified as brownfield constrained by assessor's data are already discounted to an average of about $2.80 per square foot across the industrial typology.

With remediation ranging from $1.50 per square foot of site area with (low-cost remediation) to $6 (mid-cost) to $16 (high-cost), it is clear that the resulting land value quickly goes negative with all but the low-cost scenario. For example, with high-cost remediation, resulting valuation goes to a negative $13.20 per square foot of site area.

Once the site is clean, there is potential for some bounce-back in value to a level comparable to that of a shovel-ready site – making back up to an added $4.20 per square foot if the cleaned up site can be sold (as unconstrained by brownfield or other limiting site conditions). This potentially reduces the net loss from $13.20 to $9.00 per square foot (or about $392,000 per acre).

The odds of recouping this value are enhanced if the cleanup is completed by an existing owner prior to sale. However, there still may be little incentive for an existing owner to incur a high-cost redevelopment, as value net of cost will still be substantially negative.

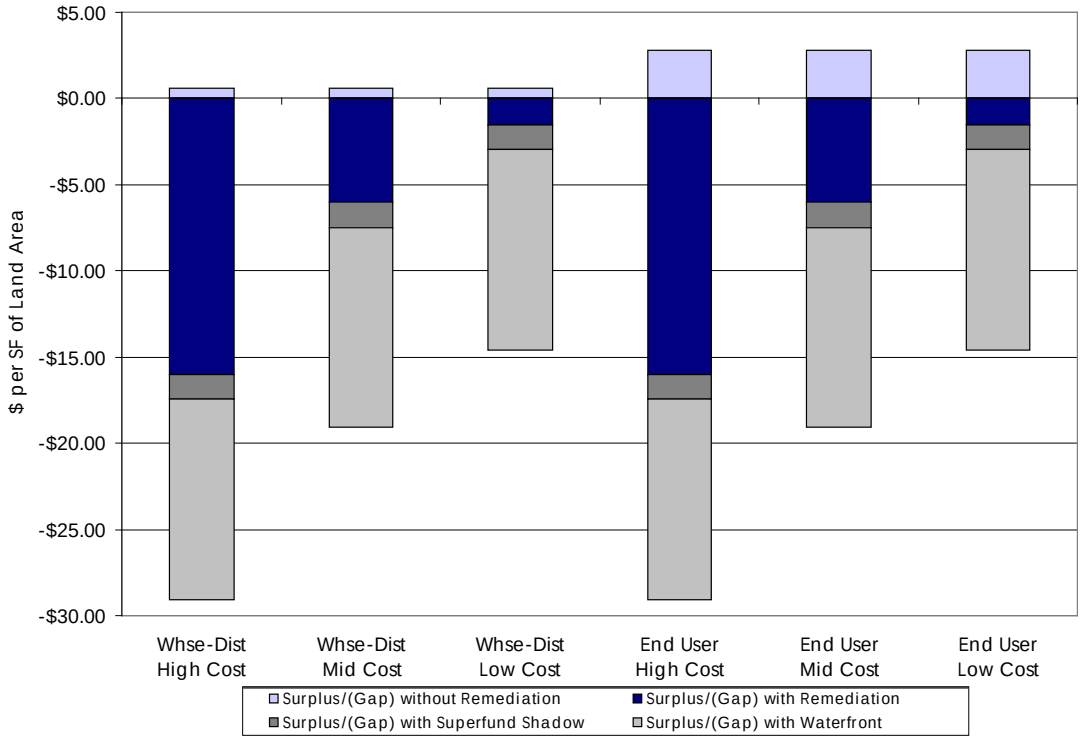
An owner's motivation might be greater with a mid-cost site, where a net loss of $3.20 per square foot translates to a positive net of $1.00 per square foot upon sale of a cleaned up site (assuming no other significant site constraints). An owner in this situation gets the benefit of taking responsibility to address a long-term liability at no net loss upon eventual property disposition.

Superfund Implications: To this point, the analysis of brownfield remediation expense has not included potential added effects of superfund liability for waterfront sites, as well as some upland properties. Inclusion of these effects is illustrated by the following graph, based on MFA-calculated estimates for all Sediment Management Areas (SMAs) using the low cost of the high impact alternative for all contributing SMAs:

- Superfund Shadow sites – with cost estimated at $1.46 per square foot of site area.

- Harbor Waterfront sites – with cost estimated at $13.10 (or an added $11.64) per square foot of site area.

Figure 3-7. Industrial Feasibility with Superfund Implications



Based on these very preliminary (and variable) estimates, incremental effects of potential superfund liability can be summarized as follows:

- In a worst case situation with an already high-cost remediation site, a redevelopment property with Waterfront Superfund liability could go to negative feasibility approaching $30 per square foot of site area. This effectively represents a nearly 75% increase to the cost of development, as compared with unconstrained sites.

- In all cases, the Waterfront Superfund liability could equate to a property owner cost that is almost double the value of unconstrained and vacant industrial land at greenfield sites elsewhere in or outside the Portland metro region.

- For affected upland properties, implications of the Superfund Shadow, while not as devastating as for waterfront properties, can be expected to further render affected property as not feasible for development for warehouse-distribution space as rental income property.

- As previously noted, the situation is more complex for end users who operate industrial businesses as owner-occupants. For these firms, decisions regarding feasibility of remaining or expanding at an existing site will be affected by considerations of revenue versus cost for the full business operation, including but extending beyond real estate considerations.

- For property owners who already are in the chain of title with a potential Superfund liability, the decision of whether to expand or reinvest may be only marginally affected – as the liability remains independent of decisions to stay, expand, or relocate. What is of more importance may be the effects to ongoing business viability at the time costs associated with prospective future liability are actually incurred.

Overall, this valuation analysis indicates that the feasibility of developing industrial space is fairly challenging under the best of conditions – with brownfields posing an even greater threat to feasibility than with the other typologies considered. This appears to be the case both for the end user of industrial property and for the developer of multi-tenant business park or industrial-warehouse space.

Superfund liability further exacerbates negative feasibility – especially for Waterfront sites. While an existing owner in the chain of title may not be able to avoid this liability, there would be no incentive for new development where a prospective purchaser is required to also assume this liability.

Summary Pro Forma Observations

Five overall observations are drawn from this preliminary pro forma financial analysis:

- The financial feasibility of bringing industrial and commercial brownfield properties back into productive use can be severely constrained, especially for high-cost and in some cases, medium-cost remediation sites. In situations where the economics of development are marginal even for shovel-ready property, low-cost remediation sites may push a project from being feasible to infeasible.

- Brownfields are not the only determinant of project feasibility. Other constraints identified by Portland's BLI may also be of importance – including constraints related to infrastructure or other environmental factors. For some typologies, market considerations may render a project as unfeasible or marginally feasible, especially in an economic environment affected by as yet slow and halting economic recovery. Typologies with relatively weak market conditions (even before consideration of brownfields) include Mixed Use Hubs and Main Street East (for mixed use) and Central City Industrial (for new construction as rehabilitation opportunities shrink).

- Remediation costs vary widely in terms of their impact on overall real estate development cost – with lesser impact on high density projects, where remediation can be spread across more development per square foot of land area. Remediation equates to less than 1% of project cost for the Downtown High Density typology, to up to 5-7% for Mixed Use Hub and Central City Industrial, to as much as 10% for Main Street West or 15% for Main Street East, to a substantial 30% of project cost for Standard Industrial warehouse-distribution use (before consideration of potential Superfund liability).

- Due to lower density of development and the greater risk of high-cost remediation sites, the feasibility of developing Portland's industrial properties that are brownfield constrained are far more seriously impaired than for all of the other employment and brownfield typologies considered. However, in cases where other infrastructure or environmental constraints are also present, removal of the brownfield constraint alone may not prove adequate to assure project feasibility. Rather, cleanup incentives might be more effectively targeted to sites where remediation appears as the major obstacle to site redevelopment.

- The potential addition of Superfund Shadow liability will make medium- and high-cost remediation sites even more underwater financially. The full liability of Superfund Waterfront cost will render

development from a prospective new purchaser infeasible whether or not the site has other brownfield contamination issues – unless this liability is not transferred to the new owner.

If resources of existing owners are not adequate to fund these future costs and/or if public resources are not available, these sites are not likely to be redeveloped (unless by an existing owner with an ongoing, viable business for whom the prospective liability is a responsibility that cannot otherwise be avoided).

3 PUBLIC BENEFIT ANALYSIS

Over the last five years, Portland has become increasingly involved in assessing the public benefits that might be realized through stepped up initiative to redevelop underutilized brownfield sites. The *flip side* of public benefits is identifying economic opportunities lost if brownfields remain idle indefinitely into the future.

Initial steps were taken in 2007, when the National Brownfields Association through its Site Technical Assistance for a Municipal Project ("STAMP") was engaged by a coalition of public and non-profit interests in Portland to perform an analysis of how best to spur redevelopment of approximately 400 non-contiguous acres, on 25 contaminated parcels in Portland's industrial sanctuary. The 2007-08 STAMP process led to a series of recommended actions, the first of which was to recognize the "cost of doing nothing," defined as follows:

> The costs (of doing nothing) include financial losses in terms of jobs, tax revenue and economic growth, stigmatization of the area, possible exacerbation of the environmental impact and taking industrial sanctuary property out of play within the urban growth boundary. This stagnation not only increases pressure to convert agricultural lands to industrial use, which creates additional high costs associated with adding infrastructure, but also thwarts the carefully developed state land use planning laws intended to protect open space and agriculture and prevent urban sprawl.

This public benefit analysis expands the STAMP approach to consider the full range of brownfield affected properties across commercial as well as industrial geographies citywide.

3.1 Lost Economic Opportunities

With this analysis of seven brownfield typologies, the cost of doing nothing can be identified and quantified in terms of:

- Reduced employment, payroll and business revenue capacity – limiting Portland's ability to realize EOA-defined employment objectives through 2035.

- Fiscal impacts to local jurisdictions and the State of Oregon – focused for the purposes of this analysis on property tax, state income tax, Multnomah County business income tax, and City of Portland business license tax.

Methodology

Key elements of the methodologies associated with this benefits evaluation can be summarized as follows:

- For consistency and ease of comparison, measures of economic and fiscal benefit are defined on the basis of *per square foot of site area developed* or as *a percentage of total real estate development cost.*

- Employment potential is estimated consistent with job density ratios derived from the Portland EOA.

- Business revenue and average annual wage per worker is from IMPLAN data for the Portland metro region as of 2009 (including self-employed and proprietors) – as per data provided in conjunction with the EOA.

- Net income as a percentage of gross business revenue is estimated from business license data of Portland Revenue Bureau by business type for 2000 and 2007.

- Property tax rates reflect a composite rate per $1,000 tax assessed valuation across varied in-City levy codes as of 2011-12, including change ratios as applicable to industrial, commercial and residential uses.

- Personal property tax rates are estimated at an average 16.5% add-on to real market value (RMV) for industrial uses and 12.2% for commercial uses based on urban renewal analysis for the Portland Development Commission (PDC). Note that personal property can vary widely, especially for industrial uses, depending on the capital intensiveness for equipment of a particular industrial operation.

- Oregon personal income tax is based on current income-adjusted rates and corporate income tax at an estimated 7.6% marginal rate.

- The Multnomah County marginal rate is 1.45% applied to net business income; Portland marginal rate is at 2.2%.

Data assumptions and methodology are subject to refinement based on review of this preliminary draft report.

As with the financial pro forma analysis, this discussion is organized around the seven brownfield typologies and associated public benefit implications. This typology-specific evaluation is then followed by a broader review of lost opportunities across the full Portland employment landscape

1. Downtown High Density

As might be expected, Downtown High Density development is associated with high potential levels of public benefit relative to land area required. Employment densities for the mixed use and office-retail typologies considered range from over 260 to 310+ employees per acre.

When considered in terms of the relationship of on-site payroll to total development cost, annual payroll equates to about 10% of real estate development cost (with mixed residential-commercial use) to 23% (with all commercial use). This is illustrated by the first of three sets of bar graphs provided below.

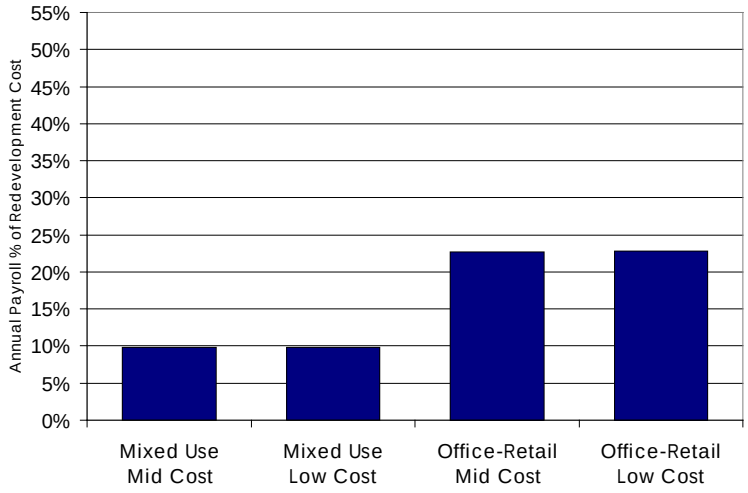
Tax revenues are also relatively high, due to density of development – estimated at nearly $60 annually per square foot of land area to state and local jurisdictions (including $15-$16 per square foot to Portland).

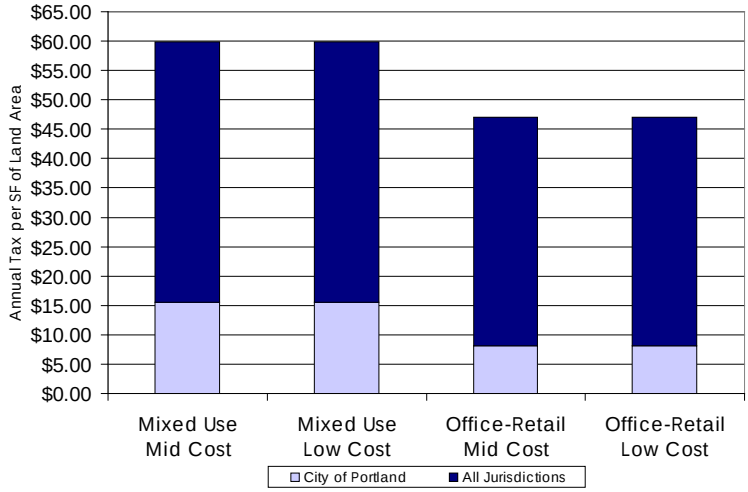
When considered relative to real estate development costs, annualized taxes range up to nearly 4% of project cost.

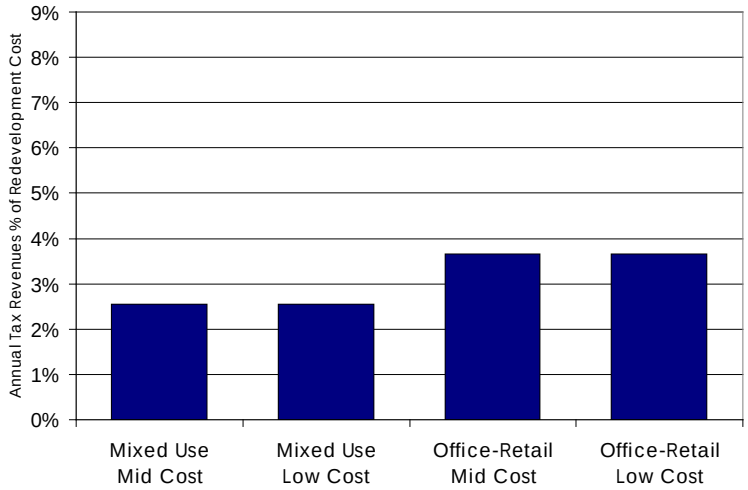
Note: As with the Downtown High Density typology, three sets of graphs are presented as indicators of economic and fiscal benefit for each of the employment / brownfield typologies considered:

- Annual payroll as % of redevelopment cost
- Annual taxes as per square foot (SF) of land area (including property taxes to Portland and other jurisdictions, business income / license taxes to Multnomah County and City of Portland, and personal / corporate income taxes to the State of Oregon)
- Annual tax revenues as % of redevelopment cost

Figure 4-1. Downtown High Density Development Benefits







2. Mixed Use Hub

Of the seven typologies, Mixed Use Hubs are expected to achieve the third highest levels of development density – behind Downtown High Density and Central City Industrial. Employment densities might range up to about 50 jobs per acre.

With 100% commercial development, annual payroll ranges up to 28% of development cost (a higher ratio than for the downtown).

Annual state and local taxes are generated at a rate of up to about $9 per square foot of site area. This equates to between 2-4% of total project cost.

3a. Main Street West

The Main Street typology (west of 82nd Avenue) is associated with employment densities in the range of 28-44 jobs per acre – with the lower employment level associated with mixed use development.

Added annual employee payroll ranges up to nearly 27% of real estate project cost, comparable with the Mixed Use Hub typology.

Annual state and local tax take for the mixed use and 100% commercial alternatives considered is in the range of $5-$6 per square foot of site area – or up to about 4% of project cost.

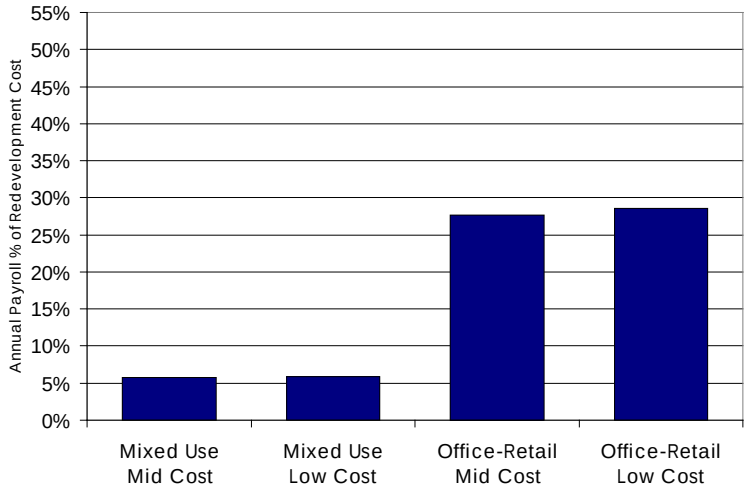
3b. Main Street East

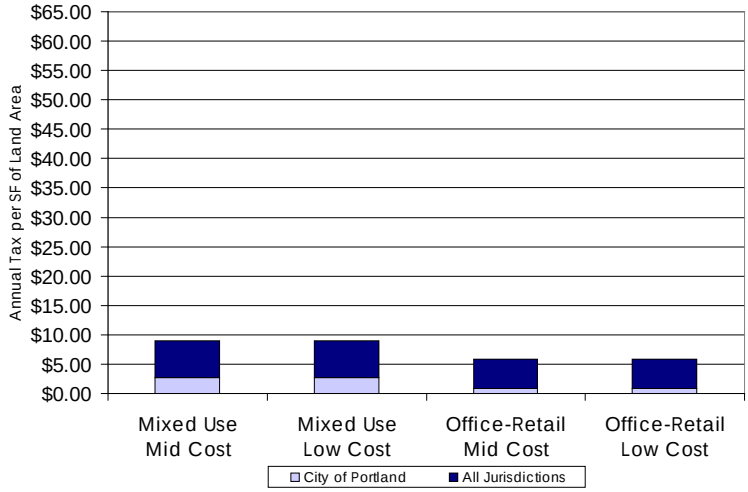
Commercial properties east of 82nd are generally expected to develop at somewhat lower densities than is the case with the Main Street West typology, but with a higher mix of commercial as part of mixed use projects. Employment densities of up to about 38 jobs per acre might be expected with redevelopment.

Annual payroll might range up to 34% of development cost.

Annualized state and local taxes run between $4-$4.50 per square foot of site area – or at up to nearly 5% of real estate development cost.

Figure 4-2. Mixed Use Hub Development Benefits





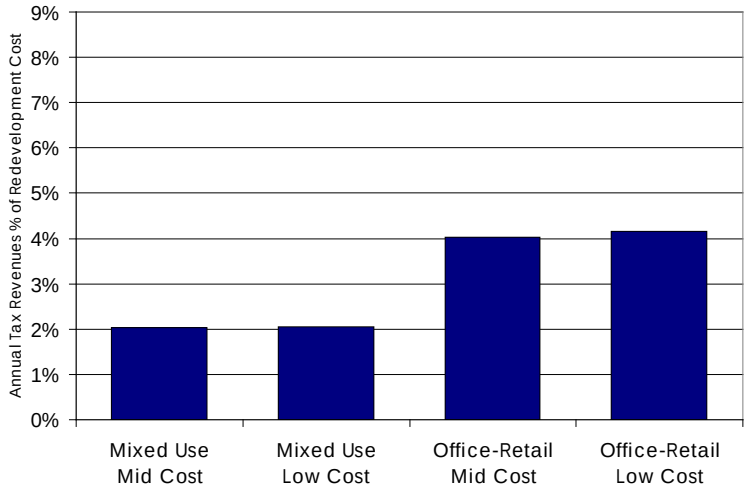
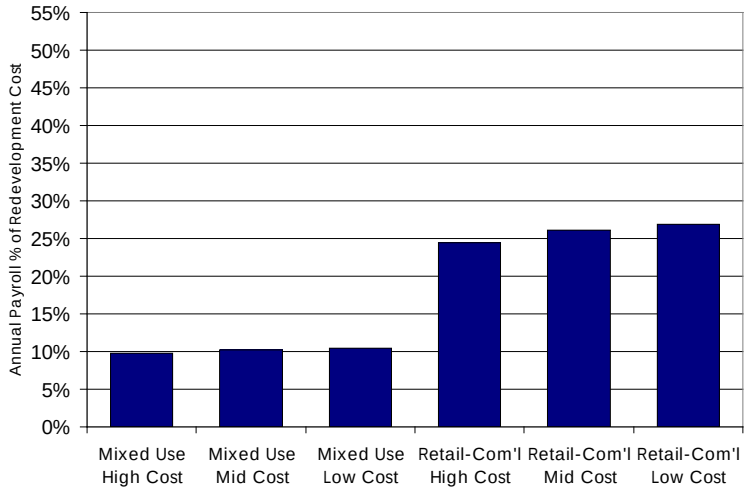
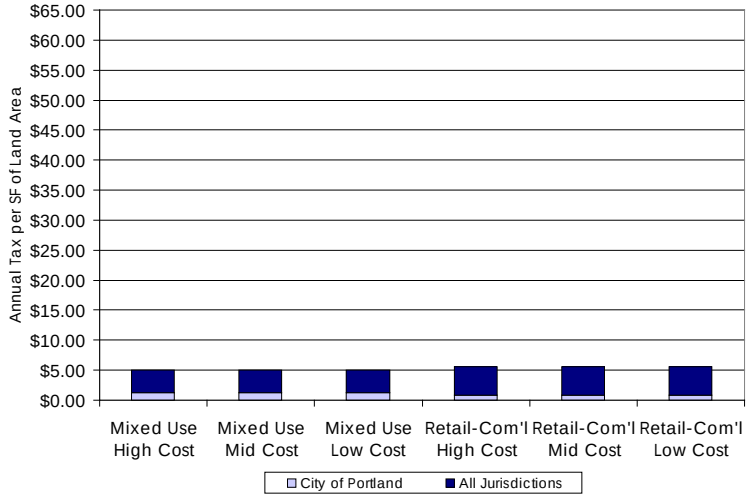


Figure 4-3. Main Street West Development Feasibility





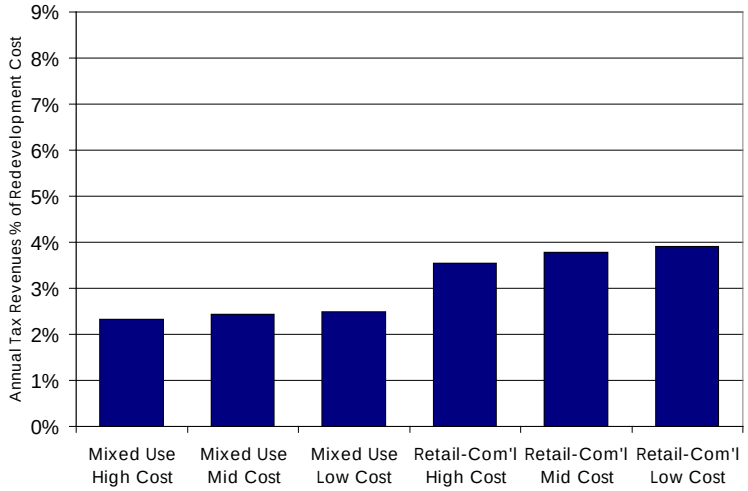
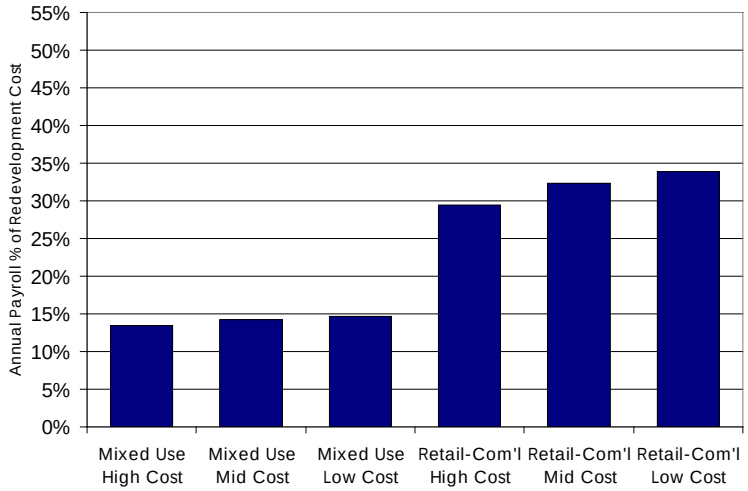
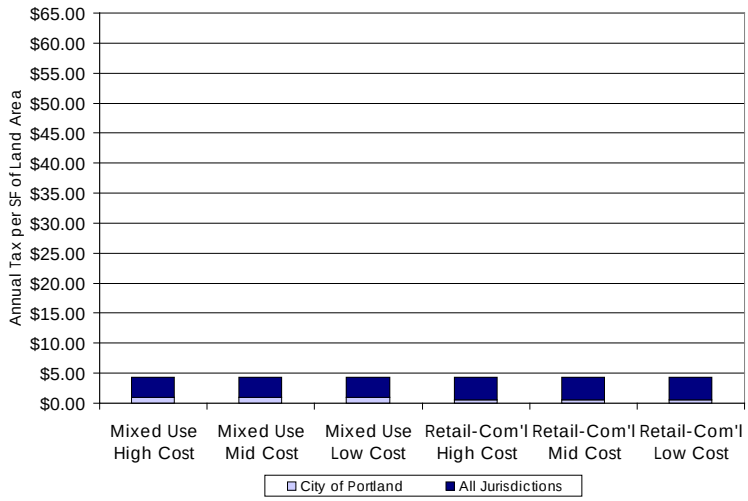
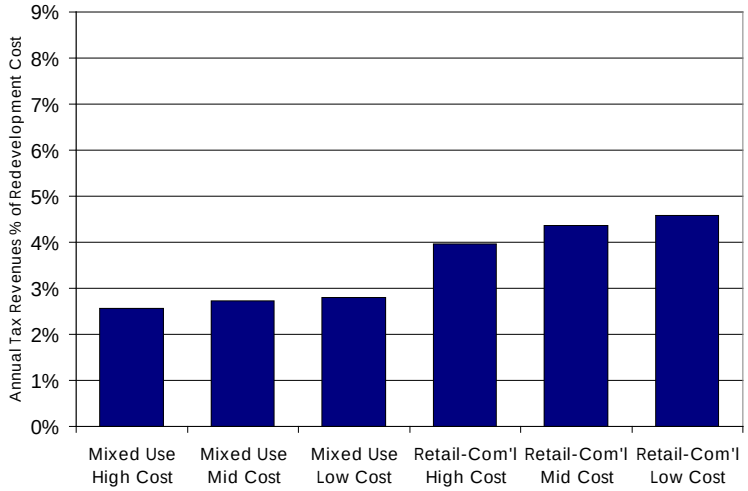


Figure 4-4. Main Street East Development Benefits







4. Central City Industrial

At 68 jobs per acre, the Central City Industrial typology and development prototype is associated with the second highest potential employment density in Portland – second to Downtown High Density.

At 33% of development cost, added annual payroll is also relatively high.

Annual tax revenue to state and local jurisdictions is estimated at $13 per square foot of site area – or between 5-6% of development cost.

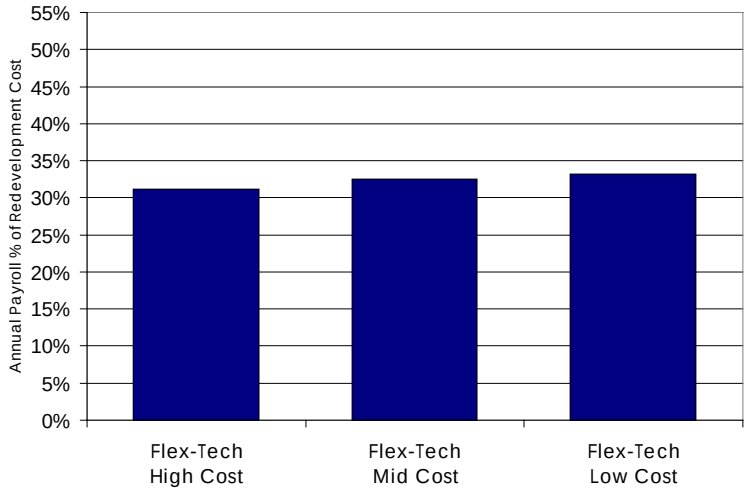
5-7. Industrial

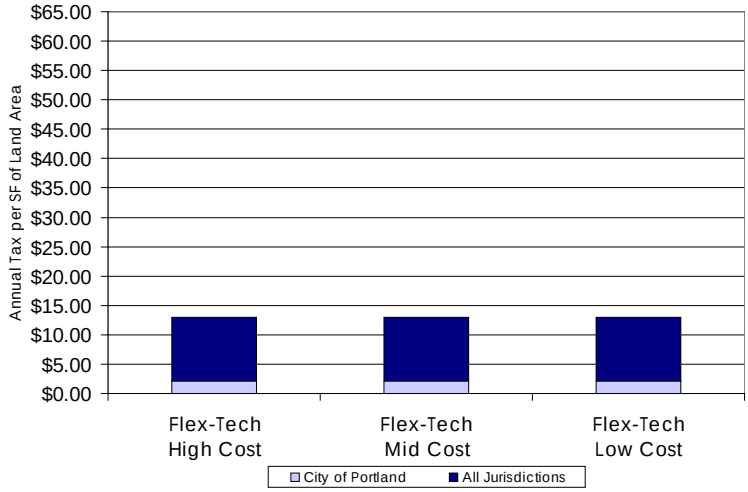
Industrial development benefits are estimated for the flex space-business park and warehouse-distribution project prototypes. Densities are lower than for the other typologies considered, but can still be relatively strong at up to 12-25 jobs per acre if the full site can be effectively utilized with brownfield redevelopment.

When considered on the basis of payroll potential relative to real estate development cost, the public benefit is highest of the typologies considered – with annual payroll potential at up to more than 50% of development cost. In part, this is because average annual wage is estimated at $69,000 per year for manufacturing / warehouse uses and $52,000 per job with flex / business park development – as compared with $46,000 per office and $24,000 per retail job.

State and local taxes generated from redevelopment are estimated at up to about $5 per square foot annually for flex-business park development and at just under $3 per square foot annually for warehouse-distribution space. Annual taxes range between about 5-8% of project cost – highest of the seven employment / brownfield typologies considered.

Figure 4-5. Central City Industrial Development Benefits





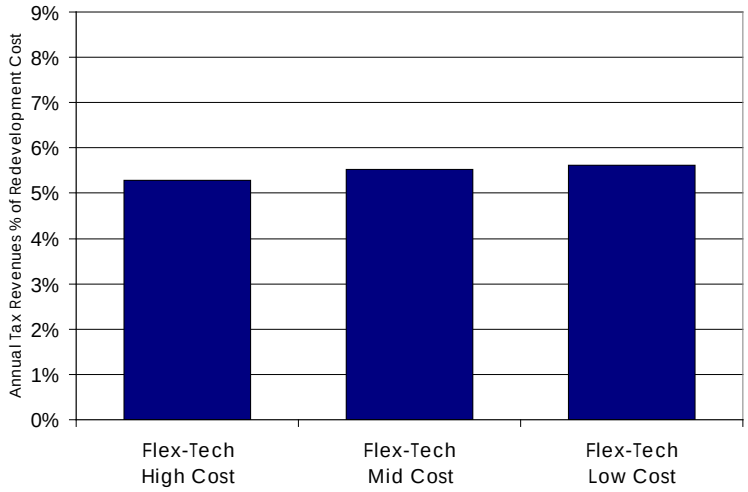
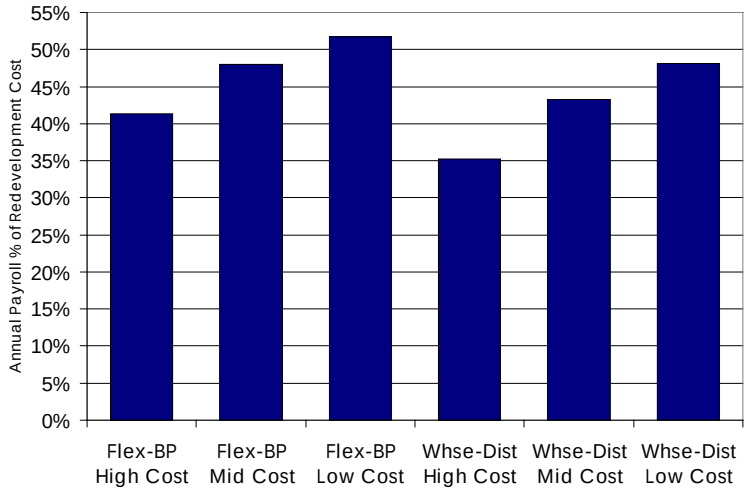
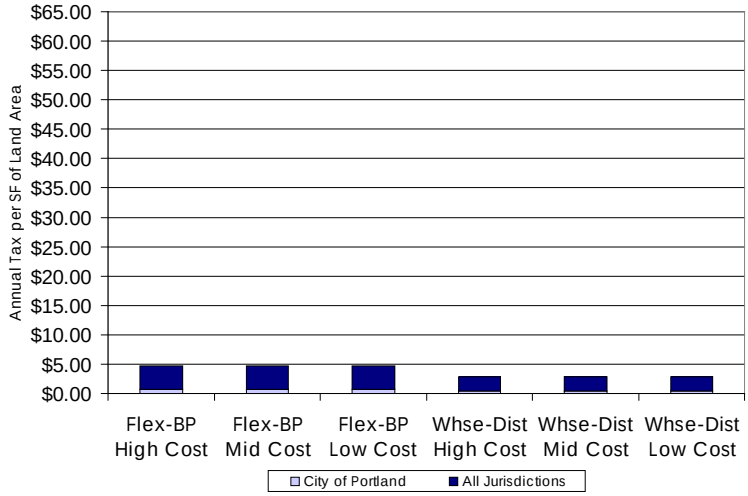
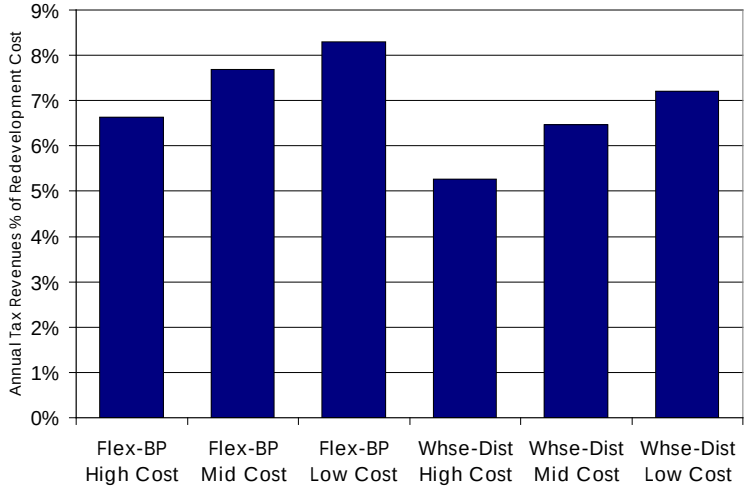


Figure 4-6. Standard Industrial Development Benefits







Overview Observations

This public benefits analysis serves to illustrate the tradeoffs inherent in meeting a multiplicity of employment and tax revenue benefits for Portland businesses and residents. These larger tradeoffs are clearly reflected in choices about investment related to brownfield remediation as well:

- Higher density development – especially with downtown mixed use – can serve to maximize employment and tax return relative to employment land area required. However, the community-wide employment and tax revenue benefits realized are not as strong when considered relative to the dollar levels of real estate investment required.

- In contrast, the Industrial typology requires more land area to achieve similar employment and land benefit. With brownfields, the feasibility of redevelopment is also more seriously impaired than for higher density sites where the cost of remediation can be spread across more square feet of building development. However, when considered relative to total development cost (even with remediation), the return on investment in the form of payroll and tax revenues is considerably higher than for the other typologies considered – as is average wage.

4 NATIONAL BEST PRACTICES

Brownfield cleanup and redevelopment is a challenge faced by cities across the country. Many cities and states have experimented with different policy and planning approaches to promote redevelopment of these contaminated properties, including those encumbered by rivers and harbors designated as Superfund sites. A review of effective policy tools from across the country has been conducted to provide a menu of options that can be analyzed to determine if they may be relevant and appropriate for Portland.

Brownfields Baseline Programs

Almost all cities and states (including Portland and Oregon) that have made cleanup and redevelopment of brownfields a priority have adopted several foundational programs including

Voluntary Cleanup Program—provides an expedited administrative pathway for cleanup of less contaminated properties with limited state oversight.

Brownfield Program—public agency staff that act as liaison between property owners and regulatory agency, typically active in coordinating funding for projects along with outreach and education. Both Portland and Metro Regional Government have brownfield programs.

Assessment Grants—funds for conducting studies to characterize contamination on properties and develop cleanup plans. These grants can be critical to defining the magnitude of cleanup cost and creating certainty that facilitates private investment. State and local grant programs are typically funded through EPA grants. Portland and Metro have both managed assessment grants in the past.

Brownfield Revolving Loan Fund—low interest loan program to support cleanup of contaminated properties. These programs are typically capitalized by federal funds. Business Oregon manages two brownfield revolving loan funds, one capitalized by the EPA and the other by the state. Portland is in the process of establishing a federally capitalized brownfield revolving loan fund.

This report focuses on financial incentives and policy tools that are not currently available in Oregon. They are framed in this report through example cities and governments that are considered national models. These cities include:

Tacoma, Washington—a city that has turned the challenge of a Superfund designation into an opportunity to recreate its waterfront

Minneapolis-St. Paul, Minnesota—partnership between several local and regional governments has been developed to leverage resources to promote brownfield redevelopment.

New Bedford, Massachusetts—a historically industrial community with a strong fishing community that has leveraged federal, state and local resources to develop its economy in spite of a Superfund sediment site

Milwaukee, Wisconsin—an older city with a strong industrial past that is focusing on brownfields as a way to promote sustainable development

Genesee County, Michigan—a leading example of the use of land banks and Tax Increment Financing for brownfield redevelopment.

While each of these communities has created a unique set of policies that incent cleanup and redevelopment of brownfields, they share a number of fundamental similarities that are important to recognize.

Economy and the Environment—Cleanup and liability is a fundamental concern for brownfields, but the paradigm of viewing these properties first and foremost as an economic opportunity lead each of these communities to a proactive and successful approach.

Local Government Leadership—A commitment by local leaders to brownfield redevelopment as a key element of community development and quality of life. This commitment has ranged from investment of local tax dollars, to assumption of environmental liability, to being an advocate for change at the state or federal level.

Coordinated Approach—These communities have not developed a single silver bullet policy tool, but rather created a package of land use and economic development plans, financial incentives, regulatory reforms, and infrastructure investments. These multiple actions have been coordinated and mutually supportive, to target specific brownfields challenges, and designed to address weaknesses in the regulatory and incentive framework.

4.1 Tacoma

More than 100 years ago, the Thea Foss Waterway in Tacoma was home to thriving industrial activities served by rail and marine transportation infrastructure. By the early 1980's, changes in the region's economy had left the area blighted and littered with vacant buildings and the contaminated sediments in the waterway were included in the designation of Commencement Bay as a Superfund Site. The designation was followed by approximately 10 years of investigation and study of cleanup options lead by the US Environmental Protection Agency (EPA) and Washington State that involved dozens of potentially liable parties. As the Superfund process began to focus on allocation of costs for cleanup, the City of Tacoma, with support from private business and community leaders, agreed to take the lead on the cleanup. In 1991, the City acquired approximately 27 acres of property on the Thea Foss waterfront and began to negotiate with the regulatory agencies and potentially liable parties on how to proceed with cleanup. The City created the Foss Waterway Development Authority, a special-purpose public development entity to hold title to the properties and position them for redevelopment. A development plan and design guidelines were established to set the stage for transformation of the formerly industrial area to a high density, mixed use community with a waterfront esplanade and recreation and entertainment opportunities. Redevelopment plans engaged the community, generated enthusiasm for revitalization of the waterfront, and allowed cleanup plans to be tailored to future uses.

There were many challenges along the way, including the recent economic downtown, but twenty years later, Thea Foss Waterway has been transformed. The public esplanade has been largely completed and seven of fifteen development sites are being constructed or planned for redevelopment. Today the Thea Foss is home to unique uses, including the Museum of Glass; the Chihuly Bridge of Glass; Albers Mill, a restored 1904 mill converted to residential use; and Thea's Landing residential community and appurtenances, including small boat moorage and a developing Maritime Center.

A number of policies have supported the success of Tacoma in this project including

State Environmental Cleanup Grants—Washington State provides grants to local governments funded by a tax on hazardous materials. This *ad valoreum* fee on the wholesale value of petroleum, pesticides and other listed materials has generated over $60 million in funds for local government grants per year. See Section 4.6.1 for more discussion of this policy tool.

Integrated Planning & Site Assessment Grants—The significant public risk and investment taken on the Thea Foss was supported in large part based on a community planning effort to create a new vision for revitalization of the waterfront. This model has helped lead to a state grant

program that funds both environmental assessment as well as redevelopment planning for brownfields. See Section 4.6.2 for more discussion of this policy tool.

Public Equity in Brownfields—The local government acquisition of the waterfront properties was instrumental to changing the paradigm of the cleanup process to a neighborhood revitalization effort. It has also positioned the local government to potentially realize direct financial returns on its investment. See Section 4.6.6 for more discussion of this policy tool.

4.2 Minneapolis-Saint Paul

The Minneapolis-St. Paul metropolitan area has taken a leadership role in cleanup and redevelopment of brownfields that is nationally unique for its local government leadership. The Twin Cities have developed a strong partnership between their County, Port Authority and Regional Government Council to establish a dedicated environmental cleanup fund, acquire brownfield properties, and target public investments

Dedicated Environmental Cleanup Fund—In 1997, Ramsey County (which includes the City of St. Paul) established the Environmental Response Fund to create a local funding source for contaminated site cleanup. The fund revenues are generated by a mortgage registry and deed tax of 0.0001 percent of the principal amount. The funds may be used for land acquisition, remediation, site improvements, and indemnification. Public and private entities are eligible to receive grants or loans from the fund. The funds are intended to provide gap financing. To date, twenty-two clean-up projects have received Environmental Response Funds totaling $5.7 million and representing approximately 200 acres of remediated and redeveloped brownfield property. Note the program is scheduled to sunset in 2012. See Section 4.6.1 for more discussion of this policy tool.

Targeted Funding—The Metropolitan Livable Communities Act established financial incentives to support local governments in voluntarily working toward regional planning goals of equitably providing affordable housing, promoting infill development, and building public infrastructure to support private sector investment. The Livable Communities Fund is managed by the Twin Cities Metropolitan Council and consists of five accounts designed to support different types of compact development projects. The Tax Base Revitalization Account supports cleanup and redevelopment of brownfields. The account is funded by a legislatively authorized levy capped at $5 million annually and is credited with cleaning up over 1,700 acres of contaminated land.

Brownfield Acquisition—The Saint Paul Port Authority has played a lead role in acquiring, remediating, and redeveloping brownfield properties. The Port Authority is an economic development organization, which has historically focused on river-related commerce. They currently control 17

business centers/industrial parks (13 complete and 4 currently under development) in Saint Paul, all of which resulted from acquisition of brownfield sites. Completed projects house 526 businesses that employ over 17,000 persons. The Port Authority finances projects from bond funds, New Market Tax Credits, revenues derived from past projects, tax increment financing (TIF), and federal and state sources. The tools used to implement this successful acquisition-redevelopment program include several distinguishing elements:

- Land value write-down used frequently as a business incentive with the Port Authority often selling land for $1. The land value write-down assists businesses in complying with St. Paul's extensive public benefit eligibility requirements for financial incentives.

- TIF is the primary financial incentive for these projects and was strengthened in 2010 when the legislature allowed "pooling," which means that revenues generated by a mature district can cross-subsidize a start-up district.

- The Port Authority is a designated Community Development Entity that has allowed New Markets Tax Credits to support several of their projects.

- Environmental due diligence procedures and Minnesota state liability protections for innocent purchasers minimize the contamination risk taken on by the Port Authority.

Tax Increment Financing—Minnesota has adopted a variations on TIF that specifically supports brownfields redevelopment. The law permits the original tax capacity (the frozen tax value) to be reduced or "written-down" by the cost of cleanup. This provides for a greater increment to be generated as the property is remediated and eventually redeveloped. See Section 4.6.5 for more discussion of this policy tool.

4.3 New Bedford

New Bedford, Massachusetts is one of the leading commercial fishing ports in the United States. In the 1800's the city was renowned for its whaling fleets and textile mills. Through the1900's the city's economy continued to be based on commercial fishing and industry. This industrial history has left a legacy of contamination in New Bedford Harbor as well as on upland properties. The harbor was designated as a National Priorities List Superfund Site in 1983. The harbor superfund site includes covers approximately 18,000 acres of the urban estuary where sediments are contaminated with polychlorinated biphenyls (PCBs) and heavy metals. After years of study, targeted dredging of contaminated sediments began in 1994. The dredging of

high priority and strategic areas continues on an annual basis and is expected to be completed in 20-30 years.

The City of New Bedford has taken an active role in the Superfund cleanup process and in promoting cleanup and redevelopment of brownfield properties. The City's approach has been based on forming partnerships, leveraging funding, and strategically positioning specific properties for cleanup and redevelopment.

Partnerships—The City has coordinated with its local Port and Economic Development Council to plan for redevelopment and revitalization of the harbor and community. It has engaged federal partners including EPA and the National Oceanic and Atmospheric Administration through the "Portfields" program to bring increase technical and financial capacity.

Leveraging Federal Funding—The City has been successful in obtaining numerous EPA brownfield assessment and cleanup grants for specific projects and has played a key role in obtaining federal funding for cleanup of the harbor including approximately $30 million in American Recovery and Reinvestment Act economic stimulus funds.

Brownfields Acquisition—The City has taken title to a number of brownfield properties in order to obtain grant funding for site assessment and cleanup. The City and its local partners have conducted a study to prioritize brownfield properties based on economic redevelopment potential and competitiveness for EPA grant funding.

In addition to these broad strategies, a number of specific policies and programs have supported New Bedford in their effort to cleanup and redevelop brownfields

Brownfields Remediation Tax Credit—This program allows work parties to receive a credit on their state business or personal income tax based on the cost of remedial actions. Because the tax credits are transferable, non-profit organizations can take advantage of the credits as well. See Section 4.6.3 for more discussion of this policy tool.

Pooled Environmental Insurance—Massachusetts has established an insurance program to provide management of risks related to contamination liabilities at a discounted price.

4.4 Milwaukee, Wisconsin

Milwaukee has a long-standing and well-regarded brownfields program that has served as a model EPA Brownfields Showcase Community. Since 1990, Milwaukee has been actively involved in at least 87 brownfield redevelopment projects. Successful redevelopment projects have included manufacturing, residential, retail, and commercial projects. The City of

Milwaukee has invested over $21.7 million in the testing and clean-up of these properties. To date, $766.1 million of redevelopment investment and 3,384 jobs have been created or retained as a result of these redevelopment projects.

The Menomonee Valley Industrial Park[1] is often cited as model of successful re-positioning of an older industrial center, now accommodating 4,200 jobs and serving as an example of sustainable industrial development, both in that significant land has been preserved and in that a number of the new businesses are green job producers.

Milwaukee's brownfield program is supported by several policies including:

Tax Increment Financing—There are seven TIF zones just in the Menomonee Valley Industrial Park. TIF is usually used to finance infrastructure, cleanup, and site preparation to support new business investment. Milwaukee has also successfully matched up federal Housing and Urban Development (HUD) Section 108 loans and TIF. For the Menomonee Valley Industrial Park, TIF was used as the repayment source for a $10 million HUD Section 108 loan, linked to a $2 million HUD Brownfield Economic Development Initiative grant. See Section 4.6.5.for more discussion of this policy tool.

Brownfield Acquisition—Milwaukee has directly taken ownership of key parcels, such as the 135 acres for the Industrial Park. They have also established authority to assist private buyers in acquiring tax foreclosure properties through an expedited process.

Brownfield Remediation Tax Credits—Wisconsin has a Remediation Tax Credit Program that grants a 50 percent credit for cleanup projects located within designated Community Development Zones (distressed areas). See Section 4.6.3 for more discussion of this policy tool.

4.5 Genesee County

Genesee County, Michigan (which includes the City of Flint) was able to bring their rampant property abandonment problem under control through the creation of the Genesee County Land Bank. The land bank is often cited as a model use of land-banking for brownfields. However, the land bank broadly addresses vacant and tax foreclosed land; including, but not limited to, brownfields. The hallmarks of the program are:

- Expedited foreclosure process;
- Disposition of properties according to a plan instead of a mechanical bidding process;

[1] See: http://www.renewthevalley.org/

- Elimination of tax liens;
- Use of tax increment financing to enable cross-collateralization.

The use of TIF for cross-collateralization has been generally regarded as the key to success. Michigan passed land bank legislation 1) defining any property in a land bank as a "brownfield," and 2) allowing scattered site (non-contiguous) TIFs for land banks. These two reforms meant that all land bank properties were eligible for TIF. The County then issued TIF debt based on projected revenues from putting properties back on the tax rolls. As many as 4,000 mostly non-contiguous properties were batched into these TIF plans. This set the stage for stronger ready-for-redevelopment sites to generate tax revenue to cross subsidize sites that needed more upfront investment (often demolition) in order to make them viable candidates for new investment.[2] See Section 4.6.5 for more discussion of this policy tool.

4.6 Policy Tools

The review of model communities across the county provides a framework for how multiple policy tools are coordinated to create an effective approach to brownfields. This section provides more detailed discussion of specific policy tools that have supported brownfield redevelopment in the model communities. Additionally, Policy options that have been recommended in previous studies or workgroups related to urban infill and brownfields in Portland are reviewed in Section 4.7.

The discussion of each policy option is crafted to provide a brief overview and summary analysis of the tools including the following elements:

Summary—briefly describes the policy tool

Purpose—describes what policy tool is intended to achieve

Method—outlines how the tool works and its key elements

Lead Entity—identifies public agency most suited to lead program

Advantages—states the positive aspects of the policy

Disadvantages—indicates the potential drawbacks of the policy.

The tools are summarized in the table 4-1 and are individually described in narrative.

[2] Dan Kildee, presentation to the Northeast-Midwest Institute Brownfields Community Network, October 30, 2008, available: http://nemw.org/images/stories/documents/geneseecountylandbank.pdf

Table 4-1

City of Portland Brownfield Policy Tools Matrix

TOOL	DESCRIPTION	CHALLENGES				STATES / CITIES THAT HAVE ADOPTED
		Financial	Liability	Industrial Redevelopment	Superfund	
NATIONAL BEST PRACTICTES						
Dedicated Brownfield Cleanup & Redevelopment Fund (Section 4.6.1)	Establish a dedicated fund for cleanup and redevelopment of brownfields. The revenues of the fund could be generated from a large state bond or a fee.	X				WA, NY, NJ, MI, OH, PA, Minneapolis-St. Pau & Boston
Integrated Planning & Site Assessment Grants (Section 4.6.2)	Establish a publically funded Brownfield Integrated Planning Grant to conduct environmental assessments and support site-specific redevelopment strategies.	X		X		WA, NY, NJ, OH
Brownfield Remediation Tax Credit (Section 4.6.3)	Consider expanding the use of tax incentives, such as income tax credits for dollars spent on site investigation and environmental cleanup.	X		X		13 states, including MA, WI, NY, NJ, FL, and IL
Pooled Environmental Insurance (Section 4.6.4)	Establish a program that would decrease the transaction costs and reduce the cost of purchasing environmental insurance to covers risk.		X	X	X	Massachusetts, Wisconsin, California
Tax Increment Financing Targeted to Brownfields (Section 4.6.5)	Improve existing TIF authority to provide greater support for brownfield cleanup and redevelopment.	X		X		Wisconsin, Michigan, Kentucky as models
Public Land Bank (Section 4.6.6)	Establish a land bank to acquire contaminated properties (typically also foreclosed properties), manage and finance cleanup and redevelopment, and sell property back into the private market.	X	X	X		Michigan, Minnesota
Job Creation Tax Credits (Section 4.6.7)	Provide a tax break to developers based on the number of jobs provided by a completed development.	X		X		Florida
Build Market Demand (Section 4.6.8)	Develop programs to link more risk tolerant investors and developers with brownfield properties.			X		Pennsylvania, New Jersey, Ohio

Table 4-1

City of Portland Brownfield Policy Tools Matrix

Tool	Description	CHALLENGES				STATES / CITIES THAT HAVE ADOPTED
		Financial	Liability	Industrial Redevelopment	Superfund	
PORTLAND-BASED POLICY OPTIONS						
Public-Private Investment Entity (Section 4.7.1)	Building on models being explored in the Community Investment Initiative, create a new entity to combine public and private funds and foster unique joint venture opportunities.	X		X		
Historical Insurance Recovery Support (Section 4.7.2)	Provide technical support to assist work parties in making claims on historical insurance policies.	X	X	X		Indiana, Oregon (previously)
Reform Contaminated Property Tax Assessment (Section 4.7.3)	Modify tax assessment valuation rules to include time restrictions on the value reduction associated with a cleanup liability to discourage moth-balling	X				
Model Purchase and Sale Agreement (Section 4.7.4)	Create a model agreement with indemnification language and distinctions between upland and in-water liabilities along with standard transfer issues such as due diligence period, timing of cleanup, warranties, and inspection period.		X		X	
SUPERFUND POLICY OPTIONS						
Federal Prospective Purchaser Agreements (Section 4.8.1)	EPA provide Prospective Purchaser Agreements, jointly with Oregon DEQ to provide certainty and liability protection to innocent purchasers of contaminated properties under federal Superfund Law.				X	Used on individual sites, but not programmatically as recommended.
CERCLA De Minimis Settlements (Section 4.8.2)	EPA provide expedited settlement agreements for owners of properties that likely cause minor impacts to the Harbor.				X	Used on individual sites, but not programmatically as recommended.
Corps of Engineers Urban Rivers Restoration Initiative (Section 4.8.3)	Coordinate Portland Harbor cleanup into federally led project with broader focus to improve health of the river in addition to addressing sediment contamination. The Urban River Initiative uses a more collaborative process than CERCLA and would position the Harbor for a major federal appropriation to support the effort.				X	New Jersey—Passaic River, New York—Gowanus Canal

4.6.1 Dedicated Brownfield Cleanup and Redevelopment Fund

Summary—A state or local fund dedicated to cleanup and redevelopment of contaminated sites.

Purpose—Provide a robust source of public funds to subsidize cleanup and redevelopment of brownfield sites.

Method--Oregon State and Portland currently have several funding programs for brownfields including

- Brownfield Revolving Loan Fund
- Orphan Site Account
- Site Assessment Funds

However, these funds have limited their financial capacity. Several other states and local governments have created dedicated cleanup and redevelopment funds through bond measures, dedicated taxes, or use of federal Housing and Urban Development (HUD) Section 108 loans.

Bond Measures and Dedicated Taxes

Several states including Michigan, Ohio, Pennsylvania, and New York, have passed large bond measures to support environmental cleanup. Washington State's cleanup law, which was passed by voter initiative, included a fee on the wholesale value of hazardous substances, including petroleum, at a rate of $7 per $1,000 of wholesale value. The funds are used to support hazardous waste cleanup and prevention activities. The hazardous substance tax has generated over $100 million per year in revenues in the last five years. This high level of funding has been driven almost entirely by the high price of oil. The Oregon constitution includes a provision that prohibits the use of a fuel tax for any purpose other than transportation, so the Washington State model would need to be connected to a different tax revenue stream to be effective in this state.

Other dedicated funds for brownfields have used: liquor sales tax add-on (Ohio); real estate transfer tax (New York); bottle bill revenues (New York); municipal waste and tipping fee (Pennsylvania), and a portion of the corporate business taxes (New Jersey). Most of the resulting funds are used for site preparation, as well as cleanup. Usually public sites are eligible for grants, and private sites are eligible for loans and loan guarantees (sometimes private sites are eligible for grants through a public agency sponsor).

The Twin Cities of Minneapolis-St. Paul demonstrate how a local government can establish a cleanup fund. Ramsey County has been

authorized by the state to collect a mortgage registry and deed tax to establish a fund to provide gap financing for brownfield. The use of the fund is very flexible and can cover remediation, site improvements, and indemnification associated costs. The Twin Cities Metropolitan Council also manages a cleanup loan and grant fund that is funded through a property tax levy. The Minneapolis-St. Paul approach may provide a model of a tax revenue stream that could support brownfield cleanup and redevelopment. The large bond model may also be applicable for Oregon.

HUD Section 108 Loan as Brownfield Fund Source

HUD Section 108 can be used to create a brownfields loan pool with low interest rates and other favorable terms. Loans could be geared to cleanup and site preparation for brownfields, provided that the site and the expenditures are eligible under Community Development Block Grants (CDBG).

Local governments that are "Entitlement Communities" (including Portland) are allowed to borrow up to five times their annual CDBG allocation. Portland's future CDBG allocation must be part of the security for the HUD 108 loan. By loaning out the funds to multiple projects, instead of one large project, Portland would minimize risk exposer related to non-performance. Further, Portland can borrow from HUD Section 108 at approximately 1 percent, and re-loan the funds at 3 or 4%, using the difference to build up a shared reserve account as contingency for a future non-performing project.

The "Boston Invests in Growth" program is one example of a HUD Section 108 loan pool that has been used for, but is not limited to, brownfield projects. Boston gears the $69 million program to alternative mezzanine financing and requires that a primary lender be secured for a project. The program is projected to create 1,200 jobs; employment for low and moderate income persons is the rationale for using the HUD funds.

Combining HUD 108 loans with TIF for repayment creates an additional and more aggressive subsidy possibility. Loans could be effectively converted to grants if Portland agrees to use TIF as the re-payment source.

Lead Entity—Large cleanup funds are typically approved and managed at the state level. However, local jurisdictions, such as Minneapolis-St. Paul and Boston have established funds, as well.

Advantages

- Increases financial capacity for conducting cleanups
- Provides state or local control of funds in contrast to competing with priorities of federal funding

- The HUD Section 108 option has the dual advantages of: 1) being in Portland's control; and 2) not involving any new or diverted local tax dollars.

Disadvantages

- Challenging economic and political conditions for establishing a new tax or issuing large bonds
- Competition with other funding priorities (such as infrastructure, education, salmon recovery, etc.)
- For the HUD 108 option, eligible projects must fit into HUD national objectives, and that will narrow the list of potential projects.

4.6.2 Integrated Planning & Site Assessment Grants

Summary—Integrated planning grants support environmental site assessments to understand cleanup needs, and also fund studies to support a site-specific redevelopment strategy. Eligible planning costs include: market assessment, land use analysis, infrastructure assessment, geotechnical assessment, site planning, and property appraisal.

Purpose—These grants help communities conduct due diligence before investing in contaminated properties and create a redevelopment vision and strategy that can drive the cleanup

Method—Integrated Planning Grants are managed by the Washington State Department of Ecology. The states of New York, Ohio, and New Jersey have also established grant programs to help communities plan for redevelopment of brownfield properties. These grants can focus on an individual property or a neighborhood or area impacted by multiple brownfields. In each of these states grants are available to local governments, including special purposes districts, with little or no matching fund requirement.

Lead Entity—State or local government.

Advantages

- Creates the opportunity for more local governments to play leadership roles in redevelopment of abandoned, underutilized, and contaminated properties while minimizing financial risk to local communities.
- Provides resources to smaller communities that otherwise would lack the capacity to take on important cleanup and redevelopment projects.

Disadvantages

- Creates greater demand for public brownfield funds.
- Not applicable to brownfield redevelopment projects led by private parties.

4.6.3 Brownfields Remediation Tax Credit

Summary—Income tax credit for costs of conducting site investigation and environmental cleanup.

Purpose—Remediation tax credits provide a financial incentive that is dependable, predictable, and substantial. They can be designed to be applicable to both private and public sector entities.

Method—The mechanics of how tax credit programs operate vary among the 13 states that have adopted this type of policy.[3] The major policy elements include:

- Cap on the overall total financial capacity of the program (such as an annual limit on the total tax credits that can be allowed)
- Limits to credit available for an individual project
- Transferability of the tax credit (ability to transfer or sell the credit to another party which allows a party to generate upfront capital)
- Eligible costs (limited to cleanup or inclusive of site preparation or other redevelopment expenses)
- Needs testing (requiring that a project meet certain criteria to be eligible for the tax credit)
- Links to certain public benefits, such as job creation or investment in distressed areas (as requirements for eligibility or incentives for greater magnitude of tax credit)

Generally, the programs that offer the possibility of greater subsidy of redevelopment costs (not just cleanup) also have more needs testing and overall program caps, and, consequently, the tax credit is far from automatic. New York, Connecticut, Iowa, and Missouri are in this category.

[3] Redevelopment Economics, Chart of State Brownfields Tax Credits, see http://www.redevelopmenteconomics.com/yahoo_site_admin/assets/docs/State_Tax_Credits_chart_7-11.208190334.pdf

At the other end of the spectrum are state programs that are fully automatic but are limited by per project ceilings (Mississippi, Colorado, Illinois, Florida, and Kentucky), and are therefore unable to offer a substantial inducement for larger more complex cleanups.

Several states (Wisconsin, New York, and New Jersey) do not make their credits transferable, which means that non-profits cannot benefit, and many developers with limited tax liability cannot take advantage of the incentive.

Massachusetts is the only state that offers a brownfields tax credit with the combination of being: 1) fully automatic; 2) fully transferable; and 3) not subject to per project ceilings. The Massachusetts program is also a model in that unrestricted use cleanups are rewarded (a 50 percent credit for unrestricted-use cleanups versus a 25 percent credit for restricted use cleanups). The program is also restricted geographically to Massachusetts designated Economically Distressed Areas.[4]

A draft report on the impact of the Massachusetts Brownfields Tax Credit being prepared by Redevelopment Economics outlines the impacts of 44 completed projects (representing between 50 and 65 percent of all tax credit projects):

- $54 million in tax credits have helped leverage $2 billion in brownfields investments, a leverage ratio of $37/other funds to $1/tax credit. All brownfield tax credit investments are in state-designated Economically Distressed Areas (a statutory requirement) so all investments assist struggling communities and neighborhoods.

- The state's investment in brownfield tax credits is repaid six times over in only 10 years of operation. That is, state tax revenues derived from initial construction and from ten years of the on-going impacts of businesses locating at brownfield sites exceed the initial public investment by a factor of more than six to one.[5]

Lead Entity—State

Advantages

- Provides a financial incentive for private investment in brownfields during a down economic cycle

- Creates a financial incentive that does not require establishing a new tax or fund

[4] See: http://www.mass.gov/dep/cleanup/bfhdout2.htm

[5] This calculation counts only direct impacts (not multiplier-derived impacts) and does not count the retail businesses attracted to BTC sites.

- If properly crafted, implementation of tax incentives requires few state staff resources.

Disadvantages

- Potential impact on state budget

4.6.4 Pooled Environmental Insurance

Summary—Publicly supported program that would decrease the transaction costs and reduce premiums for environmental insurance.

Purpose—Like standard insurance policies, environmental insurance is a tool to manage risk. Environmental insurance policies are frequently used in brownfield transactions, but because they are individually scripted for each project, the transaction costs can be a barrier. A publicly supported program can make environmental insurance policies more widely available. In Portland, an environmental insurance program could be crafted to specifically address risks and uncertainty related to the Portland Harbor Superfund site.

Method—There are several options for a public role to facilitate the use of environmental insurance that could be effective for addressing brownfield challenges in the Metro area. These include:

Pre-Selected Insurers—To reduce the transaction costs of environmental insurance and make it more accessible for smaller sites, the state or Portland could pre-select brokers or insurance carriers. The states of Massachusetts, Wisconsin, California, and Ohio currently offer this type of program. The program could offer cost cap insurance, pollution legal liability insurance, or blended risk policies. The insurers would establish standard guidelines and template policies to make the process of drafting and executing a policy more efficient. For the privilege of having business directed to the insurers, they could agree to a discounted premium cost (the states of Wisconsin, California, and Ohio programs both provide 10% discounts).

Another approach to reducing the premium costs is for the public agency to subsidize the insurance premiums. For example, Massachusetts covers 50 percent of the premium costs of eligible projects (with a $50,000 limit for private projects and $150,000 limit for publicly sponsored projects). The California program is also authorized with a 50 to 80 percent subsidy, but the subsidy aspect has not been funded for several years.

In 2009, the Massachusetts program reported that, over the 10-year life of the program, $6.6 million in state funds had assisted 330 projects that in turn created 27,000 jobs and $4.1 billion in new investment. The Ohio, California, and Wisconsin programs are both more recent and less aggressive; so impact numbers are likely more limited.

Public Insurance Pool—In this model, the state or Portland would allow project proponents to make a payment to the government as closure for tailing environmental liability. The government could in turn use those funds to buy insurance policies to cover a pooled group of sites. This method of contribution to reach closure is similar in principle to the current program addressing contaminated sediments in the Columbia Slough.

Portland Harbor Superfund Application—A pooled insurance model could be particularly effective in the Portland Harbor. The program could allow for small contributors to the Portland Harbor Superfund site (those only connected to the Harbor through stormwater discharge) to reach closure ahead of the final federal settlement by insuring against the specific risk that the property may be subject to EPA enforcement/cost recovery actions. Upon completion of upland cleanup actions (if needed) and implementation of stormwater best management practices, the parties would pay a premium that funds the environmental insurance. If the EPA or other potentially liable parties seek contribution from that party, the claim would be directed to the environmental insurance policy.

Lead Entity—State or Portland

Advantages

- Makes environmental insurance more broadly available which can provide the risk management to facilitate brownfield projects.
- Lower-cost environmental insurance premiums
- Pre-negotiated policy terms to reduce transaction costs and timeframes
- Streamlined underwriting process

Disadvantages

- Potential public costs to support the program
- Public takes on some measure of risk in the Public Insurance Pool model

4.6.5 Brownfield Focused Tax Increment Financing

Summary—Modify existing TIF policy to provide greater support to brownfields including:

- Making brownfields outside of urban renewal areas eligible
- Exempt brownfield projects from land and tax base TIF limits

- Allow "pooling" of TIF funds so that revenues from mature districts can "seed" start-up districts

- Augment local TIF revenues with state funds

- Use TIF to support an environmental insurance pool

Purpose—TIF has been an important financial tool to support a number of brownfield projects in Portland. There is potential for TIF to be refined to be an even more effective tool for promoting brownfield cleanup and redevelopment utilizing concepts adopted in other states.

Method—Most of the potential modifications to TIF would require legislative changes or revising criteria for property tax evaluations. However, some proposals might be advanced through administrative mechanisms. Several specific potential modifications for using TIF for brownfields redevelopment in Oregon are presented below.

Urban Renewal Plan Exception. The urban renewal-related requirements dictate that TIF is used only for area redevelopment, not for the redevelopment of isolated or small individual/brownfield sites. Some states, such as Wisconsin, make an exception so that brownfields sites can use TIF without the urban renewal plan requirement. In Oregon a statutory change would be required to create a similar exception, but the result would mean that numerous brownfield sites could potentially make use of TIF. More subtle, limited changes to support isolated or small sites could include 1) limiting brownfield TIF to sites that have been vacant for a certain time period; and/or, 2) limiting brownfields TIF expenditures to cleanup and site preparation, not infrastructure or vertical development.

Land / Tax Base Limitation. The limitation that localities may not designate TIF districts for more than 15 percent of their land or 15 percent of their assessable base in TIF districts may hamper TIF redevelopment, particularly in Portland. Several states have made exceptions to debt limitations for brownfield TIF projects. For example, sites eligible for Wisconsin's Environmental Remediation TIF program are not subject to the general requirement that TIF districts not exceed 15 percent of the equalized value. If this exception is not feasible, then the same potential compromises referenced for the urban renewal plan could apply to the limitations.

Pooling to Seed Start-up Districts. Brownfield Redevelopment Authorities in Michigan report that one of the keys to their success is the ability to seed start-up districts from unobligated revenues from mature districts. The St. Paul Port Authority also reported that they have been able to advance several new brownfields TIF projects because of a 2010 state reform that allowed pooling of revenues. This could be a general TIF reform or it could be adopted specifically for TIF projects that also qualify as brownfields.

State Revenues Dedicated to Assist Projects that Meet State Objectives. Oregon does not currently dedicate state revenues to supplement local TIFs. Sometimes dubbed "super TIFs," the pledge of state revenues can make a very significant difference in gap financing, and the logic of the state committing funds to support projects that meet state objectives is indisputable. One of the best examples is Kentucky's support for "Signature Projects," defined as mixed use redevelopment projects that involve a minimum $200 million investment and can be demonstrated to create net positive economic and fiscal impacts to the State.

An option that would have less fiscal impact would be to allow certain state revenues (generated by the project) to be used as extra security for the TIF but not for direct project expenditures.

State TIF Guarantee or Other Credit Enhancement. Several states offer limited TIF guarantees for certain kinds of projects. Connecticut's Brownfields Redevelopment Authority[6] is the best brownfields-specific example by both guaranteeing and creating an alternative loan source for brownfields TIF projects.

TIF and Environmental Insurance. Consideration should be given to developing a proposal to tie together TIF and environmental insurance. See discussion under Pooled Environmental Insurance (Section 4.6.4).

Lead Entity—State legislative change, implemented by Portland and other local governments

Advantages

- Expands a financial incentive program that has a track record of effectiveness
- Provides funding source to support public-private partnerships and leverage outside investment

Disadvantages

- Current market conditions create risk that incremental tax revenue generation may not meet expectations

4.6.6 Brownfields Land Bank

Summary—Establish a regional or statewide land bank to acquire brownfield properties and re-position them for redevelopment.

[6] See: http://www.ctcda.com/Landing/

Purpose—Provide patient capital to cleanup and reposition property within the context of a long-term plan.

Method—Land banks can provide an entity with the resources and long-term perspective to acquire and reposition constrained properties. Land banks are usually created to manage the orderly disposition of property that has come under local government ownership, most often through tax delinquency. The disposition process is governed by community plans rather than the short-sighted tendency of local agencies to try to "get the properties off our books." The orientation toward community planning means that many land banks also selectively acquire properties in order to address blight or to assemble properties that can be redeveloped under the unified plan. A brownfields land bank would be more geared to proactive land acquisition of properties that are currently "upside down" and are therefore not attracting new investment. The land bank could have a strong orientation to industrial development and could hold properties until the "right" user comes along.

Keys to successful redevelopment of brownfields through land banks in other states include:

- Acquire and assemble sites through conventional purchase or eminent domain processes. Assembly of several parcels into a larger redevelopment site can help overcome the barriers to redeveloping isolated parcels that might be upside-down by themselves.

- Issue debt and use TIF to finance site preparation, cleanup, and infrastructure improvements. Debt repayment would be from land sale, TIF revenues, and other public and private funding sources. Note, in particular, that several of the concepts in the "Brownfields-Focused TIF" section could be the difference-makers for a successful land bank. Specific reforms could be limited to Land Bank properties:

    - Making brownfields outside of urban renewal areas eligible

    - Exempt brownfield projects from land and tax base TIF limits

    - Allow "pooling" of TIF funds so that revenues from mature districts can "seed" start-up districts

    - Augment local TIF revenues with state funds

    - Use TIF to support an environmental insurance pool

    - Allow non-contiguous TIF districts based on site characteristics rather than geography

- Provide liability protections for the land bank. The land bank should be exempt from liability to the state and to third parties provided that it does not cause or exacerbate the contamination.

- Provide special powers to clear title and liens on property to make them more attractive for the private market

- State/regional land bank and other revenue sources. If the land bank is a regional or state entity, localities may be reluctant to allow property tax TIFs. In that case, the land bank would need other funding sources. A TIF based on state revenues is one option (see "Brownfields Focused TIF section"). Another possibility would be a dedicated source of revenue (see: "Dedicated Environmental Cleanup Fund" section).

Lead Entity—State, County, or City (establishing a separate land bank entity)

Advantages

- Land bank can target specific types of properties to meet community planning goals, such as industrial properties to meet forecasted shortfall of shovel-ready industrial sites in Portland.

- Creates an entity that is eligible for public funding to take ownership of constrained properties

- Provides patient capital and long-term vision for redevelopment of challenged properties

- Establishes an alternative to local governments taking title of contaminated properties through tax foreclosure

- Potential synergy with state Orphan Site cleanup program

Disadvantages

- Requires additional public investment in challenging budget climate

4.6.7 Brownfield Jobs Tax Credit

Summary— Provide a tax credit to developers based on the number of jobs provided by a completed development.

Purpose—Provide a financial incentive for brownfield redevelopment that is directly linked to job creation and economic benefits.

Method— This policy would require state legislation for implementation. In 2011, Oregon legislators considered a bill that would provide job tax credits for completed brownfield projects[7]. If the legislation had been approved, participants in the DEQ Voluntary Cleanup Program (VCP) would receive a $1,000 credit per job for a taxpayer who creates 25 or more jobs during a removal or remedial action.

Similar suggested legislation has proposed that participants of the VCP receive a $5,000 tax refund for each new job created that exceeded average annual county wage and $2,500 tax fund for each new job that didn't. The incentive would only apply for full-time jobs created in Oregon.

The job credit would be approved following the verification of jobs and awarded as a refund paid out of taxes paid by entities to the State, including corporate taxes. Refunds would be distributed annually with no more than 25% of the approved total bonus refund to be paid in a single fiscal year. DEQ would be responsible for certifying eligible tax payers for the credit prior to redevelopment.

This proposal is similar to jobs tax credits that have proven to be effective in other states. Florida, for example provides a $2,500 tax refund for each new job created in a designated brownfield redevelopment area.

Lead Entity—State

Advantages

- Provides a financial incentive for private sector investment directly tied to economic benefits of a project

Disadvantages

- Potential impacts to state finances. This concern would need to be studied.

4.6.8 Build Market Demand

Summary— Develop programs to link risk tolerant investors and developers with brownfield properties.

Purpose—Highlight and promote brownfield properties in order to educate investors about tools available to support cleanup and redevelopment of these properties and to mitigate potential stigma.

[7] House Bill 2949, 76th Oregon Legislative Assembly, 2011 Regular Session

Method—A program to build market demand could function like an extension of Oregon's Industrial Site Certification program and Prospector site database. Portland, the Portland Development Commission, and/or Business Oregon could develop a listing service that targets brownfield sites with development potential. The New Jersey Site Mart[8] and Pennsylvania Site Search[9] websites provide useful examples. The government agency would maintain the listing and actively market and promotes these sites to prospective investors and business site selectors. Brownfields could be one subset of sites currently in the Industrial Site Certification and Prospector programs, or it could be a stand-alone initiative.

Specialized workshops or events could be held with developers that have experience with brownfields to introduce them to available brownfield properties that are considered to have strong market potential or that may be catalyst sites that support neighborhood revitalization efforts.

One special focus of this effort could be creating an easily accessible compilation of existing environmental information on properties in the Portland Harbor. The perception of potential contamination in this area often exceeds the reality of known issues. Providing access to environmental studies may help dispel stigma and misperceptions and provide potential purchasers with enough confidence to invest in this area.

Lead Entity—State, Portland, or Portland Development Commission

Advantages

- Requires relatively limited investment of public resources, but potentially drives significant private investment

Disadvantages

- Potential liability concerns may make property owners reluctant to promote the parcels.

4.7 Portland-Based Policy Options

Portland has strong tradition of planning and policy development around urban infill development and brownfields. Portland was designated as a brownfield showcase community by the EPA in 1998. With federal support, Portland conducted an initiative to study how to promote cleanup and redevelopment of brownfields in the state. That effort led to the creation of the Portland Brownfield Program within Portland's Bureau of

[8] See http://www.njbrownfieldsproperties.com/Default.aspx

[9]See http://pabrownfields.pasitesearch.com/

Environmental Services. Since the Portland Harbor was designated as a Superfund site in 2001, there have been several studies of the challenges to redevelopment in that area and potential policy solutions.

These brownfield efforts fit into the context of broader planning to promote infill development and adaptive re-use of industrial land, such as the Economic Opportunity Analysis for the Portland Comprehensive Plan and the Community Investment Initiative.

Based on those studies and the professional experience of the Advisory Panel, City staff, and the consulting team, a number of potential policy solutions that are unique to Portland have been developed including the following.

4.7.1 Public-Private Investment Entity

Summary— Create a public-private funding partnership entity that invests in infrastructure and brownfield remediation to provide viable returns to each participating sector.

Purpose—Establish a mechanism to leverage public and private resources to meet the estimated $27 to $40 billion infrastructure funding need in the Portland metropolitan areas over the next two to three decades[10]. Brownfields are recognized as being one type of constraint on redevelopment of employment lands in Portland that is related to infrastructure challenges.

Method—This concept has been proposed by the Community Investment Initiative, a group of public and private sector leaders seeking mechanisms to overcome infrastructure challenges, including those related to brownfield remediation. The public-private partnership for infrastructure funding concept is still under development by the Community Investment Initiative. The details of how the concept could be implemented, including how the funding entity would be structured and how projects would be prioritized have not yet been determined.

Lead Entity—Public-private partnership including Portland and/or Metro.

Advantages

- Leverages private resources with public investment

[10] Metro. 2008. Regional Infrastructure Analysis. http://library.oregonmetro.gov/files/regionalinfrastructureanalysis.pdf

- Potential to significantly increase financial capacity to support infrastructure repair and improvement as well as environmental remediation

Disadvantages

- Creates additional demand on public resources
- Potential issues with lending of public credit to private parties would need to be resolved
- Remediation of brownfields will need to compete with infrastructure projects for funding.

4.7.2 Historical Insurance Recovery Support

Summary—Provide staff or contractor expertise to support parties in submitting a claim on historical insurance policies for environmental impacts.

Purpose—Engage insurance companies to support site investigation and cleanup of contamination that occurred under operations that held comprehensive general liability policies.

Method—Oregon DEQ provided support through a contractor that specializes in insurance archaeology to submit claims against historical insurance policies. This service was managed through State and Tribal Response Program funding from EPA. That particular grant has been expended, but DEQ is considering including insurance archaeology as an expertise to be provided under its prime contractors for environmental services. This service could be provided by Portland either through staff or contractor as well. The insurance archaeology service could be provided as a fee-for-service payable upon settlement with the insurance carrier as a way to minimize expenditure of public resources.

Before the mid-1980s, commercial general liability policies did not contain exclusions for liabilities caused by environmental damage. Therefore, cost recovery may be pursued from historical insurance policies that were in place when pollution occurred and that covered the property owner, operators, or other potentially liable parties. Historical insurance recovery requires a commitment of time and resources, but is becoming a standard industry practice. Oregon state law and court decision precedents make it one of the most favorable states in the nation for substantiating environmental claims on historical insurance policies.

Making a claim on an historic insurance policy requires substantiating information of a liability and proof of coverage during the period of the environmental release. It is typically recommended to work with an attorney

to make an historical insurance claim, but there also can be a large amount of document research needed to provide proof of coverage.

Lead Entity—State or Portland

Advantages

- Brings new resources to support site investigation and cleanup

Disadvantages

- Successful settlement of claims is not guaranteed
- Potential opposition from insurance carriers

4.7.3 Reform Contaminated Property Tax Assessment

Summary—Revise the current property tax assessment criteria for contaminated sites by setting time limits for the value reduction whereby lack of remedial action by the property owner results in diminishing tax reductions over time.

Purpose—Limit the tax reduction because it creates a disincentive for cleanup and redevelopment

Method—Currently, owners of contaminated sites are able to secure significant reductions in their property taxes based on the impact contamination has on a site's value for development purposes. These deep reductions in taxes can last a long time and a site may not be remediated for decades. This situation not only adds to the burdens of local governments and schools by diminishing their financial resources and consequently their services, but also tends to hamper development potential for nearby properties.

The administrative rule establishing procedures for assessing property taxes includes a methodology for valuing contaminated properties (OAR 150-308.205-(E)). This methodology currently discounts the assessed value of contaminated properties based on the estimated cleanup cost, redevelopment constraints, and financing implications. The administrative rule could be amended so that this discount diminishes over time. A reasonable period for the discount should be established that is long enough to be realistic for property owners to conduct remedial actions, but short enough to discourage mothballing of properties. This change could be implemented in a bundle with other programs that enable property owners to access funds and/or reduce ongoing liability for cleanup.

Lead Entity—Oregon Department of Revenue

Advantages

- Potentially removes a financial disincentive to take a contaminated property through the cleanup process.

- By revising to include a time limit, reforms could maintain the important tax break for property owners while they work through remediation.

Disadvantages

- Anecdotal reports indicate that some existing businesses rely on the decreased property tax to remain financially viable.

- Reforms to the tax code will require political support and prioritization at state legislative level, and may encounter resistance from affected property owners.

4.7.4 Model Purchase and Sale Agreement

Summary—Create a model agreement with indemnification language and distinctions between upland and in-land water liabilities along with standard transfer issues such as due diligence period, timing of cleanup, warranties, and inspection period.

Purpose—Purchase and sale agreements between buyers and sellers of contaminated properties can be a time-intense and variable process. Creating a model could reduce the time and cost associated with

Method—A model purchase and sale agreement could include:

- A menu of available government incentives that could apply to offset environmental remediation and infrastructure improvements, and implementation of green building and sustainability initiatives:

- Provide practical indemnification language for addressing past and future liabilities

- Provide language that differentiates and addresses upland and in-water environmental liability and cleanup

- Provide language that will address standard transfer issues (e.g. price, inspection period, down payment, due diligence period, reps and warranties, timing of cleanup and closing)

Lead Entity—Business Oregon or Portland

Advantages

- Potentially a low-cost solution to help facilitate property transactions.

Disadvantages

- Property transactions are not typically uniform in detail and conditions. The model agreement may help, but negotiation and adaptation may be required.

4.8 Superfund Policy Options

Designation of the Portland Harbor as a National Priority List Superfund Site has created a unique set of challenges for redevelopment of properties in that area. There are many complex issues related to the Portland Harbor Superfund designation, such as the technical analyses of risk and remediation options, and legal arguments over allocation of costs that are beyond the scope of this project. There are also a number of large scale strategies to resolve the Harbor, such as implementation of interim actions to support Superfund de-listing or seeking a major federal budget appropriation to offset costs, which are very important for policy makers to explore but are also beyond the scope of this study.

The policies proposed in this section focus on risk management and creating certainty to promote property transactions and investment in redevelopment of upland properties around the Harbor. To protect this regional economic asset, Portland and State could work with EPA to modify Superfund policies to allow upland property owners to expeditiously reach regulatory closure and remove a dark cloud over land transactions and redevelopment on industrial lands. These policy proposals are targeted toward upland properties that are considered to be in the "Superfund shadow," they are not on the waterfront, but could be connected to sediment contamination in the harbor through the stormwater system. As the owner and operator of the stormwater system, Portland has some interest in reducing these potential sources of historic and on-going contamination.

4.8.1 Federal Prospective Purchaser Agreements

Summary—EPA could provide Prospective Purchaser Agreements (PPAs) jointly with Oregon DEQ to provide certainty and liability protection to innocent purchasers of contaminated properties under federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, aka Superfund Law).

Purpose—Provide a mechanism for innocent prospective buyers of properties near the Portland Harbor Superfund site to obtain liability protections ahead of the final settlement and allocation. Like the Oregon state PPAs, this tool provides certainty that can be critical for financing

redevelopment projects and for bringing in new financial resources to fund cleanup actions.

Method— EPA has the authority under CERCLA to execute Prospective Purchaser Agreements. The 2002 Brownfield Amendments included a Bona Fide Prospective Purchaser (BFPP) defense tool with the purpose of providing a legal liability defense based on an innocent party conducting adequate due diligence and taking appropriate care and precautions on a property. EPA intended that the BFPP defense would serve the same role as Prospective Purchaser Agreements without requiring significant agency involvement. However, the BFPP defense has been challenged in court and appears to have limitations rooted in the subjective definition of the due care provisions[11].

In recognition of the special circumstances around the Portland Harbor, EPA could make a policy decision to enter into prospective purchaser agreements in this area. Eligibility for a prospective purchaser agreement could be limited to properties not located immediately adjacent to areas of contaminated sediments. Eligibility requirements could include: remediation of any existing upland contamination and implementation of source control measures. As an additional eligibility requirement that may be attractive EPA in meeting their broader water quality goals, properties could be required to utilize Portland "sustainable stormwater" management techniques to promote infiltration of runoff. These low impact development stormwater management techniques are being incorporated into remedies for in-water Superfund sites such as the Gowanus Canal and Newtown Creek in New York City.

To make implementation of this policy tool efficient, EPA and DEQ could enter into a memorandum of agreement and establish a model prospective purchaser agreement for properties in the Harbor area based on existing state templates. The prospective purchaser agreement would need to be executed by both EPA and DEQ to provide sufficient liability protection.

Lead Entity—US EPA and Oregon State DEQ

Advantages

- Provides strong incentive for redevelopment of property near the Portland Harbor without significant public investment

- The green infrastructure option could be appealing to EPA as a creative new approach, consistent with their sustainability agenda

[11] See Ashley II of Charleston, LLC vs. PCS Nitrogen. That decision sets a high bar for compliance with the due diligence and due care requirements that are connected to the BFPP defense.

Disadvantages

- Requires commitment and staff resources of EPA.

4.8.2 CERCLA *de minimis* Settlements

Summary—EPA provides expedited settlement agreements for owners of properties that likely cause minor or insignificant to the Portland Harbor.

Purpose—Since the Superfund Site designation is based on contaminated sediments in Portland Harbor, there is a perceived potential for liability related to any property that could convey pollution through stormwater, groundwater, or other pathways to the Harbor. This perception has had a chilling effect on property transactions around the Harbor. Providing settlements for properties that are located in the drainage basin for the Harbor, but can be demonstrated to likely have only minor potential contribution to sediment impacts would relieve that concern.

Method—EPA has the authority under CERCLA to provide *de minimis* settlements for parties that have a small share of cleanup liability. To date, EPA has been reluctant to provide these settlements in the Portland Harbor. Broader use of this existing tool could expedite cleanup and redevelopment of a large number of properties that are located within the contributing area to the Superfund site, but that have had small impacts are only linked to the Harbor through the municipal stormwater system.

Lead Entity—Federal

Advantages

- Provides strong incentive for redevelopment of property near the Portland Harbor without significant public investment.

Disadvantages

- Requires commitment and staff resources of EPA.

4.8.3 Corps of Engineers Urban Rivers Restoration Initiative

Summary—Explore the potential advantages of incorporating the EPA-Corps of Engineers "Urban Rivers Restoration Initiative (URRI)[12] in the Portland Harbor Superfund site restoration.

[12] See: http://www.epa.gov/landrevitalization/urbanrivers/

Purpose—Based on the experience of parties involved in the Passaic River, bringing the URRI into a Superfund sediment cleanup process has created:

- The potential for large scale federal funding through the Water Resources Development Act and Energy and Water Development appropriations;

- A more cooperative process. Although Superfund enforcement remains central to the program, there are advantages in using the Corps of Engineers Civil Works Project process via the "Integrated Planning Framework."[13] This planning process has led to greater involvement and commitment by potentially responsible parties and may help expedite project completion.

Method—EPA and the Corps of Engineers signed a Cooperative Agreement in 2002 (renewed in 2005 and 2006), creating the "Urban Rivers Restoration Initiative" to support "ongoing efforts to clean up the nation's most polluted rivers and revitalize (them) for public use." The agreement uses existing authorities such as CERCLA, the Clean Water Act, and the Water Resources Development Act to focus federal attention on sediment cleanup in urban areas. There were eight pilots chosen in 2002, including the Passaic River[14] in northern New Jersey, which was a Superfund site, and the Gowanus Canal in New York City, which was later designated a Superfund site.

Oregon State and Portland could work with their federal counterparts to initiate negotiations to include the Portland Harbor in the Urban Rivers Restoration Initiative.

Lead Entity—Oregon State and Portland, in consultation with EPA and the Corps of Engineers

Advantages

- Creates another avenue for potential federal funding to support cleanup of the Harbor

- May expedite the cleanup process for the Portland Harbor.

- Liability issues related to the upland areas would likely be resolved at an earlier point.

[13] Jonathan P. Deason, G. Edward Dickey, Jason C. Kinnell, and Leonard A. Shabman, "Integrated Planning Framework for Urban River Rehabilitation," Journal of Water Resources Planning And Management, ASCE / November/December 2010.

[14] The Corps of Engineers involvement with the Passaic pre-dated (and formed the basis for) the 2002 cooperative agreement between EPA and the Corps. Congressional action in 2000 authorized the Corps' involvement with the Passaic.

Disadvantages

- Involvement of the Corps of Engineers at this stage of the Superfund process may create challenges and delays

- Potential reluctance of EPA to release some control over the current process.

APPENDIX A

FINANCIAL PRO FORMAS

The following pages include tables with pro forma inputs and results for each of the typologies considered with this draft financial feasibility analysis.

Data Inputs and Assumptions

The first two tables provide assumptions as applied to the resulting pro formas, notably:

- Data inputs and assumptions that may vary by building or use type but are otherwise common to all brownfield typologies
- Assumptions and inputs that vary between building typology

Pro Forma Worksheets

The remaining worksheets are organized to present pro forma analysis by typology with added alternatives reflecting anticipated development use and level of brownness. A total of 32 alternative pro formas are provided with the pro forma worksheets.

The worksheets are provided in the following order:

- Downtown High Density
- Mixed Use Hub
- Main Street Commercial (differentiated between Main Street west and east of 82nd Avenue)
- Central City Industrial
- Industrial (covering Standard Industrial, Superfund Shadow and Harbor Waterfront)

Table A1. Data Inputs & Assumptions Common to All Typologies

	All Typologies			
	Average	High	Low	Sources / Notes
Site Use Intensity (FAR)				
Build-Out FAR - w/o mixed use				Per EOA, March 2011, rounded
Build-Out FAR - w/mixed use				
Residential Share w/Mixed Use				Adapted from EOA
Cost Parameters per SF Land Area				
Market Rate Land Value (RMV)				Vacant/unconstrained sites as of 2011 (except Harbor)
Brownfield Land Cost (RMV)				Shown as less of unconstrained vs. brownfield RMV, composite used for typologies 6+7 is $2.80 per sf
Brownfield Remediation	$6.00	$16.00	$1.50	Per MFA, from 88 property data base
Demolition	$6.75	$8.50	$5.00	EDH comps ind Gresham/Metro, Spokane 2010/11
Site Preparation	$4.50	$6.00	$3.00	EDH comps ind Gresham/Metro, Spokane 2010/11
Parking (at grade)	$9.00	$12.00	$6.00	EDH, from Gresham, Spokane w/low adjusted
Parameters per GSF Building Area				Based on RLB, Quarterly Construction, 2012 2nd
Building Construction:				Top range of all reduced by $5 per sf, more for office
Manufacturing / Warehouse	$85.00	$105.00	$65.00	For industrial/warehouse space (low < RLB $75 PDX)
Flex / Business Park	$107.00	$130.00	$84.00	Reflects 50/50 industrial/office rates, 60/40 @ low
Office Commercial	$155.00	$195.00	$115.00	High prime, low secondary (w/top rate reduced $15
Retail	$145.00	$190.00	$100.00	High center, low strip
Residential	$150.00	$190.00	$110.00	Multi-family low-high (with high adjusted down)
Structured Parking	$85.00	$105.00	$65.00	Low is above ground, high for below, avg either
Other (non-income)	$110.00			Estimate for common area as with residential
Tenant Improvements (as % of Bldg):				
Manufacturing / Warehouse	--			Separately installed by business occupant
Flex / Business Park	--			
Office Commercial	15%			$30 for Class A; $15-$30 for older per Kidder-Matthews
Retail	20%			Up to $40 for high cost space
Indirect Soft Cost Rate (Single Use)	30%	35%	25%	Low ind/ret, avg for all but MU, add 5% high brown
Indirect Soft Cost Rate (Mixed Use)	35%	40%	30%	
Rental Rates				
Rental Rates per SF Annually				
Manufacturing / Warehouse				NBS 4Q11; CBRE, CoStar 2009 EOA & showcase.com
Flex / Business Park				NBS 4Q11; CBRE, CoStar 2009 EOA & showcase.com
Office Commercial				NBS 4Q11; CoStar 2009 EOA & showcase.com
Retail				NBS 4Q11; CBRE, CoStar 2009 EOA & showcase.com
Added Rate Notes:				
Residential Rate per SF/Month				MMHA; Internet research
Parking Structure Rate per Month				Internet market comps, residential-office (non-retail)
Operating Expenses Ratios				
Operating Expense Ratios (% of GOI):				
Manufacturing / Warehouse	8%			
Flex / Business Park	9%			
Office Space (full service)	25%			
Retail	10%			
Added Expense Notes:				
Annual Residential Expense/NSF				MMHA, 2011/12, newer urban/garden apts Mult Co
Annual Parking Garage Cost/Space				Rick Williams, for non-retail space, unattended
Capitalization Rates				ULI Emerging Trends 2012 (forecast for 12/12)
Manufacturing / Warehouse	7.00%	7.00%	7.00%	(all rates rounded)
Flex / Business Park	7.25%	7.50%	7.00%	
Office Commercial	7.25%	8.00%	6.50%	Low for central city, high for suburban
Retail	7.00%	7.50%	6.75%	Low for reg'l mall, avg neighborhood, high power
Residential	5.75%	6.00%	5.50%	Low for high income, high for moderate income
Mixed Use	7.00%	7.50%	6.50%	Banded range from above for resid / commercial
Sales Valuation (of Owned Components)				
Condo / Townhome Price / NSF				Based on RLIS average 2000-12 YTD sales data

Table A2. Data Inputs & Assumptions Varied by Typology

	1. Downtown High Density	2. Mixed Use Hub	3a. Main St Comml-West	3b. Main St Comml-East	4. Central City Indus	5. Standard Industrial	6. Superfund Shadow	7. Harbor Waterfront
Site Use Intensity (FAR)								
Build-Out FAR - w/o mixed use	5.50	0.75	0.50	0.40	1.25	0.40	0.35	0.35
Build-Out FAR - w/mixed use	11.00	3.00	1.00	0.80	NA	NA	NA	NA
Residential Share w/Mixed Use	50%	75%	50%	50%	NA	NA	NA	NA
Cost Parameters per SF Land Area								
Market Rate Land Value (RMV)	$100.00	$18.00	$21.00	$15.00	$27.00	$8.00	$7.00	NA
Brownfield Land Cost (RMV)	$75.00	$18.00	$21.00	$15.00	$25.00	$4.50	$1.50	$5.00
Brownfield Remediation	$100.00	$18.00	$21.00	$15.00	$27.00	$8.00	$7.00	NA
Rental Rates								
Rental Rates per SF Annually								
Manufacturing / Warehouse					$12.00	$9.00	$9.00	$9.00
Flex / Business Park					$17.50	$12.00		
Office Commercial	$33.50	$25.00	$25.00	$20.00	$25.00			
Retail	$27.50	$25.00	$27.50	$22.50				
Added Rate Notes:								
Residential Rate per SF/Month	$2.25	$1.60	$1.70	$1.30				
Parking Structure Rate per Month	$175	$50	$75	$50	$90			
Operating Expenses Ratios								
Added Expense Notes:								
Annual Residential Expense/NSF	$5.50	$4.15	$4.15	$4.15				
Annual Parking Garage Cost/Space	$250	$200	$200	$200	$200			
Sales Valuation (of Owned Components)								
Condo / Townhome Price / NSF	$375	$200	$275	$150				

Table A3. Financial Pro Forma – Downtown High Density

Typology	1. Downtown High Density			
Use Type	Mixed Use		Office-Retail	
Brownfield Cost	Mid Cost	Low Cost	Mid Cost	Low Cost
Site Use Intensity (FAR)				
Current Development	2.00	2.00	1.00	1.00
Net Added Development	9.00	9.00	4.50	4.50
Total @ Build-Out	11.00	11.00	5.50	5.50
Building Footprint % of Site	90%	90%	90%	90%
Anticipated Development Use				
Manufacturing / Warehouse				
Flex / Business Park				
Office Commercial	20%	20%	50%	50%
Retail	5%	5%	20%	20%
Residential	50%	50%	--	--
Structured Parking	24%	24%	25%	25%
Other (non-income)	1%	1%	5%	5%
Total Building Area	100%	100%	100%	100%
Rental as % of Residential	50%	50%	--	--
Development Budget				
Parameters per SF Land Area				
Market Rate Land Cost	$100.00	$100.00	$100.00	$100.00
less Brownfield Discount	-25%	-25%	-25%	-25%
Adjusted Site Cost	$75.00	$75.00	$75.00	$75.00
Site Development	$23.00	$23.00	$14.50	$14.50
Brownfield Remediation	$6.00	$1.50	$6.00	$1.50
Indirect Soft Cost Rate	40.0%	40.0%	35.0%	35.0%
Parameters per GSF Building				
Land Acquisition	$6.82	$6.82	$13.64	$13.64
Site Development	$2.09	$2.09	$2.64	$2.64
Brownfield Remediation	$0.55	$0.14	$1.09	$0.27
Building Construction (w/TIs)	$145.00	$145.00	$160.00	$160.00
Other (project cost)	--	--	--	--
Indirect (Soft) Cost	$58.84	$58.84	$56.92	$56.92
Total Development Cost	$213.29	$212.88	$234.29	$233.47
Cost per SF Land Area	$2,346.20	$2,341.70	$1,288.58	$1,284.08
Operating Budget (per GSF)				
Annual Gross Income	$14.10	$14.10	$20.70	$20.70
less Vacancy	$(0.85)	$(0.85)	$(1.25)	$(1.25)
Gross Operating Income	$13.25	$13.25	$19.45	$19.45
Less Expenses	$(2.90)	$(2.90)	$(4.25)	$(4.25)
Net Operating Income	$10.35	$10.35	$15.20	$15.20
Valuation as Built (per GSF)				
Income Portion of Property:				
Capitalization Rate	7.00%	7.00%	6.50%	6.50%
Capitalized Valuation	$148.00	$148.00	$234.00	$234.00
Sales Value of Owned Portion:				
Sales Price (net of expense)	$65.00	$65.00	$0.00	$0.00
Total Project Valuation	$213.00	$213.00	$234.00	$234.00
Cost % Supported by Value	100%	100%	100%	100%
Surplus/(Gap) w/Remediation	$ (0.29)	$0.12	$ (0.29)	$0.53
Surplus/(Gap) w/o Remediation	$0.25	$0.25	$0.80	$0.80

Table A4. Financial Pro Forma – Mixed Use Hub

Typology	2. Mixed Use Hubs			
Use Type	Mixed Use		Office-Retail	
Brownfield Cost	Mid Cost	Low Cost	Mid Cost	Low Cost
Site Use Intensity (FAR)				
Current Development	0.50	0.50	0.15	0.15
Net Added Development	2.50	2.50	0.60	0.60
Total @ Build-Out	3.00	3.00	0.75	0.75
Building Footprint % of Site	85%	85%	65%	65%
Anticipated Development Use				
Manufacturing / Warehouse				
Flex / Business Park				
Office Commercial	--	--	50%	50%
Retail	20%	20%	25%	25%
Residential	50%	50%	--	--
Structured Parking	28%	28%	20%	20%
Other (non-income)	2%	2%	5%	5%
Total Building Area	100%	100%	100%	100%
Rental as % of Residential	100%	100%	--	--
Development Budget				
Parameters per SF Land Area				
Market Rate Land Cost	$18.00	$18.00	$18.00	$18.00
less Brownfield Discount	0%	0%	0%	0%
Adjusted Site Cost	$18.00	$18.00	$18.00	$18.00
Site Development	$9.00	$9.00	$7.70	$7.70
Brownfield Remediation	$6.00	$1.50	$6.00	$1.50
Indirect Soft Cost Rate	35.0%	35.0%	30.0%	30.0%
Parameters per GSF Building				
Land Acquisition	$6.00	$6.00	$24.00	$24.00
Site Development	$3.00	$3.00	$10.27	$10.27
Brownfield Remediation	$2.00	$0.50	$8.00	$2.00
Building Construction (w/TIs)	$100.00	$100.00	$115.00	$115.00
Other (project cost)	--	--	--	--
Indirect (Soft) Cost	$36.05	$36.05	$37.58	$37.58
Total Development Cost	$147.05	$145.55	$194.85	$188.85
Cost per SF Land Area	$441.15	$436.65	$146.14	$141.64
Operating Budget (per GSF)				
Annual Gross Income	$13.15	$13.15	$16.60	$16.60
less Vacancy	$(0.80)	$(0.80)	$(1.00)	$(1.00)
Gross Operating Income	$12.35	$12.35	$15.60	$15.60
Less Expenses	$(2.35)	$(2.35)	$(3.35)	$(3.35)
Net Operating Income	$10.00	$10.00	$12.25	$12.25
Valuation as Built (per GSF)				
Income Portion of Property:				
Capitalization Rate	7.00%	7.00%	6.50%	6.50%
Capitalized Valuation	$143.00	$143.00	$188.00	$188.00
Sales Value of Owned Portion:				
Sales Price (net of expense)	$0.00	$0.00	$0.00	$0.00
Total Project Valuation	$143.00	$143.00	$188.00	$188.00
Cost % Supported by Value	97%	98%	96%	100%
Surplus/(Gap) w/Remediation	$ (4.05)	$ (2.55)	$ (6.85)	$ (0.85)
Surplus/(Gap) w/o Remediation	$ (2.05)	$ (2.05)	$1.15	$1.15

Table A5. Financial Pro Forma – Main Street West

Typology	3a. Main Street Commercial (west of 82nd Avenue)					
Use Type	Mixed Use			Retail Commercial		
Brownfield Cost	High Cost	Mid Cost	Low Cost	High Cost	Mid Cost	Low Cost
Site Use Intensity (FAR)						
Current Development	0.15	0.15	0.15	0.10	0.10	0.10
Net Added Development	0.85	0.85	0.85	0.40	0.40	0.40
Total @ Build-Out	1.00	1.00	1.00	0.50	0.50	0.50
Building Footprint % of Site	50%	50%	50%	50%	50%	50%
Anticipated Development Use						
Manufacturing / Warehouse						
Flex / Business Park						
Office Commercial	15%	15%	15%	55%	55%	55%
Retail	15%	15%	15%	45%	45%	45%
Residential	65%	65%	65%	--	--	--
Structured Parking	3%	3%	3%	--	--	--
Other (non-income)	2%	2%	2%	--	--	--
Total Building Area	100%	100%	100%	100%	100%	100%
Rental as % of Residential	50%	50%	50%	--	--	--
Development Budget						
Parameters per SF Land Area						
Market Rate Land Cost	$21.00	$21.00	$21.00	$21.00	$21.00	$21.00
less Brownfield Discount	0%	0%	0%	0%	0%	0%
Adjusted Site Cost	$21.00	$21.00	$21.00	$21.00	$21.00	$21.00
Site Development	$9.10	$9.10	$9.10	$9.20	$9.20	$9.20
Brownfield Remediation	$16.00	$6.00	$1.50	$16.00	$6.00	$1.50
Indirect Soft Cost Rate	35.0%	35.0%	35.0%	30.0%	30.0%	30.0%
Parameters per GSF Building						
Land Acquisition	$21.00	$21.00	$21.00	$42.00	$42.00	$42.00
Site Development	$9.10	$9.10	$9.10	$18.40	$18.40	$18.40
Brownfield Remediation	$16.00	$6.00	$1.50	$32.00	$12.00	$3.00
Building Construction (w/TIs)	$125.00	$125.00	$125.00	$165.00	$165.00	$165.00
Other (project cost)	--	--	--	--	--	--
Indirect (Soft) Cost	$46.94	$46.94	$46.94	$55.02	$55.02	$55.02
Total Development Cost	$218.04	$208.04	$203.54	$312.42	$292.42	$283.42
Cost per SF Land Area	$218.04	$208.04	$203.54	$156.21	$146.21	$141.71
Operating Budget (per GSF)						
Annual Gross Income	$12.60	$12.60	$12.60	$26.15	$26.15	$26.15
less Vacancy	$(0.75)	$(0.75)	$(0.75)	$(1.55)	$(1.55)	$(1.55)
Gross Operating Income	$11.85	$11.85	$11.85	$24.60	$24.60	$24.60
Less Expenses	$(2.35)	$(2.35)	$(2.35)	$(4.70)	$(4.70)	$(4.70)
Net Operating Income	$9.50	$9.50	$9.50	$19.90	$19.90	$19.90
Valuation as Built (per GSF)						
Income Portion of Property:						
Capitalization Rate	6.75%	6.75%	6.75%	7.00%	7.00%	7.00%
Capitalized Valuation	$141.00	$141.00	$141.00	$284.00	$284.00	$284.00
Sales Value of Owned Portion:						
Sales Price (net of expense)	$62.00	$62.00	$62.00	$0.00	$0.00	$0.00
Total Project Valuation	$203.00	$203.00	$203.00	$284.00	$284.00	$284.00
Cost % Supported by Value	93%	98%	100%	91%	97%	100%
Surplus/(Gap) w/Remediation	$ (15.04)	$ (5.04)	$ (0.53)	$ (28.42)	$ (8.42)	$0.58
Surplus/(Gap) w/o Remediation	$0.97	$0.97	$0.97	$3.58	$3.58	$3.58

Table A6. Financial Pro Forma – Main Street East

Typology	3b. Main Street Commerical (east of 82nd Avenue)					
Use Type	Mixed Use			Retail Commercial		
Brownfield Cost	High Cost	Mid Cost	Low Cost	High Cost	Mid Cost	Low Cost
Site Use Intensity (FAR)						
Current Development	0.10	0.10	0.10	0.05	0.05	0.05
Net Added Development	0.70	0.70	0.70	0.35	0.35	0.35
Total @ Build-Out	0.80	0.80	0.80	0.40	0.40	0.40
Building Footprint % of Site	50%	50%	50%	40%	40%	40%
Anticipated Development Use						
Manufacturing / Warehouse						
Flex / Business Park						
Office Commercial	10%	10%	10%	50%	50%	50%
Retail	35%	35%	35%	50%	50%	50%
Residential	50%	50%	50%	--	--	--
Structured Parking	2%	2%	2%	--	--	--
Other (non-income)	3%	3%	3%	--	--	--
Total Building Area	100%	100%	100%	100%	100%	100%
Rental as % of Residential	100%	100%	100%	--	--	--
Development Budget						
Parameters per SF Land Area						
Market Rate Land Cost	$15.00	$15.00	$15.00	$15.00	$15.00	$15.00
less Brownfield Discount	0%	0%	0%	0%	0%	0%
Adjusted Site Cost	$15.00	$15.00	$15.00	$15.00	$15.00	$15.00
Site Development	$8.80	$8.80	$8.80	$9.70	$9.70	$9.70
Brownfield Remediation	$16.00	$6.00	$1.50	$16.00	$6.00	$1.50
Indirect Soft Cost Rate	35.0%	35.0%	35.0%	30.0%	30.0%	30.0%
Parameters per GSF Building						
Land Acquisition	$18.75	$18.75	$18.75	$37.50	$37.50	$37.50
Site Development	$11.00	$11.00	$11.00	$24.25	$24.25	$24.25
Brownfield Remediation	$20.00	$7.50	$1.88	$40.00	$15.00	$3.75
Building Construction (w/TIs)	$115.00	$115.00	$115.00	$125.00	$125.00	$125.00
Other (project cost)	--	--	--	--	--	--
Indirect (Soft) Cost	$44.10	$44.10	$44.10	$44.78	$44.78	$44.78
Total Development Cost	$208.85	$196.35	$190.73	$271.53	$246.53	$235.28
Cost per SF Land Area	$167.08	$157.08	$152.58	$108.61	$98.61	$94.11
Operating Budget (per GSF)						
Annual Gross Income	$16.55	$16.55	$16.55	$21.25	$21.25	$21.25
less Vacancy	$(1.00)	$(1.00)	$(1.00)	$(1.30)	$(1.30)	$(1.30)
Gross Operating Income	$15.55	$15.55	$15.55	$19.95	$19.95	$19.95
Less Expenses	$(3.05)	$(3.05)	$(3.05)	$(3.65)	$(3.65)	$(3.65)
Net Operating Income	$12.50	$12.50	$12.50	$16.30	$16.30	$16.30
Valuation as Built (per GSF)						
Income Portion of Property:						
Capitalization Rate	6.75%	6.75%	6.75%	7.00%	7.00%	7.00%
Capitalized Valuation	$185.00	$185.00	$185.00	$233.00	$233.00	$233.00
Sales Value of Owned Portion:						
Sales Price (net of expense)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total Project Valuation	$185.00	$185.00	$185.00	$233.00	$233.00	$233.00
Cost % Supported by Value	89%	94%	97%	86%	95%	99%
Surplus/(Gap) w/Remediation	$ (23.85)	$ (11.35)	$ (5.72)	$ (38.53)	$ (13.53)	$ (2.28)
Surplus/(Gap) w/o Remediation	$ (3.85)	$ (3.85)	$ (3.85)	$1.48	$1.47	$1.47

Table A7. Financial Pro Forma – Central City Industrial

Typology	4. Central City Industrial		
Use Type	Flex - Tech		
Brownfield Cost	High Cost	Mid Cost	Low Cost
Site Use Intensity (FAR)			
Current Development	0.20	0.20	0.20
Net Added Development	1.05	1.05	1.05
Total @ Build-Out	1.25	1.25	1.25
Building Footprint % of Site	60%	60%	60%
Anticipated Development Use			
Manufacturing / Warehouse			
Flex / Business Park	65%	65%	65%
Office Commercial	25%	25%	25%
Retail			
Residential			
Structured Parking	10%	10%	10%
Other (non-income)	--	--	--
Total Building Area	100%	100%	100%
Rental as % of Residential			
Development Budget			
Parameters per SF Land Area			
Market Rate Land Cost	$27.00	$27.00	$27.00
less Brownfield Discount	-7%	-7%	-7%
Adjusted Site Cost	$25.00	$25.00	$25.00
Site Development	$7.80	$7.80	$7.80
Brownfield Remediation	$16.00	$6.00	$1.50
Indirect Soft Cost Rate	35.0%	35.0%	35.0%
Parameters per GSF Building			
Land Acquisition	$20.00	$20.00	$20.00
Site Development	$6.24	$6.24	$6.24
Brownfield Remediation	$12.80	$4.80	$1.20
Building Construction (w/TIs)	$115.00	$115.00	$115.00
Other (project cost)	--	--	--
Indirect (Soft) Cost	$42.43	$42.43	$42.43
Total Development Cost	$196.47	$188.47	$184.87
Cost per SF Land Area	$245.59	$235.59	$231.09
Operating Budget (per GSF)			
Annual Gross Income	$16.15	$16.15	$16.15
less Vacancy	$(0.95)	$(0.95)	$(0.95)
Gross Operating Income	$15.20	$15.20	$15.20
Less Expenses	$(1.55)	$(1.55)	$(1.55)
Net Operating Income	$13.65	$13.65	$13.65
Valuation as Built (per GSF)			
Income Portion of Property:			
Capitalization Rate	7.50%	7.50%	7.50%
Capitalized Valuation	$182.00	$182.00	$182.00
Sales Value of Owned Portion:			
Sales Price (net of expense)	$0.00	$0.00	$0.00
Total Project Valuation	$182.00	$182.00	$182.00
Cost % Supported by Value	93%	97%	98%
Surplus/(Gap) w/Remediation	$ (14.47)	$ (6.47)	$ (2.87)
Surplus/(Gap) w/o Remediation	$ (1.67)	$ (1.67)	$ (1.67)

Table A8. Financial Pro Forma – Industrial

Typology	5-7. Industrial (Standard Industrial, Superfund Shadow, Harbor Waterfront)					
Use Type	Flex Space - Business Park			Warehouse - Distribution		
Brownfield Cost	High Cost	Mid Cost	Low Cost	High Cost	Mid Cost	Low Cost
Site Use Intensity (FAR)						
Current Development	--	--	--	--	--	--
Net Added Development	0.40	0.40	0.40	0.35	0.35	0.35
Total @ Build-Out	0.40	0.40	0.40	0.35	0.35	0.35
Building Footprint % of Site	45%	45%	45%	45%	45%	45%
Anticipated Development Use						
Manufacturing / Warehouse	--	--	--	100%	100%	100%
Flex / Business Park	100%	100%	100%	--	--	--
Office Commercial						
Retail						
Residential						
Structured Parking	--	--	--	--	--	--
Other (non-income)	--	--	--	--	--	--
Total Building Area	100%	100%	100%	100%	100%	100%
Rental as % of Residential						
Development Budget						
Parameters per SF Land Area						
Market Rate Land Cost	$8.00	$8.00	$8.00	$7.00	$7.00	$7.00
less Brownfield Discount	-44%	-44%	-44%	-60%	-60%	-60%
Adjusted Site Cost	$4.50	$4.50	$4.50	$2.80	$2.80	$2.80
Site Development	$5.60	$5.60	$5.60	$5.60	$5.60	$5.60
Brownfield Remediation	$16.00	$6.00	$1.50	$16.00	$6.00	$1.50
Indirect Soft Cost Rate	30.0%	30.0%	30.0%	25.0%	25.0%	25.0%
Parameters per GSF Building						
Land Acquisition	$11.25	$11.25	$11.25	$8.00	$8.00	$8.00
Site Development	$14.00	$14.00	$14.00	$16.00	$16.00	$16.00
Brownfield Remediation	$40.00	$15.00	$3.75	$45.71	$17.14	$4.29
Building Construction (w/TIs)	$85.00	$85.00	$85.00	$65.00	$65.00	$65.00
Other (project cost)	--	--	--	--	--	--
Indirect (Soft) Cost	$29.70	$29.70	$29.70	$20.25	$20.25	$20.25
Total Development Cost	$179.95	$154.95	$143.70	$154.96	$126.39	$113.54
Cost per SF Land Area	$71.98	$61.98	$57.48	$54.24	$44.24	$39.74
Operating Budget (per GSF)						
Annual Gross Income	$12.00	$12.00	$12.00	$9.00	$9.00	$9.00
less Vacancy	$(0.70)	$(0.70)	$(0.70)	$(0.55)	$(0.55)	$(0.55)
Gross Operating Income	$11.30	$11.30	$11.30	$8.45	$8.45	$8.45
Less Expenses	$(1.10)	$(1.10)	$(1.10)	$(0.70)	$(0.70)	$(0.70)
Net Operating Income	$10.20	$10.20	$10.20	$7.75	$7.75	$7.75
Valuation as Built (per GSF)						
Income Portion of Property:						
Capitalization Rate	7.25%	7.25%	7.25%	7.00%	7.00%	7.00%
Capitalized Valuation	$141.00	$141.00	$141.00	$111.00	$111.00	$111.00
Sales Value of Owned Portion:						
Sales Price (net of expense)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total Project Valuation	$141.00	$141.00	$141.00	$111.00	$111.00	$111.00
Cost % Supported by Value	78%	91%	98%	72%	88%	98%
Surplus/(Gap) w/Remediation	$ (38.95)	$ (13.95)	$ (2.70)	$ (43.96)	$ (15.39)	$ (2.54)
Surplus/(Gap) w/o Remediation	$1.05	$1.05	$1.05	$1.75	$1.75	$1.75

APPENDIX C

PUBLIC BENEFIT REPORT

PORTLAND BROWNFIELD ASSESSMENT PUBLIC BENEFIT ANALYSIS

Prepared for
CITY OF PORTLAND BUREAU OF PLANNING AND SUSTAINABILITY

December 18, 2012
Project No. 0559.02.01

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CONTENTS

SUMMARY			V
	FINANCIAL FEASIBILITY ANALYSIS		V
	PUBLIC BENEFIT ANALYSIS		VII
	RETURN ON INVESTMENT FOR BROWNFIELD INCENTIVES		VII
1	INTRODUCTION		1
	1.1	CONTEXT	2
2	FINANCIAL FEASIBILITY ANALYSIS		4
	2.1	SUMMARY OF PRO FORMA ANALYSIS	4
	2.2	PRO FORMA AGGREGATED RESULTS	7
	2.3	ANALYSIS OF FINANCIAL BARRIERS	11
	2.4	INVESTMENT TO ACHIEVE REDEVELOPMENT GOALS	12
	2.5	OTHER MARKET BARRIERS	15
3	PUBLIC BENEFIT ANALYSIS		16
	3.1	TAX REVENUE GENERATION	16
	3.2	JOB CREATION POTENTIAL	20
	3.3	PAYBACK PERIOD	20
	3.4	ENVIRONMENTAL AND GROWTH MANAGEMENT BENEFITS	22
4	RETURN ON INVESTMENT POLICY COMPARISON		27
	4.1	METHODS AND ASSUMPTIONS	28
	4.2	BROWNFIELD REMEDIATION TAX CREDIT	30
	4.3	BROWNFIELD JOBS TAX CREDIT	33
	4.4	REDEVELOPED BROWNFIELD PROPERTY TAX ABATEMENT	35
	4.5	BROWNFIELDS PUBLIC LAND BANK	36
	4.6	REFORM CONTAMINATED PROPERTY TAX ASSESSMENT	37
	4.7	POOLED ENVIRONMENTAL INSURANCE	38
	4.8	HISTORICAL INSURANCE RECOVERY SUPPORT	39
	4.9	MODEL PURCHASE AND SALE AGREEMENT	40
	4.10	SUPERFUND POLICIES	40
	4.11	RETURN ON INVESTMENT SUMMARY	41

ACRONYMS AND ABBREVIATIONS

BES	Bureau of Environmental Services, City of Portland
BPS	Bureau of Planning & Sustainability, City of Portland
CERCLA	Comprehensive Environmental Response, Compensation and Liabilities Act
DEQ	Department of Environmental Quality
EOA	City of Portland's Economic Opportunities Analysis
EPA	Environmental Protection Agency
GIS	Geographic Information Systems
OAR	Oregon Administrative Rule
ORS	Oregon Revised Statute
PDC	Portland Development Commission
PPA	Prospective Purchaser Agreement
TIF	Tax-Increment Financing
UGB	Urban Growth Boundary
USEPA	United States Environmental Protection Agency

The Portland Brownfield Assessment is a policy study to examine the economic, environmental, and social effects of brownfield properties on the City of Portland (Portland), and review policy options to increase the rate of brownfield redevelopment. As Portland plans for long-term future growth and development within the constraints of the Urban Growth Boundary (UGB), there is an increasing need and opportunity to promote infill redevelopment. The Portland Economic Opportunity Analysis (EOA) projects a 740 acre shortfall of industrial land supply within the UGB in the next 20 years and estimates that brownfield properties account for about one-third of the growth capacity in Portland's industrial, commercial and other employment areas.

This document is one of a series of technical reports that will help policy makers determine how best to cleanup and revitalize brownfield properties to meet the Portland's growth needs. The Public Benefit Analysis reports presents:

- Analysis of the financial barriers to redevelopment of brownfields (Section 2)
- Estimation of the potential economic, environmental, and social benefits that could be derived from redevelopment of brownfield properties (Section 3)
- Forecast of potential return on investment associated with implementation of priority brownfield policy tools (Section 4)

Financial Feasibility Analysis

A range of prototypical development scenarios were modeled for potential brownfield properties in different market areas in Portland. Pro forma estimates of development costs and likely rents and property values were created for each of the prototypes. This analysis provides a financial bottom line that relates the costs of construction and environmental remediation to property value.

Key Findings

- It is estimated that the total cleanup costs of all potential brownfield properties in Portland is approximately $240 million. The burden of these costs drives almost all development prototypes in all market areas underwater financially.

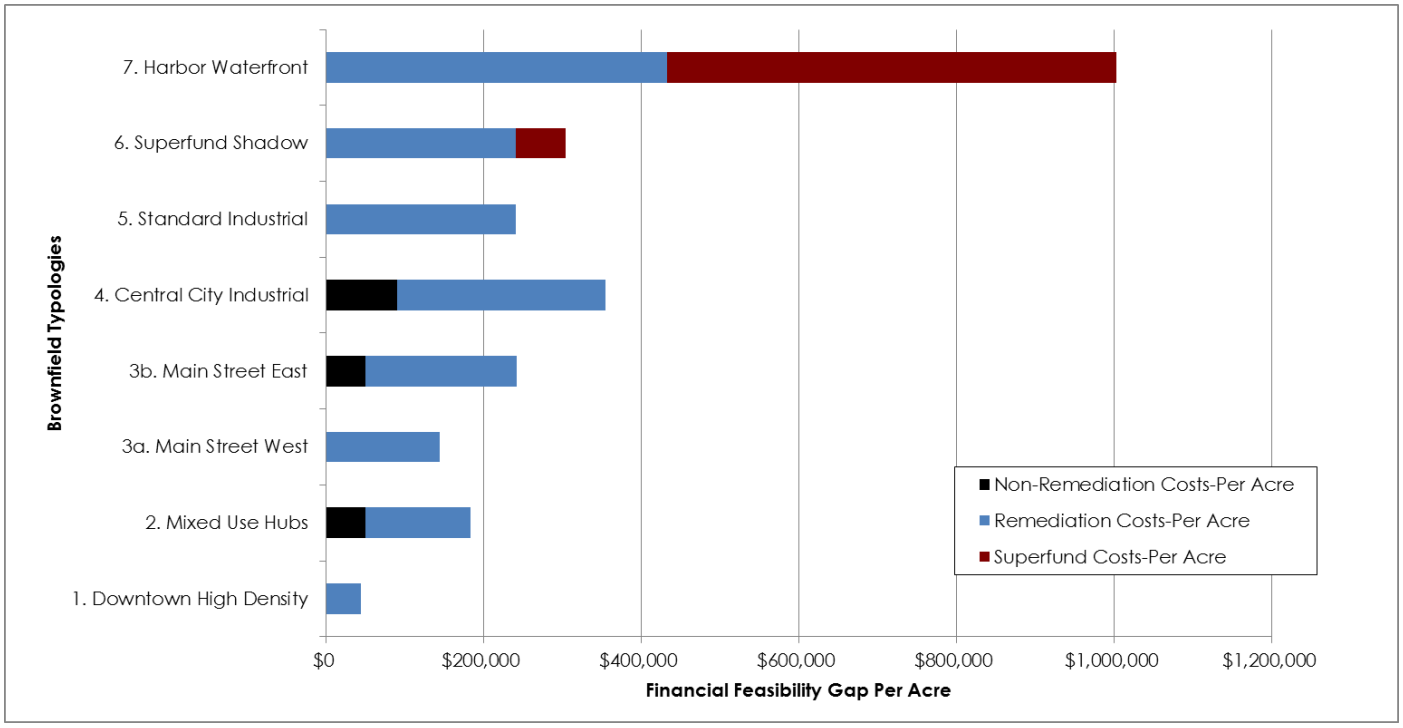
- Theoretical public investment to close the financial feasibility gap for redevelopment of 50% of the brownfield acreage would be approximately $36 million. That investment more than doubles to $75 million to achieve 70% redevelopment. This indicates diminishing returns for public investment—half the properties represent 'low hanging fruit,' but high potential cleanup costs make the rest increasingly financially challenging.

- High density development downtown is the strongest typology from a financial feasibility perspective; the remediation costs are generally low relative to the high potential redeveloped value of these properties.

- Industrial properties account for 77% of the overall feasibility gap for on-site remediation. That increases to 84% of the gap if potential Superfund-related liability is included.

- With potential Superfund liability costs added, the total cost of remediating affected properties on the Portland Harbor Waterfront is preliminarily estimated to increase to as much as $23-$24 per square foot of site area—more than three times the value of shovel-ready (or unconstrained) vacant industrial land.

Figure Exec. 1. Financial Feasibility Gap Per Acre



Public Benefit Analysis

The prototypical development scenario financial models were used as the basis for projecting the potential economic, environmental, and social benefits or redeveloping brownfields in Portland.

Key Findings

- Redevelopment of all potential brownfields identified in Portland could potentially result in 910 acres of land supply that would support 31,000 jobs and over $40 million in annual Portland tax revenues.

- High density development in downtown accounts for nearly 50% of both the employment potential and Portland tax revenue potential, even though it accounts for only 6% of total brownfield acres.

- Redevelopment of brownfields in industrial areas accounts for approximately 30% of potential jobs.

- Payback of public investment in brownfields through increased tax revenues ranges from one to four years for commercial and mixed use development areas near downtown up to four to thirteen years for most industrial areas. Because of potentially high cleanup costs and relatively low Portland tax revenue potential, payback from public investment in cleanup of brownfields on the Portland Harbor waterfront may take as long as 40 years.

- Redevelopment of brownfields can help Portland achieve its greenhouse gas reduction goals. It is estimated that full build-out of the inventory of potential brownfields would result in a reduction of 39,000 metric tons of CO2 annually, relative to sprawl development—the equivalent of taking 9,200 cars off the road.

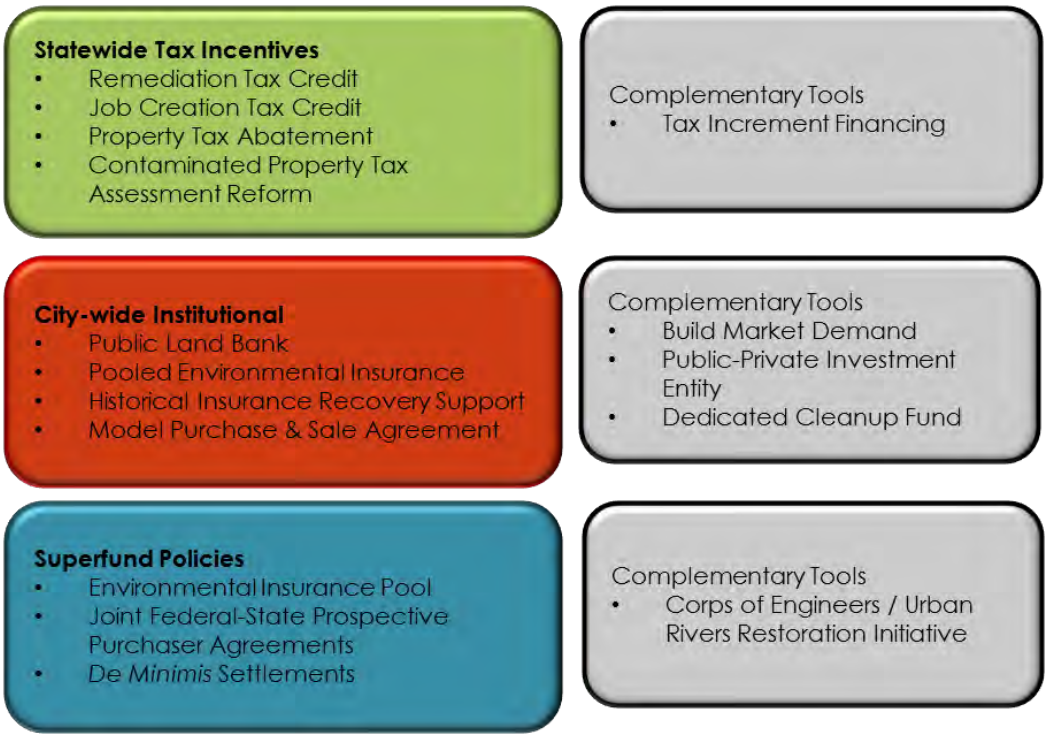
- Infill development on brownfields has the potential to save $115 - $180 million in public infrastructure investment.

Return on Investment for Brownfield Incentives

A set of policy options that can accelerate brownfield redevelopment to achieve Portland's economic and community development goals has been developed through a review of best practices in other cities and states across the country and collaborative discussions with the advisory group of stakeholders and experts. The policy tools have been prioritized by the advisory group and bundled to demonstrate synergies between options and lay the foundation for an implementation strategy. The policy tools are described in detail in the Financial Feasibility Analysis (Part 1 of the Task 3 &

4 report). Tools prioritized by the advisory group are listed in Figure 2 along with other policy options assessed in the study listed as "complementary tools."

Figure Exec 2. Priority Policy Tool Bundles



The purpose of the return on investment analysis is to compare the relative impact these tools. Because the policies have not yet been fully developed and it is uncertain what eligibility criteria, geographic constraints, or other factors might affect their influence on redevelopment outcomes, the results should be considered order of magnitude. This analysis is most useful for comparing the policies amongst each other to determine which are most likely to create the best return in absence of complete information about how they will be implemented.

Key Findings

- The Remediation Tax Credit, Job Creation Tax Credit, Property Tax Abatement, Public Land Bank, and Pooled Environmental Insurance appear to have the greatest impact with each potentially facilitating redevelopment of about 150 acres.

- The Remediation Tax Credit, Pooled Environmental Insurance, and Historical Insurance Recovery provided the greatest return on tax revenues relative to public investment. Each approach a $10 return in state and local tax revenue for every $1 invested (See

Figure 3). These tools leverage private investment or bring outside resources to projects, thus minimizing the public funds needed to help a project achieve financial feasibility.

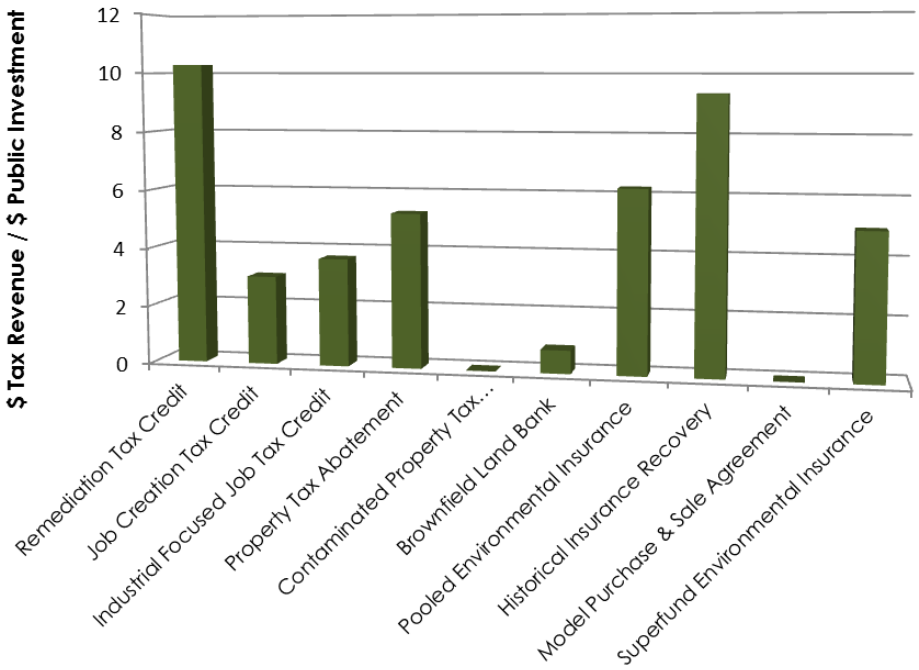
- Tax credits and tax abatements appear to have great potential to support redevelopment of brownfields that are close to financial feasibility, including the Standard Industrial, Downtown High Density, and Mixed Use Hub typologies

- To drive redevelopment in the Superfund Shadow and Harbor Waterfront typologies, multiple policy tools are needed, such as combining the Public Land Bank with Pooled Environmental Insurance, and a Remediation Tax Credit.

- Much of the employment and tax revenue benefit of brownfields is focused in office, commercial, and mixed use development in strong markets. These areas are also the most likely to redevelop with little to no public investment.

- Incentives for redevelopment in industrial areas have the potential to reduce the projected shortfall in land supply, but will require significant investment with relatively low increase in Portland tax revenues. However, the tax revenues generated to Multnomah County and the State of Oregon for industrial redevelopment are substantial and supports a rationale for shared investment in Portland industrial lands as a regional economic asset.

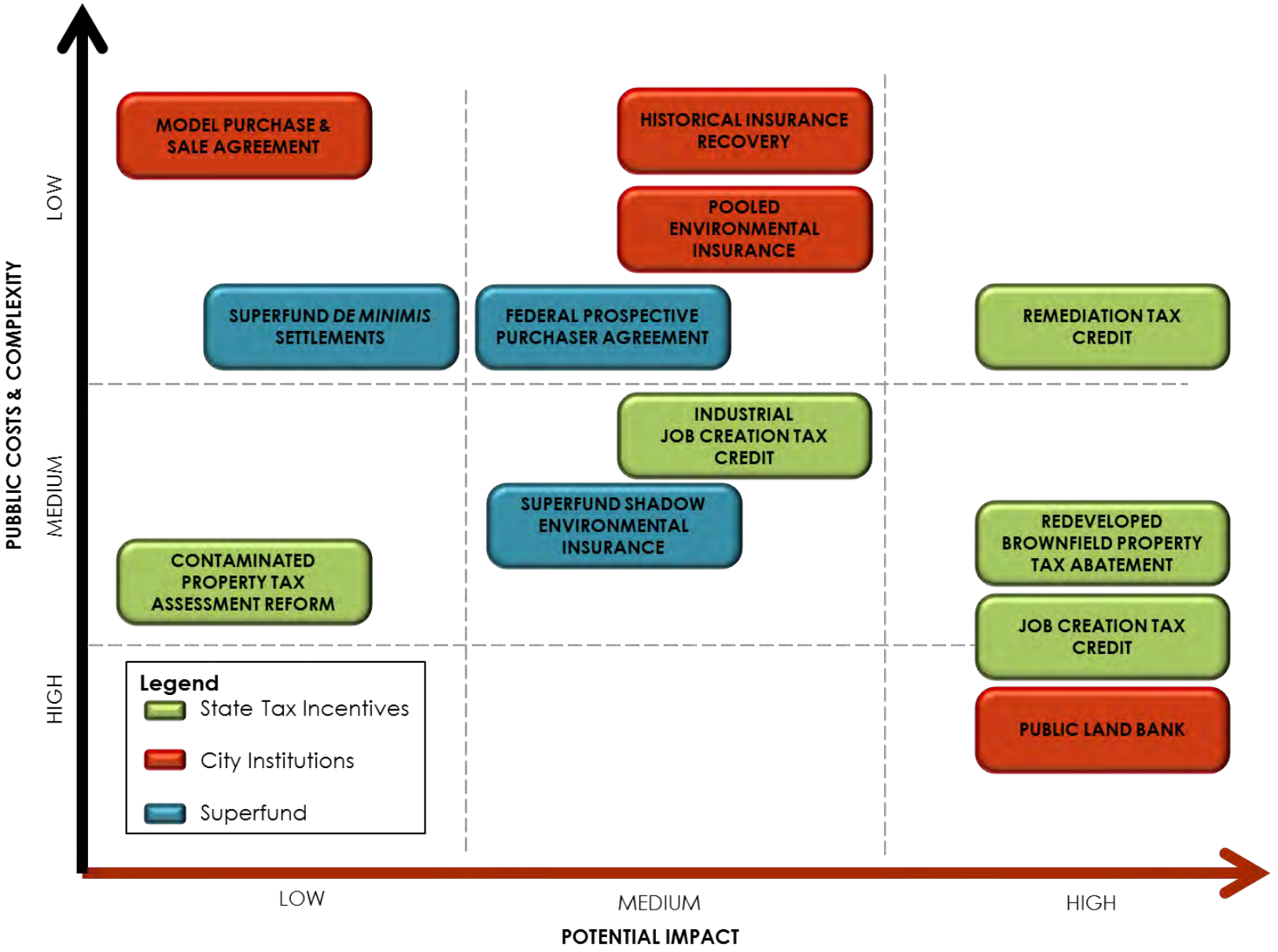
Figure Exec. 3. Return on Public Investment



In setting policy, the potential financial returns of a policy should be considered along with a number of other factors including administrative costs and complexity to implement. Figure 4-3 provides a conceptual graphic that aligns brownfield policy options in terms of potential impact relative to public cost and complexity. The highest rated policies based on this analysis are the Remediation Tax Credit and Historical Insurance Recovery Support. The Public Land Bank has a high potential impact over a long-term time horizon, but will likely require significant investment of public resources for it to successful. Several low cost, low impact policies, such as creating a Model Purchase and Sale Agreement. are actions that, though difficult to quantify, can support the other effectiveness of other tools.

Figure Exec 4

POLICY IMPACT AND COSTS SUMMARY ANALYSIS



1 INTRODUCTION

This report summarizes findings regarding the barriers to redevelopment of brownfields, and the public benefit that could be associated with brownfield redevelopment in Portland. This analysis was completed as part of Tasks 3 and 4 of the Portland Brownfield Assessment project. This report builds on the previous reports listed below which should be read as companion documents for context and complete results.

The goal of the Portland Brownfield Assessment is to examine opportunities to increase the rate of brownfield redevelopment through:

- Identification of barriers to brownfield redevelopment
- Development of financial feasibility and public benefit analyses
- Analysis of financial and technical assistance incentives to address barriers to brownfield redevelopment
- Development of implementation actions based on best practices from around the country

Brownfields Defined

The term "brownfield" refers to real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of hazardous substance contamination.

Key work elements presented in this draft Public Benefits Analysis report include:

- Discussion and quantification of the market-based barriers to redevelopment of brownfields (Section 2)
- Analysis of the economic, environmental, and social benefits that could be derived from redevelopment of brownfield properties (Section 3)
- Forecast of potential return on investment associated with implementation of priority brownfield policy tools (Section 4)

Components of Portland Brownfield Assessment

- Inventory & Existing Conditions Analysis (Task 2 Report)
  - Inventory of potential brownfield properties
  - Identification of brownfield typologies
  - Assessment of development trends at national and local level
  - Review of market & non-market barriers to brownfield redevelopment
  - Review of existing state and local incentives for brownfield cleanup and redevelopment
- Financial Feasibility Analysis (Part 1 of Task 3 and 4 Report)
  - Pro forma analysis of prototypical brownfield redevelopment scenarios
  - Estimate of opportunity costs associated with brownfield properties
  - Review of policy tools to promote brownfield cleanup and redevelopment
- Financial Barriers and Public Benefit Analysis (Part 2 of Task 3 and 4 Report)—*this report*
  - Evaluation of financial gaps to achieving redevelopment goals
  - Analysis of potential economic, environmental, and social benefits to brownfield redevelopment
  - Forecast of return on investment from implementation of priority policy tools to promote brownfield cleanup and redevelopment
- Summary Report (Task 5)

1.1 Context

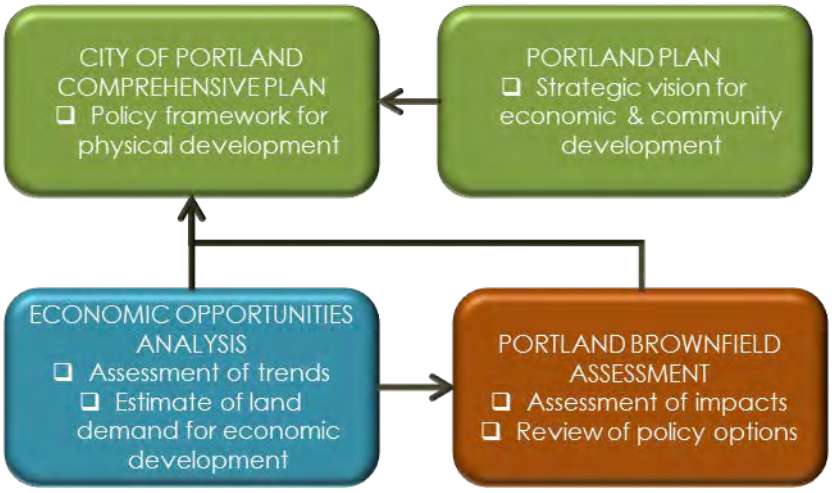
Portland recently adopted the Portland Plan, a long-term strategic vision for Portland that is built on integrated strategies to promote: economic prosperity and affordability, a healthy connected Portland, and thriving educated youth. The Portland Plan sets ambitious goals for Portland to capture regional growth, meet demands for land supply within the Urban Growth Boundary (UGB), and increase the traded sector economy and competitiveness of industrial land as a multi-modal transportation hub.

Portland is currently in the process of updating its Comprehensive Plan that sets the framework for the physical development of Portland over the next 20 years. Because Portland is essentially land-locked and therefore cannot easily expand its UGB to accommodate expected growth, it must focus more clearly on infill redevelopment. A substantial amount of the land that could accommodate infill and redevelopment are brownfield properties that are constrained by contamination concerns.

As part of its process to update the Comprehensive Plan, Portland has completed a draft Economic Opportunity Analysis (EOA). The study found that buildable employment land supply in Portland is inadequate to meet forecasted demand in 2035; and that "potential brownfields" account for about one-third of the growth capacity in Portland's industrial, commercial and other employment areas. Brownfield properties face significant challenges in the marketplace. Recent trends indicate that most of Portland's brownfield land will continue to sit idle despite increasing economic growth and demand for new real estate development. The EOA forecasts that only 40% of brownfield acreage in industrial areas and 50% in neighborhood commercial areas are expected to redevelop by 2035.

This report is one way in which Portland is reconsidering its existing land supply, and evaluating opportunities to make investments inside of its UGB that can result in additional built space to support jobs and people, while avoiding suburban sprawl (See Figure 1-1). This effort is driven by the recognition that addressing brownfields is not only about improving public health and the environmental, but is a critical economic and community development strategy..

Figure 1-1. Interconnection of Planning Efforts



2 FINANCIAL FEASIBILITY ANALYSIS

One of the key features of the Portland Brownfield Assessment is its focus on accounting for the real estate market context in which brownfield redevelopment occurs. In many cases, contamination cleanup costs are just one among many market variables that constrain the potential for redevelopment. Low achievable rents in the planned redevelopment; site constraints (slope, allowed density, access, etc); regional real estate and development financing trends; and other variables all affect development feasibility.

The financial feasibility analysis examines the development potential of individual prototypical development scenarios for each typology (Section 2.1) and then aggregates the results to evaluate the financial condition of all of the identified brownfields in Portland (Section 2.2). To support this analysis, brownfields in Portland have been categorized into seven typologies based both on market potential and contamination issues. (Figure 2-1).

2.1 Summary of Pro Forma Analysis

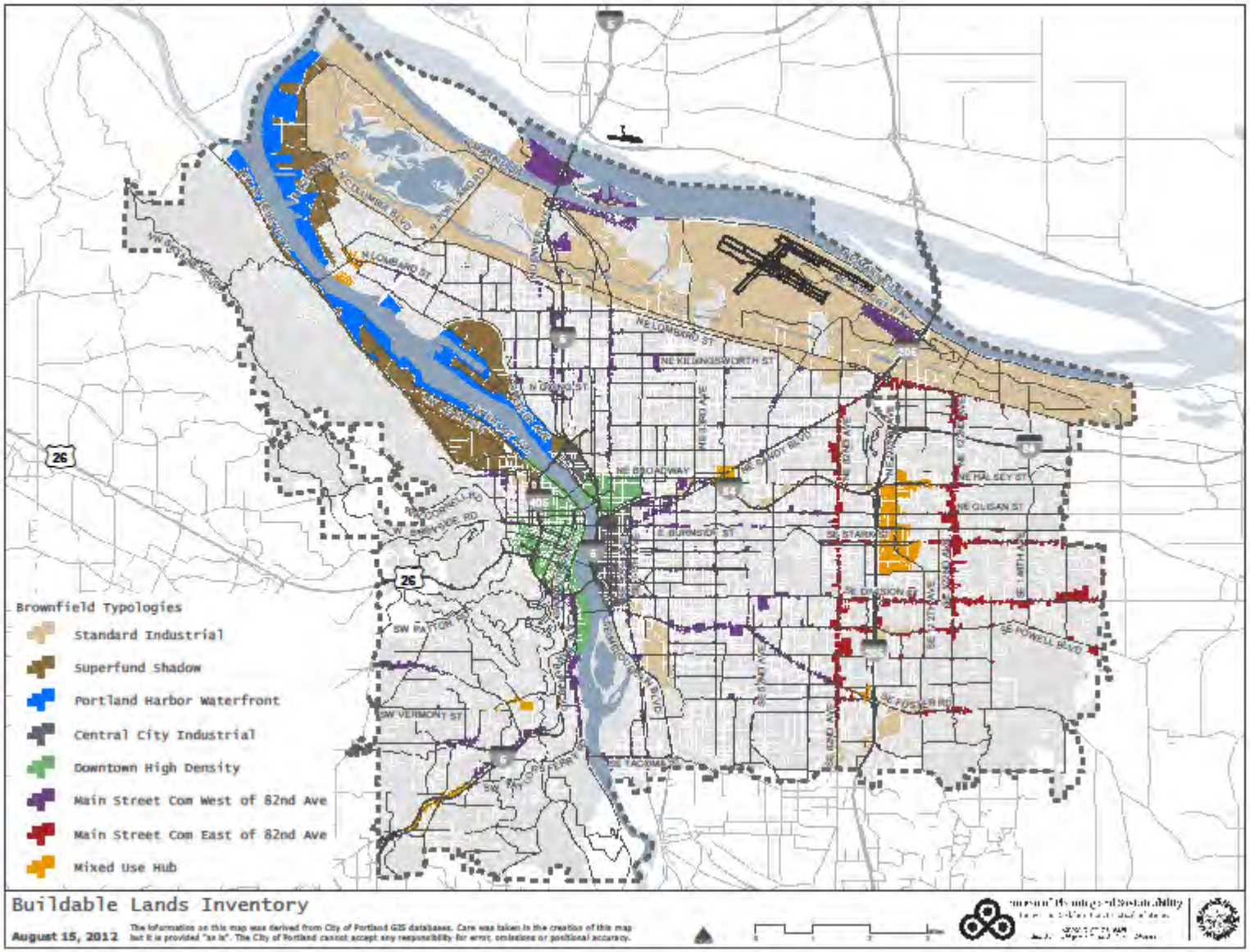
Pro Forma Analysis provides insight into the financial viability of brownfield redevelopment, based on its potential future use.

Pro forma estimates of development costs, cleanup costs, likely rents and property values were created for each of the prototypical development scenarios in each typology (See Table 2-1). The critical test of financial feasibility lies in the relationship of project *cost to valuation.* If the valuation upon completion and resulting occupancy exceeds the cost of development, the project is viewed as feasible. In situations where valuation is less than cost, the project is viewed as having a "financial feasibility gap."

Table 2-1. Brownfield Typologies and Development Scenarios.

Typology	Use Type	Acres
1. Downtown High Density	Mixed Use	27
	Office-Retail	67
2. Mixed Use Hubs	Mixed Use	11
	Office-Retail	47
3a. Main Street West	Mixed Use	45
	Office-Retail	92
3b. Main Street East	Mixed Use	22
	Office-Retail	36
4. Central City Industrial	Flex-Tech	4
5. Standard Industrial	Flex-Business Park	137
	Warehouse-Distribution	189
6. Superfund Shadow	Flex-Business Park	33
	Warehouse-Distribution	46
7. Harbor Waterfront	Warehouse-Distribution	154
Total		**910**

Figure 2-1 Map of Portland Brownfield Typologies



Pro Forma Analysis Methods

The pro forma analysis is not site or owner specific—but rather relies on prototypical development projects generated for each typology under alternative assumptions of market use and brownfield remediation cost. For ease of application across Portland's full employment and brownfield geography, all pro formas are calculated on standard per unit measures of:

- Development cost versus valuation per *building square footage*
- Resulting financial surplus (or gap) per square foot of *land area*

The financial pro forma compared the cost of developing a property (including land acquisition, hard and soft development costs, and site remediation) to the market value of the completed building as an indicator of feasibility. It evaluated a mix of building types as appropriate for zoning and employment geography including manufacturing / warehouse, flex / business park, office / commercial, retail, and mixed use residential.

The results of the financial pro forma evaluation determined whether each building type was feasible both with and without remediation costs included. Importantly for the next step in the feasibility analysis, it also resulted in an estimate of the dollar amount of "gap" between development costs and finished market value for each of these building types.

Pro Forma Analysis Key Findings

Commercial developments close to downtown have greatest financial strength.

Industrial redevelopment is challenged by comparatively low land values relative to cleanup costs.

- Generally, environmental cleanup costs have a stronger overall influence on feasibility than the costs associated with market variables (i.e. rents, development costs, location).
- High value locations with high allowed density development are more likely to be market feasible. For example, properties in downtown Portland can often absorb average remediation costs and still be financially viable to redevelop.
- Mixed use developments in some typologies such as Main Street East are often financially infeasible because construction costs outweigh potential rents achievable with current market conditions. The addition of remediation costs only exacerbates those scenarios. However, these development types make up a small portion of total potential brownfields in Portland.
- Industrial brownfields are generally challenging to redevelopment because cleanup costs often exceed the redeveloped value which is limited by the lower density of development and land prices.

- The addition of Superfund related liability on top of upland remediation costs has the potential to drive industrial brownfields near the Portland Harbor underwater financially.

2.2 Pro Forma Aggregated Results

Financial pro formas were generated in terms of typical square footage estimates of building area together with associated costs and incomes; these results were then translated to per site area figures based on intensity (or floor area ratio) of anticipated development. These results have been aggregated to show how the development scenarios are extrapolated across the full inventory of potential brownfield properties in Portland. Excluding the EOA Institutional geography, Portland currently estimates that there are approximately 910 acres of vacant and underutilized, potentially contaminated industrial and commercial land in Portland[1].

Aggregated Pro Forma Results estimate the scale of the financial challenge posed for brownfields redevelopment in Portland.

Aggregation Methods:

- Identification of brownfield acreage by typology.
- Distributing high-medium-low remediation cost assumptions across each of the seven typologies based on review of available local and national data on cleanup cost (See Table 2-2).

Table 2-2. Distribution of Typical Cleanup Costs

Brownfield Typology	Application of Costs to % of Brownfield Acres		
	High ($16/s.f.)	Medium ($6/s.f.)	Low ($1.5 / s.f.)
1. Downtown High Density	0%	50%	50%
2. Mixed Use Hubs			
3. Main Street (east and west)	10%	40%	50%
4. Central City Industrial	20%	37%	43%
5. Standard Industrial			
6. Superfund Shadow			
7. Portland Harbor Waterfront	50%	40%	10%

- Distribution of future development types
    - Typologies 1-3—Mixed use (with residential and commercial), commercial, and office-retail. Note that the residential allocations for mixed use have been defined consistent with target shares (ranging from 34-49% of

[1] See Inventory and Existing Conditions Report (Task 2) of the Portland Brownfield Assessment for detailed methodology for brownfield inventory.

affected typologies) as consistent with the Portland EOA for each pertinent Comprehensive Plan designation.

  - Typologies 4-7—Flex/business park space, warehouse-distribution. Approximately 42% of future site development within the Standard Industrial and Superfund Shadow typologies is anticipated to occur with flex/business park space and 58% with warehouse-distribution space. For Harbor Waterfront properties, 100% of future development is assumed as warehouse-distribution related use.

- Per square foot remediation costs and feasibility "gap" numbers are converted to acreage equivalents, multiplied across the acreage distributions, and then summed to estimate total remediation cost and associated feasibility gap figures, by typology. Note that for redevelopment prototypes that would be financially underwater even before brownfield considerations, the amount of the financial gap is further intensified by the cost to remediate.

- For the Superfund Shadow and Harbor Waterfront typologies, costs are calculated separately for on-site remediation and potential Superfund liability. For purposes of illustration (and as is further detailed in the Task 3/4 report), these costs are estimated at an added $1.46 per square foot of land area for brownfield constrained properties in the Superfund Shadow typology and at $13.10 per square foot of site area for the Harbor Waterfront typology.

- Per site area figures of net added employment, payroll and state / local jurisdiction tax revenue potential are multiplied by typology specific acreage and use distributions to arrive at estimates of potential opportunity cost resulting from brownfield sites not in productive economic use. These preliminary estimates represent maximum gross potential assuming "best case" 100% redevelopment and without taking into account potential relocation of economic activity from one part of the metro region or state to Portland of Portland.

Aggregated Results

Total estimated cost to remediate all brownfields in Portland = $244M

- Remediation costs for all the identified brownfields is estimated at nearly $244 million. If potential Superfund liability is added for these sites, the total remediation cost increases to nearly $337 million.

- Downtown High Density represents the financially strongest typology (See Table 2-2), demonstrated by

  - Estimated 45% of the added job potential with full build out.

    - Remediation costs relatively low to overall development costs and redeveloped value

- Another 8,300+ jobs (or 27% of the total) may be oriented to typologies (2-4) for Mixed Use Hubs, Main Street, and Central City

- Industrial typologies account for approximately 8,900 (28-29%) of potential jobs.

- Harbor Waterfront—with potential Superfund liability costs added, the total cost of remediating affected properties is preliminarily estimated to increase to as much as $23-$24 per square foot of site area—more than three times the value of shovel-ready (or unconstrained) vacant industrial land.

- Industrial brownfield typologies account for 77% of the overall feasibility gap for on-site remediation. That increases to 84% of the gap if potential Superfund-related liability is included.

- Payroll—Estimated $1.4 billion in foregone annual payroll potential for the affected sites

- Tax Revenue—Lost opportunity for additional $239 million per year in potential state and local income, property and business tax revenues (estimated in 2012 dollars).

Table 2-3. Aggregated Feasibility Gap & Opportunity Cost Analysis

	Total All Typologies	1. DT High Density	2. Mixed Use Hubs	3a. Main Street West	3b. Main Street East	4. Central City Industrial	5. Standard Industrial	6. Superfund Shadow	7. Harbor Waterfront
Cost to Cure (per SF Land)									
Remediation Cost	$6.15	$3.75	$3.75	$4.75	$4.75	$6.07	$6.06	$6.06	$10.55
Remediation Cost w/Superfund	$8.50	$3.75	$3.75	$4.75	$4.75	$6.07	$6.06	$7.52	$23.65
Financial Gap w/Remediation (if any)	($6.02)	$(2.05)	$(4.22)	$(5.01)	$(5.55)	$(8.16)	$(5.53)	$(5.53)	$(9.94)
Financial Gap w/Superfund	($8.63)	$(2.05)	$(4.22)	$(5.01)	$(5.55)	$(8.16)	$(5.53)	$(6.99)	$(23.04)
Land Area (Acres)									
Brownfield Typology Totals	909.7	94.4	58.0	137.0	57.6	4.2	325.9	78.8	153.9
Total Cost to Cure									
Remediation Cost (w/o Superfund)	$243,878,000	$15,417,000	$9,478,000	$28,349,000	$11,929,000	$1,098,000	$86,090,000	$20,814,000	$70,703,000
Remediation Cost w/Superfund	$336,680,000	$15,417,000	$9,478,000	$28,349,000	$11,929,000	$1,098,000	$86,090,000	$25,824,000	$158,495,000
Financial Gap (w/o Superfund)	$(214,297,000)	$(4,207,000)	$(10,660,000)	$(19,872,000)	$(13,948,000)	$(1,477,000)	$(78,545,000)	$(18,990,000)	$(66,598,000)
Financial Gap w/Superfund	$(307,098,000)	$(4,207,000)	$(10,660,000)	$(19,872,000)	$(13,948,000)	$(1,477,000)	$(78,545,000)	$(23,999,000)	$(154,390,000)
Economic Opportunity Cost									
Employment / Payroll (@ 100% Use)									
Employment	31,310	14,066	2,641	3,298	2,103	281	5,688	1,375	1,857
Annual Payroll	$1,406,489,000	$564,887,000	$94,986,000	$118,007,000	$71,119,000	$13,881,000	$334,575,000	$80,890,000	$128,144,000
Payroll per Job (Average Wage)	$44,921	$40,160	$35,960	$35,778	$33,815	$49,389	$58,819	$58,819	$69,000
Net Added Residential Units	7,306	5,366	566	1,058	316	--	--	--	--
Annual Tax Revenue (@ 100% Use)									
City of Portland	$42,511,000	$21,104,000	$3,094,000	$4,140,000	$1,770,000	$395,000	$7,482,000	$1,809,000	$2,717,000
Total State / Local Revenue	$238,699,000	$104,425,000	$16,336,000	$21,053,000	$10,786,000	$2,354,000	$51,997,000	$12,570,000	$19,178,000

Source: E. D. Hovee & Company, LLC. Analysis is preliminary, intended for illustrative purposes, and subject to revision.

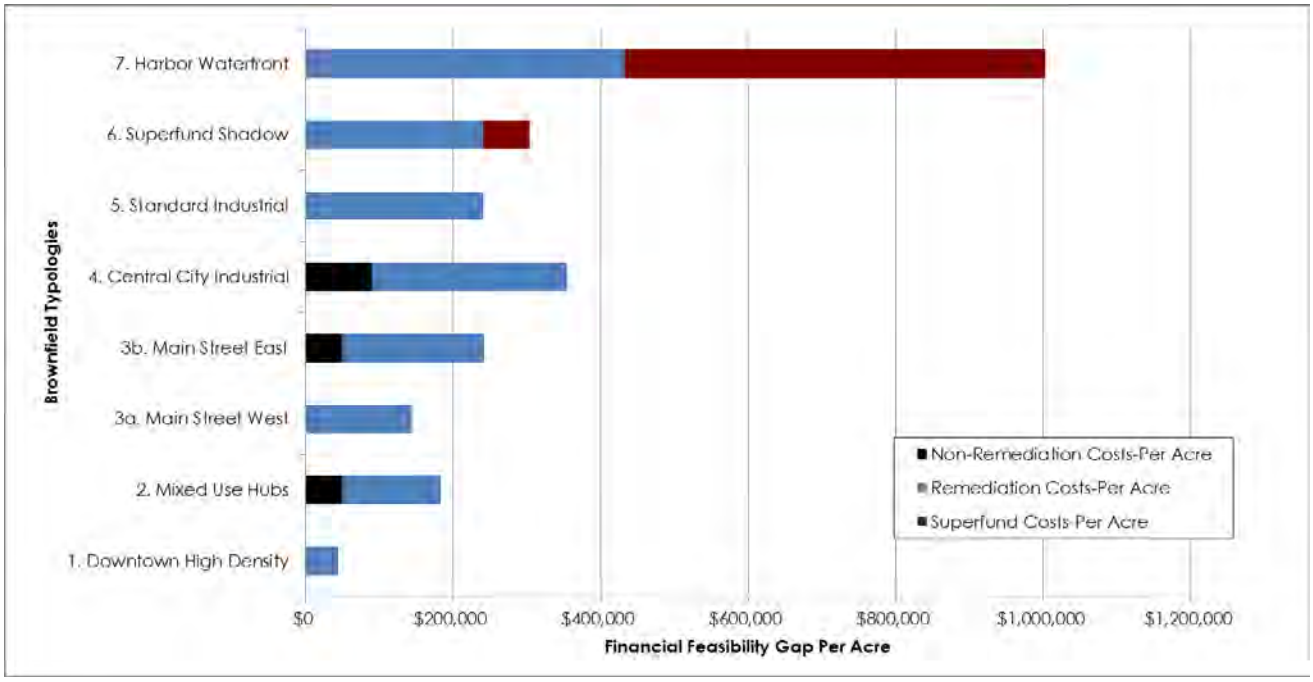
2.3 Analysis of Financial Barriers

The financial feasibility gap is composed of both development and cleanup related factors. The balance of these factors varies by typology and redevelopment scenario (See Figure 2-2). For nearly all the typologies, redevelopment is financially feasible, but for the additional costs associated with environmental remediation. For the three typologies, Main Street East, Mixed Use Hubs, and Central City Industrial, that are "underwater" before accounting for costs associated with environmental remediation, relatively high development costs currently generally exceed the rents those areas will bear. In the Central City Industrial employment geography, recent development activity has largely consisted of rehabilitation of existing buildings, with not much new construction to date. However, the pro forma analysis assumed construction of new building space based on the observation that further opportunities for re-use of existing viable building stock in this area is becoming limited.

As discussed above, the addition of estimated potential costs associated with Portland Harbor Superfund liability has a substantial impact on the Harbor Waterfront and Superfund shadow typologies.

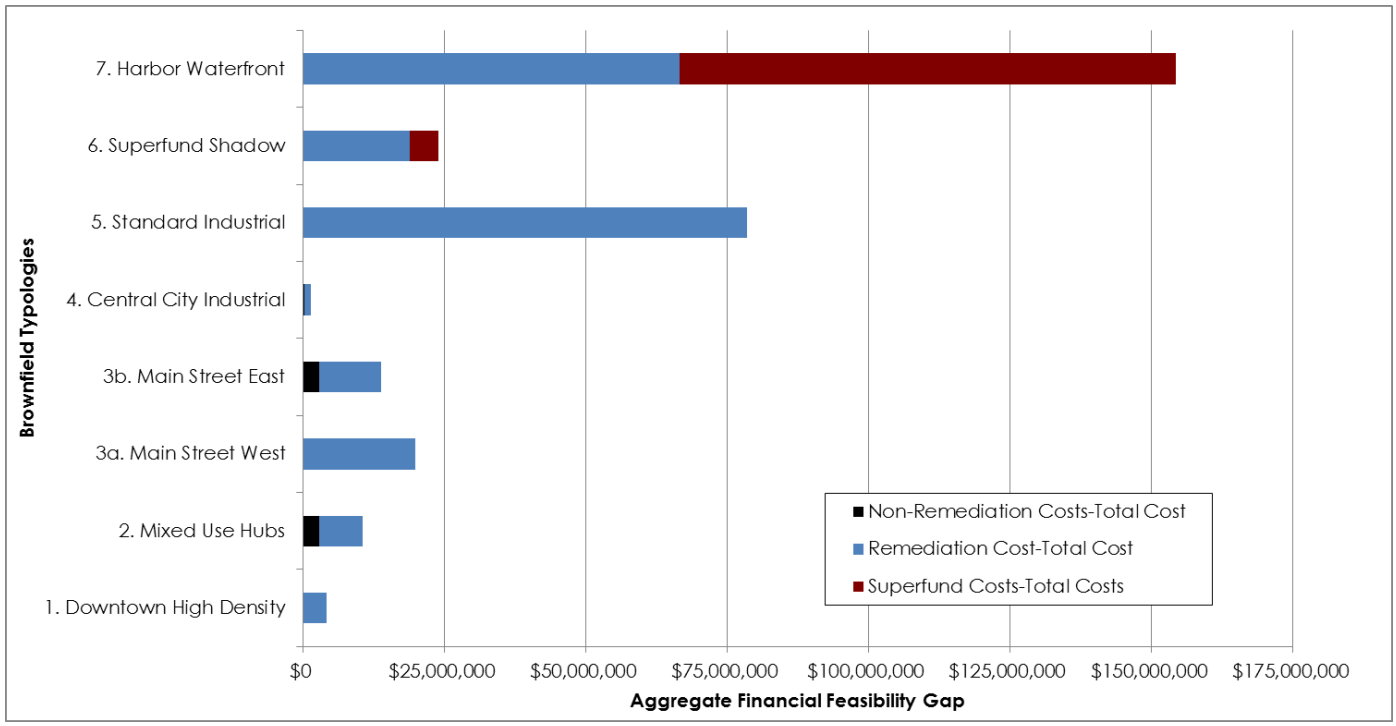
- Superfund Shadow sites—adds approximately $64,000 in costs/ acre
- Harbor Waterfront sites—adds nearly $571,000 in costs/ acre.

Figure 2-2. Financial Feasibility Gap <u>Per Acre</u>



Applying this analysis to the entire inventory of potential brownfield sites provides an estimate of the total financial feasibility gap across all sites (See Figure 2-3). The magnitude of the total financial feasibility gap is largely driven by the number of acres in a particular typology. Industrial sites make up the majority of acreage in the brownfield inventory. The Harbor Waterfront typology alone accounts for 150 acres or about 19% of the inventory. This emphasizes the liability associated with remediation of industrial sites in general and the magnitude of the Superfund impact in particular.

Figure 2-3. Total Financial Feasibility Gap



2.4 Investment to Achieve Redevelopment Goals

What level of investment is needed to meet potential targets of 50%, 70%, and 90% redevelopment of the brownfields in Portland?

Reaching complete build out of the brownfield inventory is not a realistic goal, so interim targets of reaching redevelopment of 50%, 70%, and 90% of these properties is evaluated to establish a context for the level of public investment that may be needed to put these sites into productive use. These targets align with analysis conducted in the EOA to examine the potential for brownfields to meet the forecasted industrial land supply shortfall in the UGA.

Methods

- Sorting—Development scenarios of the pro forma analysis were sorted by the financial gap on a per-acre basis. That is, the subcategory with the smallest per-acre financial gap was at the top of the sorted list and the subcategory with the largest per-acre financial gap was at the bottom of the sorted list.

- Winnowing—Development scenarios that were financially feasible even after adding remediation costs were removed. Three scenarios in the Downtown High Density and Main Street West typologies met this criteria. These accounted for 93 acres or about 10% of the brownfield acreage. Since these development types would not need public investment to make them viable, they were removed from the analysis.

Results

The analysis finds that a large amount of the brownfield inventory can be redeveloped with a relatively modest investment (Table 2-4), but achieving higher levels of redevelopment will be increasingly costly with diminishing returns. Closing the estimated financial feasibility gap on 50% of the brownfield acreage would require an investment of approximately $36 million. That investment doubles to achieve 70% of redevelopment, then doubles again to achieve 90%. The analysis indicates there is a large amount of "low hanging fruit" in projects that could become financially feasible with some level of public investment. The increasing costs to achieve higher levels of redevelopment are largely driven by the assumed high costs of cleanup associated with a relatively small number of individual properties.

Table 2-4. Financial Gap to Reach 50, 70, and 90% Redevelopment

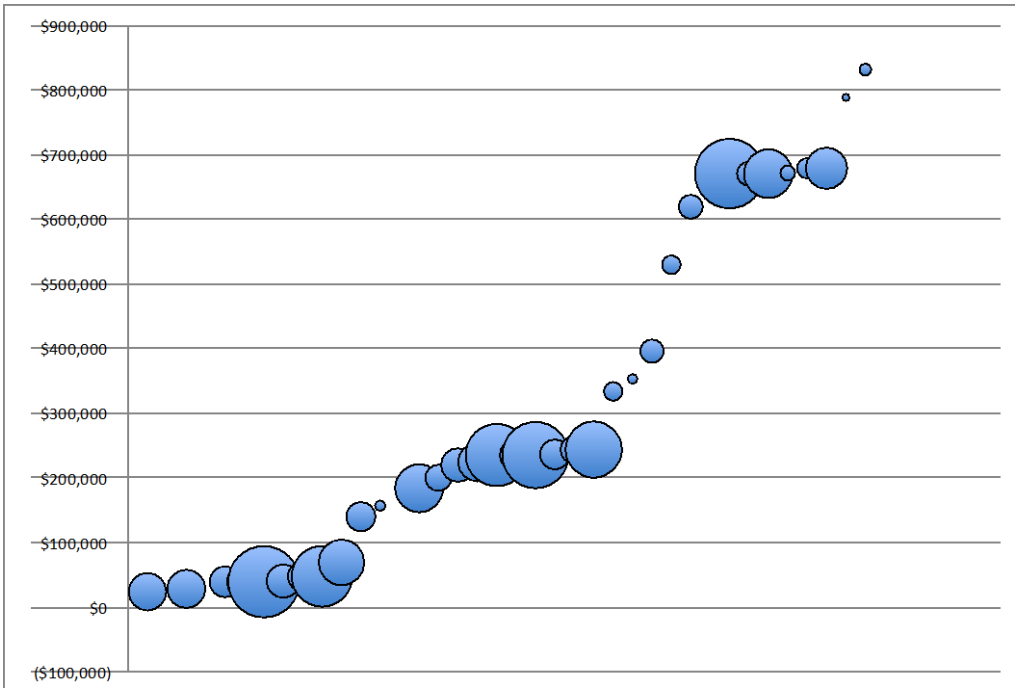
% of Total Acres	Number of Acres	Total Financial Gap	% of Total Financial Gap	Jobs	City Tax Revenue (Annual)	Total State & Local Tax Revenue (Annual)
50%	408	$36,371,000	17%	23,000	$31,760,000	$170,385,000
70%	572	$74,860,000	35%	26,000	$35,103,000	$194,107,000
90%	735	$158,820,000	74%	30,000	$40,397,000	$224,235,000
100%	817	$214,296,000	100%	31,000	$42,511,000	$238,698,000

Note: The financial gap shown here excludes costs associated with superfund sites.

Another key factor that drives these results is that many of the property development pro forma scenarios with a low per-acre financial gap are

applied in the model to a large number of acres. In Figure 2-4, each bubble shows the per-acre financial gap for each of the development pro forma scenarios, sorted from lowest to highest per-acre financial gap. The size of each bubble indicates the number of acres associated with that property type. The chart shows that the property types with a low per-acre financial gap are dominated by mid-sized acreages; the property types with a high per-acre financial gap have a higher portion of small-sized acreages.

Figure 2-4. Per-acre financial gap and acreage by development scenario



Note: the relative size of the bubble indicates the number of acres to which the development scenario is applied in the model.

Limitations and Assumptions

The financial analysis provides an order-of-magnitude estimate of the costs of construction and remediation relative to the value of potential development. The underlying pro forma analysis is based on generalized development prototypes as described in Section 2.2. The following assumptions underlie the analysis of achieving 50%, 70%, and 90% redevelopment of the brownfield inventory.

- Development scenarios with the smallest financial feasibility gap will develop first.

- The model does not include market absorption rates for achieving the different levels of redevelopment; instead, it models the

magnitude of the financial gap to achieving certain levels of redevelopment.

- The model also does not explicitly account for site specific, non-contamination constraints. To some extent, multiple constraints are addressed with Portland's Buildable Lands Inventory, but parcel-specific issues may vary widely from anticipated norms. This analysis does not take into account these external or site-specific factors.

2.5 Other Market Barriers

The pro forma and financial gap analyses show that, when brownfield sites are considered in total across Portland, possible contamination is the most important variable that affects development feasibility. Only 3% of the total financial gap is associated with market barriers other than contamination. However, there are variations among typologies. For the three typologies that have non-remediation financial barriers, about 25% of their total financial gap is attributable to market barriers such as low achievable rent, site constraints beyond contamination, access to affordable development financing, etc. The implications are important:

1. Public policy tools that seek to achieve a redevelopment outcome through addressing only brownfield constraints will be effective in some development projects. The pro forma analysis suggests that those projects are mid-cost projects that are not well-located to achieve maximum value, and certain types of industrial projects where the liability and cost associated with cleanup are the key feasibility factor. For such projects, the brownfield incentive will be the critical factor that allows redevelopment to occur. For other projects, a brownfield incentive on its own cannot overcome the other market variables that affect feasibility.

2. To achieve broader redevelopment outcomes in many situations, targeted brownfields incentives will be more effective when paired with tools that address other market barriers.

3. In many real world examples of brownfield redevelopment, a package of multiple financial tools is used to overcome a mix of barriers and achieve feasibility. As brownfield incentives are more fully developed, they may be more effective when paired with policy tools that address other market barriers.

3 PUBLIC BENEFIT ANALYSIS

The analysis presented in Section 2 focused on the opportunity costs associated with underutilized brownfield properties and the challenge of making those properties financially viable. This section changes focus to the potential benefits that would be accrued to the public if those brownfield properties were remediated and revitalized. The public benefit analysis includes two major components:

1. Financial and economic benefits (Section 3.1)

2. Environmental and social benefits (Section 3.2)

3.1 Tax Revenue Generation

The pro forma analysis of prototypical brownfield redevelopment scenarios required estimates of property values and associated assessed values. Building on those estimates, a rough projection of the tax revenues of full build out of the inventory of potentially contaminated sites can be calculated. While it is clearly unlikely that 100% of the brownfields will redevelop in any reasonable planning horizon, this analysis provides a sense of the scale and potential represented by these properties.

Methods

The estimates of tax revenue generation are based on:

- Current tax rates for Portland, Multnomah County, and the State of Oregon
- Property taxes, corporate taxes, and personal income taxes
- Estimates of jobs and payroll based on development density and types of uses derived from standard economic models (such as IMPLAN)

Results

On a per acre basis, the Downtown High Density typology generates the most tax revenue, far greater than any of the other typologies (See Figure 3-1). Each acre generates about $1.1 million in tax revenue at full development. A little over half of the tax revenue comes from state income tax generated by corporations located in the development and the individuals employed at

Downtown High Density Typology provides 44% of total potential tax revenue, but represents only 6% of brownfield acreage.

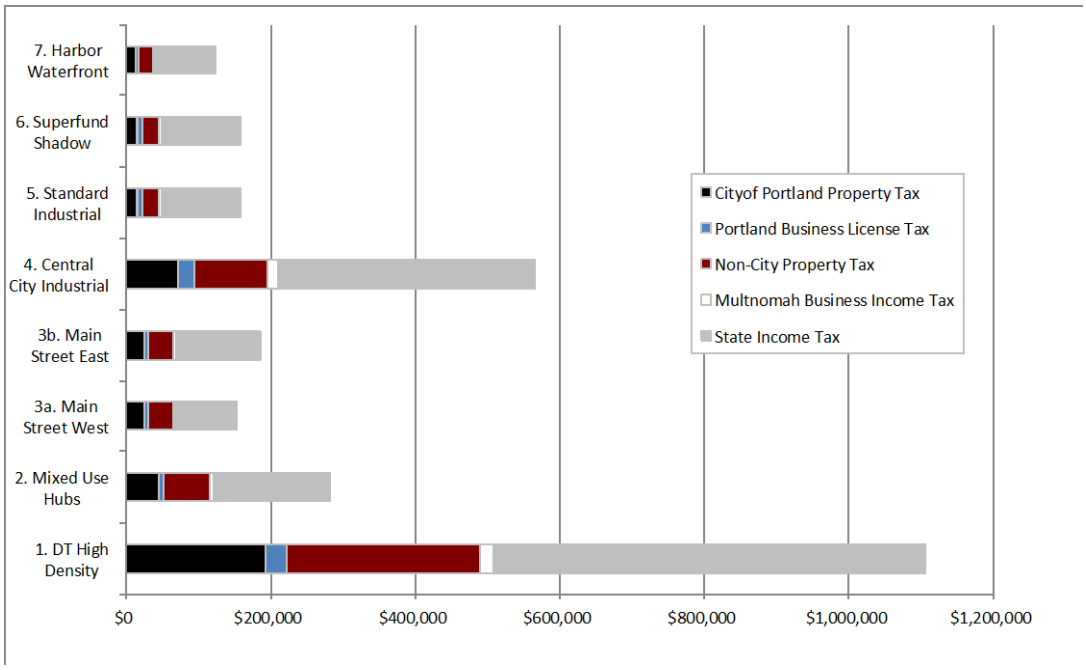
Standard Industrial accounts for 20% of tax revenue and 40% of brownfield acreage.

those firms. The pro forma analysis assumes that the jobs located in the Downtown High Density typology are relatively high-paying jobs—they include the jobs that typically locate in city centers such as financial services, legal services, and other professional occupations.

The Downtown High Density typology also generates substantially more property tax revenue than the other typologies. The multi-story developments yields more built square feet per square foot of land, so there is structure on an acre of land. In addition, the value per square foot of structure is relatively high.

The Central City Industrial typology yields the second highest public benefits on a per-acre basis, primarily in the form of income tax to the state. The model assumes this typology provides space for relatively high paying jobs.

Figure 3-1. Per-Acre Annual Tax Revenue by Brownfield Typology

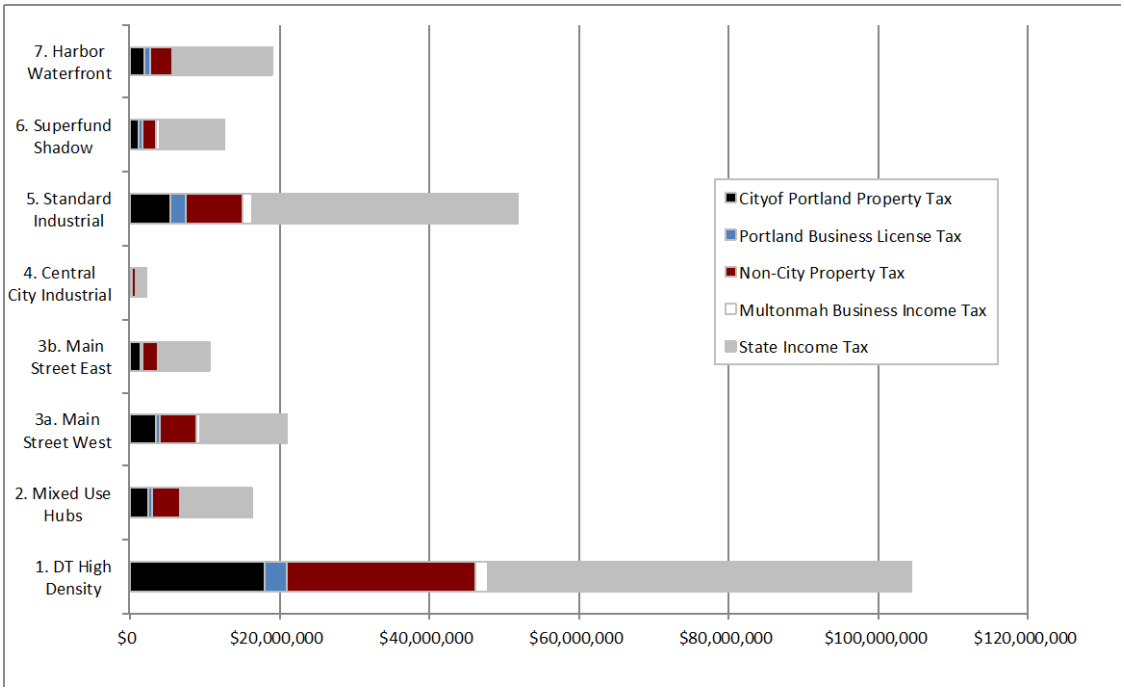


The per acre tax revenues can be multiplied out across the entire brownfield inventory (See Figure 3-2). The data show that the Downtown High Density has the potential to generate the most tax revenue, by far, over the other typologies. It has the capacity to generate about 44% of the total potential revenue, yet it makes up only 6% of the total acres.

Central City Industrial, which is a strong revenue generator on a per-acre basis, accounts for only 1% of total potential revenue. The typology accounts for 1% of the total acres.

The Standard Industrial typology has the second highest capacity to yield tax revenue. Its per-acre revenue is one of the lowest, but the typology accounts for 40% of all 817 acres.

Figure 3-2. Total Annual Tax Revenue by Brownfield Typology



Financial Feasibility Gap Relative to Tax Revenue Potential

The public benefits can be compared to the total remediation costs to show the public benefit associated with funding brownfield remediation (Figure 3-3 and 3-4). These figures are again normalized on a per acre basis and as totals. All the typologies, except Downtown High Density, have a financial gap in excess of estimated annual revenues to Portland. Downtown High Density is estimated to generate more in a single year to the City coffers than the its expected remediation costs.

The commercial typologies have the lowest ratio of annual revenues to total financial gap. Main Street West and Mixed Use Hubs are effective generators of tax revenue. Central City Industrial also has a low ratio, but the typology makes up a small portion of total acres.

The analysis also shows that Multnomah County and the State of Oregon stand to substantially increase tax revenues with redevelopment of these properties as well.

Figure 3-3. Per-acre Annual Tax Revenue and Financial Gap

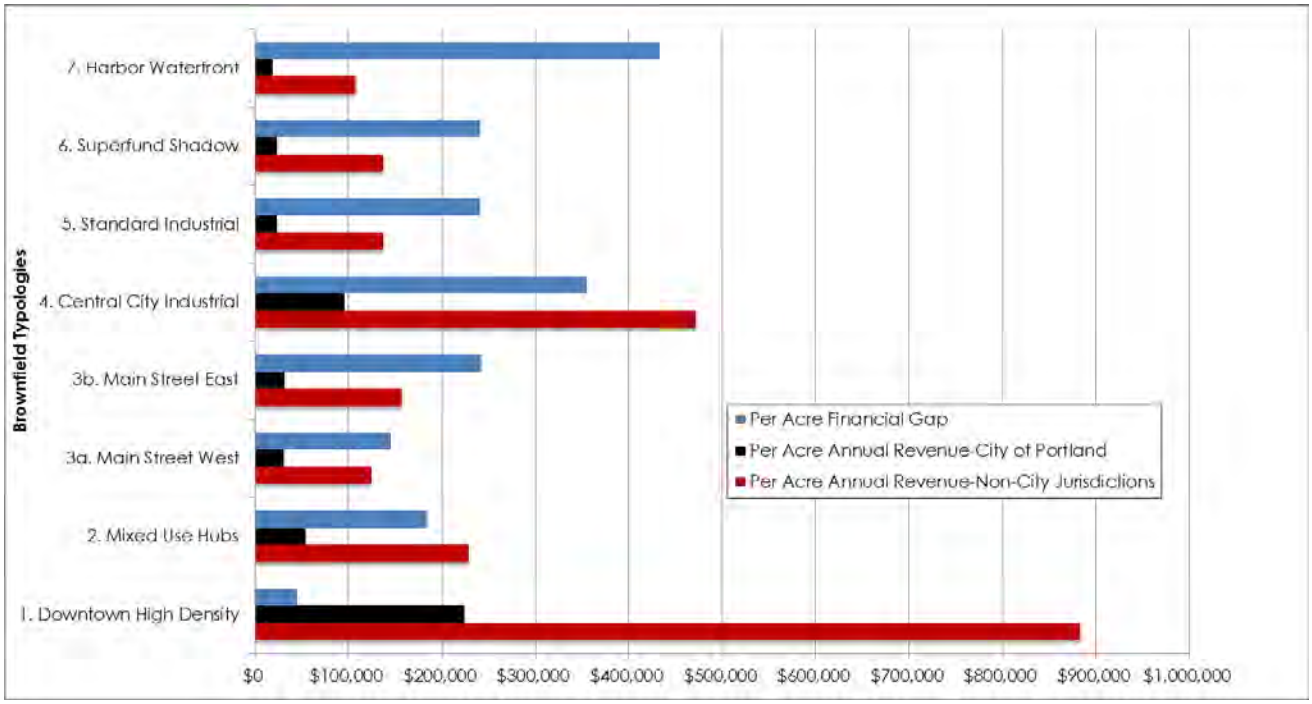
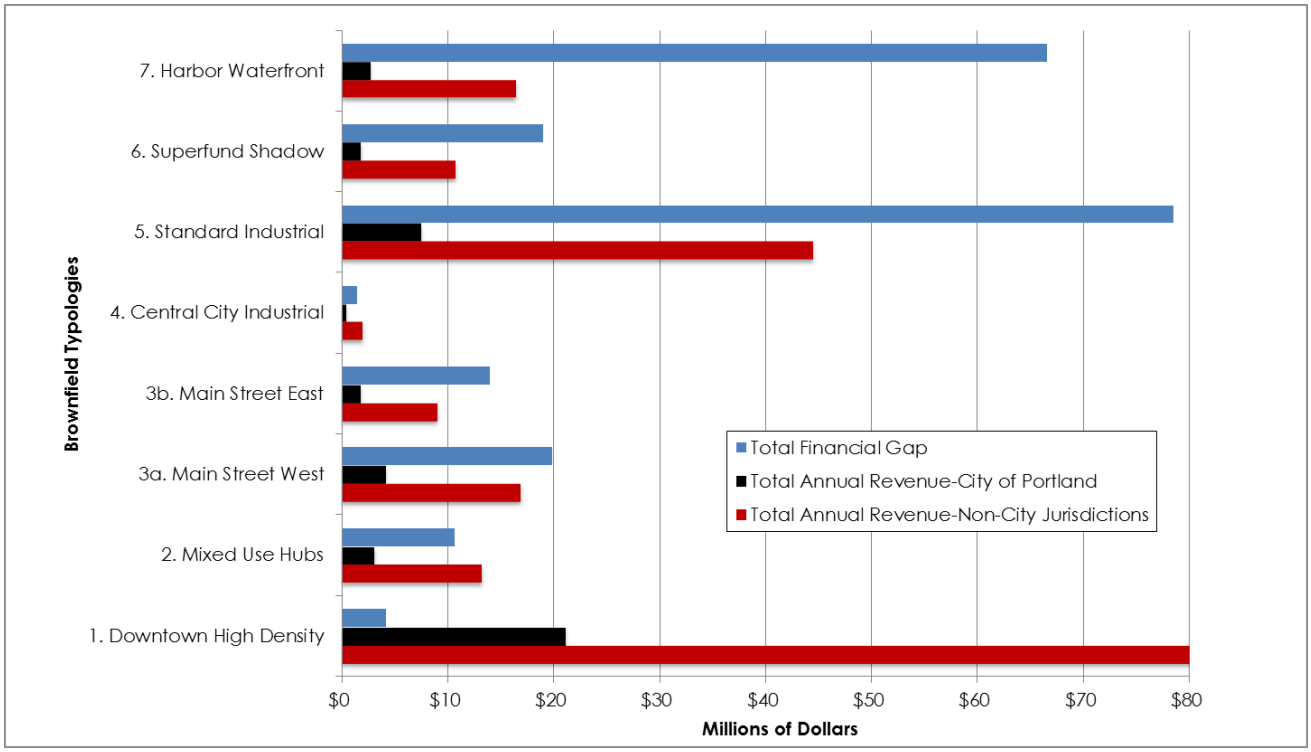


Figure 3-4. Total Annual Tax Revenue and Financial Gap



3.2 Job Creation Potential

Remediating brownfields yields benefits not only in terms of tax revenue, but also in employment. Table 3-1 shows the estimated gross jobs and payroll associated with the seven typologies. The employment benefits mirror the tax revenue benefits—the Downtown High Density typology accounts for the largest portion of potential added jobs and payroll, even though it accounts for only 6% of total brownfield acres. Industrial jobs account for much of the total projected payroll because of relatively high wage rates and the large acreage of properties represented in the brownfield inventory.

Table 3-1. Potential Employment and Payroll

	Per Acre		Total	
Typology	Employment	Payroll ($millions)	Employment	Payroll ($millions)
1. DT High Density	298	$12.0	14,066	$564.9
2. Mixed Use Hubs	46	$1.6	2,641	$95.0
3a. Main Street West	36	$1.3	3,298	$118.0
3b. Main Street East	36	$1.2	2,103	$71.1
4. Central City Industrial	68	$3.3	281	$13.9
5. Standard Industrial	17	$1.0	5,688	$334.6
6. Superfund Shadow	17	$1.0	1,375	$80.9
7. Harbor Waterfront	12	$0.8	1,857	$128.1
Total	38	$1.7	31,310	$1,406.5

3.3 Payback Period

Redevelopment of brownfields in Portland directly contributes annual tax revenues to Portland, so it is possible to compare the estimated cost of closing the financial feasibility gap through public investment to the estimated tax revenue generated by the redeveloped parcels (See Table 3-3). This analysis provides a general understanding of the benefits of redeveloping brownfield sites relative to the level of public investment, by asking the hypothetical question: "If Portland simply paid for brownfield remediation and eliminated the feasibility gap, how long would it take for the resulting Portland tax revenues to 'pay back' that investment?" In practice, of course the tax revenues that result from redevelopment could not explicitly fund brownfield remediation**.** Portland has many constraints on its ability to expend its tax revenues, and the multiple demands for tax dollars mean that even those revenues that are flexible are already over-committed. This analysis simply provides some context for considering how expenditures on site remediation might compare to benefits over time.

Assumptions

- All costs of development are in 2012 dollars.
- The tax revenue that is assumed to be collected in future years is discounted to 2012 dollars. A 3% discount rate is used to estimate the net present value of the future tax revenue dollars.

Results

The analysis finds that Portland would see a net gain after a few years if it invested in remediating brownfields in commercial typologies. The Downtown High Density typology performs particularly well: its estimated *annual* revenues exceed the total cost of remediation for the entire typology. At the other end of the spectrum, since the Harbor Waterfront has such a large financial gap and generates relatively low Portland tax revenues, it takes over four decades for Portland to regain any investment in remediation. However, when local and state tax revenues are considered in total, the payback period across all typologies is four years or less.

These findings suggest that while Portland may be able to realize substantial returns on investment in higher value commercial brownfield properties, a regional or statewide investment might be more appropriate to support remediation of industrial properties around the Harbor.

Table 3-3. Estimated number of years for tax revenue (net present value) to equal financial gap

	Years	
Typology	City Tax Revenue	Total State & Local Tax Revenue
1. DT High Density	<1	<1
2. Mixed Use Hubs	4	<1
3a. Main Street West	6	<1
3b. Main Street East	9	2
4. Central City Industrial	4	<1
5. Standard Industrial	13	2
6. Superfund Shadow	13	2
7. Harbor Waterfront	43	4

Note: This analysis excludes costs attributable to superfund sites. Including superfund costs would increase the payback period for the Superfund Shadow and Harbor Waterfront typologies.

3.4 Environmental and Growth Management Benefits

Brownfields projects create direct environmental benefits by remediating contamination and removing threats to public health and the environment. Since many of Portland's brownfields are located near rivers and wetlands, the improvements to habitat and water quality resulting from cleanup of legacy contamination is particularly significant. Brownfield redevelopment can also address environmental justice issues to the extent that contaminated lands may be located near low-income and minority populations.

There are also indirect environmental benefits that are important to recognize including:

- Lower vehicle miles traveled (VMT) and lower greenhouse gases due to locating economic activity in existing communities
- Conservation of rural lands and opens space accommodating growth within the envelope of developed areas
- Reduced infrastructure costs that may have been required to accommodate alternative development
- Reduced stormwater runoff and improved water quality because of greater density than alternative development patterns

The following discussion applies national research findings on these issues to the Portland brownfields redevelopment program. These are "order of magnitude" estimates; national statistics have been adjusted when possible to account for Oregon's unique growth management framework, but more specific and rigorous research that is specific to Portland would be required to refine quantitative estimates of environmental outcomes that might be associated with brownfield redevelopment in Portland. Nonetheless, the analysis here is a helpful starting place for a conversation around environmental and social justice effects.

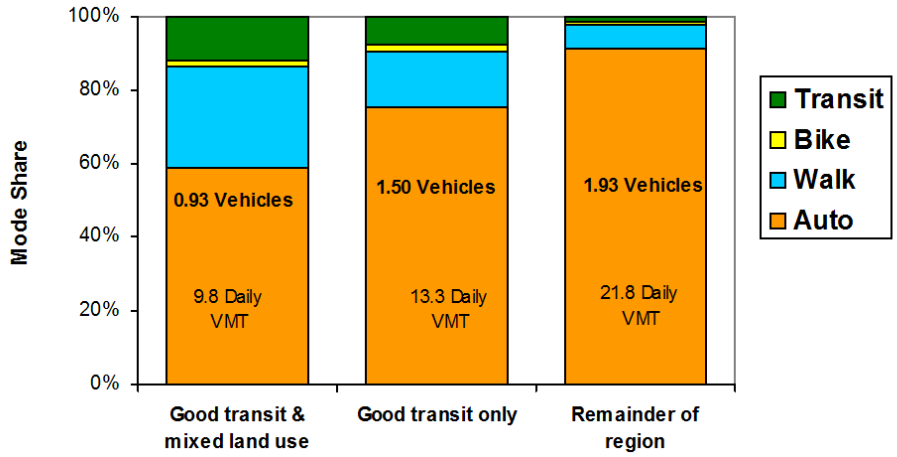
Automobile Greenhouse Gas Emissions

A recent US Environmental Protection Agency (USEPA) study found that, on average, VMT and carbon dioxide (CO_2) emissions related to brownfield redevelopment projects are 32 – 57 percent lower than typical greenfield, suburban development patterns.[2] The finding is reflective of national research that correlates VMT and CO_2 reduction with urban densities, mixed uses, access to job centers, street connectivity, and access to transit.

[2] US Environmental Protection Agency, Air and Water Quality Impacts of Brownfields Redevelopment, September, 2011.

Research focused on the Portland metropolitan area (not specific to brownfields) supports this, finding that development sites with good access to mass transit and a mix of use types result in approximately 50 percent lower VMT and CO_2 than areas that rank low for those same two factors (See Figure 3-8)[3]

Figure 3-5 Transit Oriented Development Impacts on Per Capita Vehicle Ownership and Vehicle Miles Traveled



Source: Litman 2011.

Applying these research findings to the inventory of potential brownfield sites in Portland suggests that redevelopment of 100 % of the sites would reduce CO_2 by 39,000 metric tons annually, the equivalent of taking 9,200 cars off the road. Because the Portland metropolitan area has stronger growth controls than is typical across the country, only the lower end of the USEPA estimates were used to estimate the potential VMT and CO_2 reductions related to redevelopment of brownfields (32 % reduction).

It should be noted that the industrial sector is calculated separately from commercial and residential because the market for these uses is more national than local. For example, a warehouse and distribution facility would more likely compare potential sites in Portland with other major west coast cities, while a mixed use developer would be more likely to choose between potential locations in Portland or surrounding suburbs. Estimation of VMT reduction related to industrial development incorporates two information sources:

1. Portland Commuter Traits. Portland has lower VMT per household relative to other metropolitan areas in the country. One analysis

[3] Todd Litman, "Can Smart Growth Policies Conserve Energy and Reduce Emissions?" Victoria Transport Project, *Center for Real Estate Quarterly Journal*, May 2011. Available here: www.vtpi.org/REQJ.pdf.

estimated Portland area median household VMT at 17% below the US average.[4]

2. Relative Distance. Industrial development in Portland of Portland is likely to involve lower driving distances than alternative suburban locations (either within the Portland area or compared to other metropolitan areas).

Thus, even though the factors affecting VMT are somewhat different than in other cities in the country, for the purposes of an order of magnitude estimate, this analysis assumes that redevelopment of the Portland brownfields inventory has the potential to produce an industrial development pattern that will reduce VMTs and CO_2 by the same low end percentage: 32% reduction relative to alternative development areas.

Protection of Rural Land and Open Space

As with other types of infill development, redevelopment of brownfield properties reduces pressure to build on undeveloped "greenfield" land, including open spaces and productive farm land. One national study estimated that one acre of redeveloped brownfield property absorbs growth that would otherwise consume 4.5 acres of undeveloped land.[5] This comparison is driven largely by the higher density that urban infill development projects can achieve. Applying this factor to the Portland inventory of 910 acres of potential brownfields, it can be estimated that redevelopment of those properties can "save" up to 4,095 acres of open space and rural land. This estimate, based on national figures, likely overstates the potential benefit in the Portland area given the requirement to maintain industrial uses in the industrial/employment sanctuaries. Nonetheless, these estimates do underscore the very real potential for brownfield redevelopment to reduce the development pressure on the urban fringe.

[4] Ralph DiNola, "Sustainable Urban Redevelopment and Climate Change: Five Principles for Energy-Effective Development," Congressional Hill briefing, 2253 Rayburn House Office Building, July 17, 2008, available: http://nemw.org/images/stories/documents/PortlandDiNola.pdf

[5] George Washington University, "Public Policies and Private Decisions Affecting the Redevelopment of Brownfields: An Analysis of Critical Factors, Relative Weights and Areal Differentials," 2001, http://www.gwu.edu/~eem/Brownfields/

Infrastructure Cost Savings

Redevelopment of brownfields typically allows development to connect to existing infrastructure rather than requiring new construction or expansion of existing roads, water, and sewer lines. This use of existing infrastructure can result in significant savings to local governments. Two national studies have quantified this connection between infrastructure costs and infill development, and can serve to create a basis for estimating infrastructure savings attributable to brownfields redevelopment in the Portland area.[6] One study by the Center for Neighborhood Technology estimates the differential between greenfield and infill development at five to one or $49,000 per dwelling unity (in 2012 dollars).[7] Another estimates a more modest 45 to 50 % savings, or $31,500 per dwelling unit (assuming 15-dwelling units per acre for infill development and 3 to 5 units per acre for greenfield development).[8] Applying the more conservative estimate of 50 % savings to Portland suggests that redevelopment of the full inventory of potential brownfields in Portland could save between $115 - $180 million in public infrastructure investment that would have otherwise been required to accommodate growth on greenfields. For comparison, a recently published analysis of the Massachusetts Brownfields Tax Credit program estimated that the public investment in the tax credit ($52.7 million) was recouped entirely in foregone infrastructure investments, estimated at between $66 and $104 million.[9]

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6 For a more comprehensive analysis of the research on infrastructure costs within the brownfields vs. greenfields construct see: Evans Paull, "Infrastructure Costs, Brownfields vs. Greenfields," Excerpt, "Analysis of the Economic, Fiscal, And Environmental Impacts of the Massachusetts Brownfields Tax Credit Program," Redevelopment Economics, June, 2012. See: http://redevelopmenteconomics.com/yahoo_site_admin/assets/docs/Infrastructure_Costs_-_brownfields-greenfields_final2.213114938.pdf

7 Scott Bernstein, "Using the Hidden Assets of America's Communities and Regions to Ensure Sustainable Communities." Center for Neighborhood Technology, 2003, http://www.cnt.org/hidden-assets/pt1f.html

8 James Frank, "The Costs of Alternative Development Patterns: A Review of Literature." Washington, DC. Urban Land Institute. 1989.

9 "Infrastructure Costs, Brownfields vs. Greenfields," Excerpt, "Analysis of the Economic, Fiscal, And Environmental Impacts of the Massachusetts Brownfields Tax Credit Program," Evans Paull, Redevelopment Economics, June, 2012. See: http://redevelopmenteconomics.com/yahoo_site_admin/assets/docs/Infrastructure_Costs_-_brownfields-greenfields_final2.213114938.pdf

Figure 3-6. Potential Public Infrastructure Cost Savings

	Portland Brownfields Redevelopment	Greenfields	Difference
Dwelling units projected for Portland brownfields redevelopment	7,306	7,306	
> Cost per DU, CNT study	$12,500	$62,000	$49,500
> Cost per DU, Frank study	$37,500	$69,000	$31,500
Total cost to build infrastructure			
> CNT study	$91,325,000	$452,972,000	$361,647,000
> Frank study	$273,975,000	$504,114,000	$230,139,000
Assume state-local government funds 50% of infrastructure			
> Public infrastructure cost savings using CNT study differential	$45,662,500	$226,486,000	$180,823,500
> Public infrastructure cost savings using Frank study differential	$136,987,500	$252,057,000	$115,069,500

Stormwater Management and Water Quality

Studies have also found that dense urban development can result in less stormwater runoff than comparable scale of suburban development. USEPA studies indicate that brownfields and similarly dense redevelopment projects have been found to reduce run-off by 47 to 62% relative to sprawl development patterns.[10] Given the allowed densities in Portland, it can be assumed that redevelopment of brownfields in Portland can reduce stormwater impacts by a similar range.

[10] US EPA, ibid.

4 RETURN ON INVESTMENT POLICY COMPARISON

Portland has been a national leader in brownfield policy. In the late 1990s, Portland was named a national "showcase community" by the USEPA. Portland has also established a Brownfield Program within the Bureau of Environmental Services. As Portland continues to develop, there is a need for continued leadership and innovation to address the barriers to brownfield redevelopment.

An effective policy framework is critical for promoting brownfield redevelopment and catalyzing the potential economic, environmental, and social benefits estimated in this report. There are two major components to existing policy in Oregon: regulatory and financial.

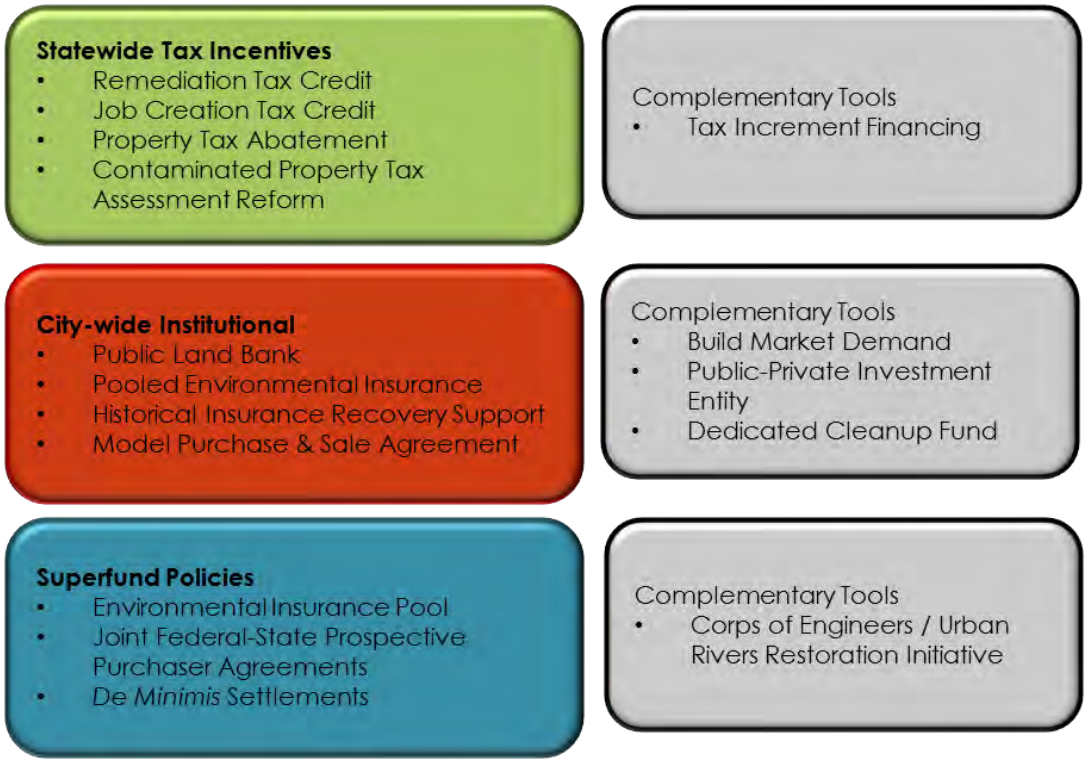
Regulatory Framework—The Oregon Department of Environmental Quality regulates cleanup of most contaminated properties, with the USEPA playing the lead role for areas designated as Superfund sites. The Oregon Cleanup Law establishes a risk-based approach to cleanup that allows flexibility for remediation to align with redevelopment of property. A Prospective Purchaser Agreement program has been established that provides certainty of liability settlement for innocent developers of properties. This program is generally considered to be very effective, but is only used by an average of eight sites per year.

Financial Incentives—Portland and the State of Oregon offer several grant and loan programs to support assessment and cleanup of brownfield properties. However, these programs have limited capacity, so; while they can play a critical role on individual projects, their ability to broadly impact the redevelopment market is limited. For example, the largest program is Oregon Brownfield Redevelopment Fund, which provides low interest loans and some grants for site assessment and cleanup. The program was re-capitalized in 2008 with $9 million in state appropriation, which is just a quarter of the estimated $36 million needed to close the financial feasibility to redevelop 50% of the brownfield inventory in just Portland (not accounting for the rest of the State).

A set of policy options that can accelerate brownfield redevelopment to achieve Portland's economic and community development goals has been developed through a review of best practices in other cities and states across the country and collaborative discussions with the advisory group of stakeholders and experts. The policy tools have been prioritized by the advisory group and bundled to demonstrate synergies between options and lay the foundation for an implementation strategy. The policy tools are described in detail in the Financial Feasibility Analysis (Part 1 of the Task 3& 4 report). Tools prioritized by the advisory group are listed in Figure 4-1

along with other policy options assessed in the study listed as "complementary tools."

Figure 4-1. Priority Policy Tool Bundles



The purpose of the return on investment analysis is to compare the relative impact that the priority tools could have on brownfield redevelopment. Because the policies have not yet been fully developed and it is uncertain what eligibility criteria, geographic constraints, or other factors might affect their influence on redevelopment outcomes, the results should be considered order of magnitude, and are most useful for comparing the policies amongst each other to determine which are most likely to create the best return in absence of complete information about how they will be implemented.

4.1 Methods and Assumptions

The return on investment analysis uses both financial modeling and comparison of actual results from other states to roughly estimate the potential effect of implementing the priority policy tools in Portland. The policy tools are designed to address different barriers to brownfield redevelopment, including financial, risk management, and regulatory framework. Therefore, they vary in their structure and not all policies can be directly compared. To address this issue, we have attempted to group policies that can be analyzed using similar methods: direct financial incentives and structural incentives (See table 4-1). Direct financial incentives can be considered at their core to represent a public investment in cleanup or

redevelopment of a property. The structural incentives support brownfield projects in other ways that are not reasonably quantifiable in financial terms.

A financial model based on the pro forma analysis is used to forecast the impact of the direct financial incentives, while comparisons to other states are used to estimate potential implications of the structural incentives.

Table 4-1. Policy Categories for Return on Investment Analysis

Direct Financial Incentives	Structural Incentives
Remediation Tax Credit	Public Land Bank
Job Creation Tax Credit	Contaminated Property Tax Assessment Reform
Redeveloped Brownfields Property Tax Abatement	Pooled Environmental Insurance
	Historical Insurance Recovery Support
	Model Purchase & Sale Agreement

Note: Analysis focuses on prioritized tools and does not include "complementary tools"

Direct Financial Incentives

The methodology for evaluating these policies builds on the pro forma analysis of prototypical brownfield redevelopment scenarios presented in Section 2.2. The following steps were taken to estimate the degree to which the direct financial incentives could reduce the financial feasibility gap of prototypical projects:

- Assumed a 10 year period for projecting impacts
- Calculated amount of credit that would be eligible for the project
    - Based on estimated cleanup cost for the remediation tax credit
    - Based on employment creation potential for the job creation tax credit
    - Based on increase in assessed value after redevelopment for property tax abatement
- Added amount of credit to financial feasibility gap of development pro forma
- Selected development scenarios that are financially viable (i.e. redeveloped value is greater than costs or financial feasibility gap of less than $(0.50) / square foot).

- Assumed that 50 % of sites that are financially viable will redevelop and participate in the incentive program. This assumption was necessary to ensure that estimates are sufficiently conservative; it is based on review of similar programs in other states.

For projects that were projected to be feasible as a result of the incentive, to proceed to redevelopment, and to participate in the program, the public benefits model factors were applied to estimate the acres of property redeveloped, employment potential, and tax revenue forecasts. Note that the forecast of annual tax revenue generation was limited to one year to conservatively account for absorption rate of the property.

Structural Incentives

The structural incentives do not lend themselves to application of the pro forma model. This analysis estimates the effect of these tools based on outcomes experienced in comparable programs in other states. The quantifiable results demonstrated by other states were then applied to Portland with adjustments made based on best professional judgment for factors such as market size (to normalize comparison with larger population cities or states).

As with the analysis of the direct financial incentives, the estimates of job creation and tax revenue generation were calculated based on the acres of brownfields projected to be redeveloped. The method used to analyze these policy options does not allow for quantification of impacts based on each typology, but only as an aggregate across all of Portland.

Superfund Policies

There are no direct comparable programs for the innovative approaches proposed for facilitating redevelopment of upland properties near the Portland Harbor Superfund site. To provide the opportunity for a comparison with the other policy options, some basic assumptions have been made to estimate the number of properties that may be affected by these policies. The pro forma development scenarios are then used to calculate the potential economic impacts.

4.2 Brownfield Remediation Tax Credit

The State of Oregon could provide an income tax credit connected to the costs of conducting site investigation and environmental cleanup. This program would directly reduce the financial impacts of remediation and improve the balance sheet for brownfield projects. Unlike some grant programs, the incentive can be designed to be applicable to both private and public sector entities.

A brownfield remediation tax credit for Oregon could be modeled off the existing programs operating in 13 other states. Based on the experience of those states, the key features that make the tax credit program effective are:

1. Minimize administrative burden. Some states make the incentive fully automatic, so that participants simply document and claim the credit when they prepare their taxes.

2. Make credits transferable. Allow participants, including tax exempt non-profits to generate upfront cash to support cleanup by selling the credits to a third party.

3. No project limit. Allow the tax credit to apply to the full cost of remediation, without setting a ceiling (such as $500K per project).

For the purposes of conducting the return on investment analysis the following assumptions were made regarding the structure of the brownfield remediation tax credit

- Tax credit amount set as 50% of remediation costs
- No cap for individual projects or the entire program
- No needs testing – fully automatic based on qualifying expenditures
- Transferable credits, enabling it to work for non-profit-led projects

Results

Based on the assumed program structure and penetration, the brownfield remediation tax credit would support redevelopment of approximately 150 acres of property in Portland (See Table 4-2). Industrial properties comprise over half of that land (approximately 95 acres). The public investment in the tax credit necessary to achieve that result would be approximately $7 million.

Table 4-2. Estimated Public Return on Investment of Brownfield Remediation Tax Credit

Brownfield Typology	Land Re-developed (acres)	Jobs Potential	Annual Portland Tax Revenues	Annual State + Local Tax Revenues	Value of Tax Credit (Public Cost)
1.Downtown High Density	23	7,030	$ 10.5 M	$ 52.2 M	$ 3.1 M
2.Mixed Use Hubs	12	520	$0.44 M	$3.0 M	$ 0.38 M
3a.Main Street West	11	320	$ 0.62 M	$ 2.5M	$ 0.37 M
3b.Main Street East	9	340	$ 0.22 M	$ 1.7 M	$ 0.29 M
4.Central City Industrial	0	0	$0	$0	$0
5.Standard Industrial	70	1,220	$ 1.6 M	$ 11.2M	$ 2.3 M
6.Superfund Shadow	17	300	$ 0.39 M	$ 2.7 M	$ 0.55 M
7.Harbor Waterfront	8	90	$ 0.14 M	$ 0.96 M	$ 0.25 M
Total	**150**	**9,820**	**$13.9 M**	**$ 74.2 M**	**$ 7.2 M**

4.3 Brownfield Jobs Tax Credit

This incentive provides a tax credit to businesses based on the number of new jobs created by a completed development. This type of program creates an incentive that is directly connected to the employment and economic benefits of brownfield redevelopment. Several other states, including Florida have enacted this type of financial incentive.

The assumed structure of the job tax credit for the purposes of the return on investment analysis is:

- Value of tax credit is $2,500 for each permanent job (excludes short term construction and cleanup jobs)
- Analysis assumes all jobs would be "new" and there is no minimum number to receive the credit (such as at least 10 jobs to receive credit)

Results

The financial investment of the brownfield jobs tax credit would turn approximately 150 acres of property financially viable to redevelop. The total value of the tax incentive for that acreage would be approximately $24.5 million. The bulk of the tax incentive, approximately 70% ($17.5 million) would be directed to the Downtown High Density typology. This outcome is driven by the density of high paying jobs in downtown. If Portland decided to focus this program on creation of industrial jobs, the credit could be limited geographically to those areas and would be forecasted to promote redevelopment of approximately 100 acres with a total tax credit value of approximately $4 million.

Table 4-3. Forecasted Public Return on Investment of Job Creation Tax Credit

Brownfield Typology	Land Re-developed (acres)	Jobs Potential	Annual Portland Tax Revenues	Annual State + Local Tax Revenues	Value of Tax Credit (Public Cost)
1.Downtown High Density	23	7,030	$ 10.5 M	$ 52.2 M	$ 17.6 M
2.Mixed Use Hubs	12	520	$0.44 M	$3.0 M	$ 1.3 M
3a.Main Street West	11	320	$ 0.62 M	$ 2.5M	$ 0.80 M
3b.Main Street East	9	340	$ 0.22 M	$ 1.7 M	$ 0.85 M
4.Central City Industrial	0	0	$0	$0	$0
5.Standard Industrial	70	1,220	$ 1.6 M	$ 11.2M	$ 3.1 M
6.Superfund Shadow	17	300	$ 0.39 M	$ 2.7 M	$ 0.74 M
7.Harbor Waterfront	8	90	$ 0.14 M	$ 0.96 M	$ 0.23 M
Total	**150**	**9,820**	**$13.9 M**	**$ 74.2 M**	**$ 24.6 M**

4.4 Redeveloped Brownfield Property Tax Abatement

A tax abatement gives land owners a reprieve for payment of property taxes for a set period of time after a development is constructed. Oregon currently offers the Enterprise Zone as one mechanism that abates property taxes on economic development improvements within designated areas of a community. Abatements last for 3 to 5 years in urban areas and up to 15 years in rural areas.

Key assumptions for this analysis regarding an expanded property tax abatement program could operate include:

- All brownfield properties are eligible for tax abatement, even if they are located outside of Enterprise Zones.
- Properties are eligible for the abatement if the remediation costs are greater than 10% of the property's current assessed value
- The tax abatement applies only to new assessed value generated by the capital improvements to the property
- The tax abatement continues for three years
- The cost of the abatement is equal to the net present value of the abatement over three years
- Individual projects are capped at the cost of remediation; otherwise, there is no cap for individual projects nor the entire program
- There is no needs testing—it is fully automatic based on qualifying expenditures

Results

The financial investment of the property tax abatement would result in approximately 160 acres of property becoming financially viable to redevelop. The total value of the tax incentive for that acreage would be approximately $16.8 million. Industrial properties comprise about 60% of the land.

Table 4-3. Forecasted Public Return on Investment of Property Tax Abatement

Brownfield Typology	Land Re-developed (acres)	Jobs Potential	Annual Portland Tax Revenues	Annual State + Local Tax Revenues	Value of Tax Credit (Public Cost)
1.Downtown High Density	24	7000	$10.6 M	$62.8 M	$6.2 M
2.Mixed Use Hubs	12	520	$0.4 M	$3.5 M	$0.8 M
3a.Main Street West	20	570	$0.6 M	$3.1 M	$3.1 M
3b.Main Street East	9	340	$0.2 M	$1.9 M	$0.6 M
4.Central City Industrial	0	0	$0.1 M	$0.6 M	$0.0 M
5.Standard Industrial	70	1220	$1.6 M	$12.8 M	$4.6 M
6.Superfund Shadow	17	300	$0.4 M	$3.1 M	$1.1 M
7.Harbor Waterfront	8	90	$0.1 M	$1.1 M	$0.5 M
Total	**159**	**10,100**	**$14.1 M**	**$88.8 M**	**$16.8 M**

4.5 Brownfields Public Land Bank

A public land bank creates an entity with the resources and long-term perspective to acquire and reposition brownfield properties without putting additional liabilities on Portland balance sheet. The land bank would operate with a clear mission and long-term plan for community revitalization. To be effective in repositioning contaminated lands, the land bank should have special powers, such as protection from environmental liability, authority to clear title, ability to issue bonds and use tax increment financing. The land bank would require initial capitalization to acquire a portfolio of properties and financial support for the initial years, but should achieve financial self-sufficiency in a period of 5 to 10 years through sale of properties to the private market.

Key assumptions for this analysis regarding how a land bank program might operate in Portland:

- Initial capitalization of a $25 million acquisition-redevelopment fund (assumed funds put directly into acquisition and redevelopment without administrative costs)

- Declining annual appropriated for the first five years of operation (such as $10 million for year one declining to $2 million for year 5)

- Land Bank would focus acquisition in challenging areas, such as Standard Industrial and Main Street East typologies.

Results

The assumptions provide a high level of initial investment targeted at properties with relatively low land value to provide a conservative estimate of the potential impact of a public land bank. program. The initial investment through the first five years would total $55 million of public funds that could potentially support acquisition and cleanup of 180 acres of property. These are subject to wide changes based on the portfolio of properties that could be acquired, the ability to purchase property at a discount and sell at a premium, and to obtain outside sources such as EPA grants to support cleanup. The land bank would likely operate like a private developer and focus on properties with the smallest financial gap and greatest redevelopment potential first. This approach could allow the land bank to use proceeds from early successes to subsidize investment in more challenging properties in the future.

Success of the public land bank is driven largely by four key factors:

- Ability to acquire property at discounted price

- Ability to obtain grants or other outside support to fund cleanup liability

- Portfolio of properties (balance of projects with large or small financial feasibility gap)

- Ability to recycle properties with low financial gap quickly back into productive employment use.

4.6 Reform Contaminated Property Tax Assessment

Property tax assessment policy in Oregon is currently considered by some to be a disincentive to cleanup. The state administrative rule regulating assessment for property taxes establishes a method to reduce the value of contaminated land by the cost of the environmental liability. This policy can result in substantial decrease in property tax payments on a brownfield property. While the market value of property is certainly impaired by contamination, a modest reform of this policy could be to include a time limit to reduce a disincentive to property owners to address the problem.

While there is some anecdotal information about the impacts of the current policy on individual properties, research has not been able to support an analysis of the current policy or a potential change across the entire city.

4.7 Pooled Environmental Insurance

A number of private insurers provide policies that protect against discovery of unknown environmental contamination and potential for contribution claims or third-party personal injury suits. These pollution liability insurance policies can be critical risk management tools in facilitating a brownfield land transaction, but they can also be costly or difficult for smaller projects to obtain. Portland could establish a pooled environmental insurance program through pre-selecting insurers and establishing uniform terms and conditions to reduce transaction costs. Portland could also potentially subsidize the premiums for environmental insurance policies to promote certain types of projects that meet multiple policy goals. A specialized environmental insurance pool could be established to address risk related to Superfund liability.

To estimate the potential impacts of this program, research was conducted on three other states that currently support pooled environmental insurance: Massachusetts, Wisconsin, and California. The state of Massachusetts was able to provide the most concrete estimates of the performance of the program. Massachusetts provides a state subsidy of 50% of insurance premiums with a limit of $50,000 for private projects and $150,000 for public projects. Massachusetts reported that $6.6 million in state funds to subsidize insurance premiums assisted 330 projects that in turn created 27,000 jobs and $4.1 billion in new investment. That equals a leverage ratio of over 600 to 1. While these numbers are impressive, it is important to note that these funds assisted projects and it was unlikely to be the lone source of public support.

To estimate how this program could transfer to Portland, a return on investment was calculated with the following assumptions:

- Five projects per year use environmental insurance program
- The average project size is three acres (based on brownfield inventory)
- Public subsidy of $50,000 per project to reduce insurance premium
- Attribute 50% of public benefits to the insurance policy, since environmental insurance typically facilitates a business deal that may be supported by other public investments that make it financially feasible.

Results

As an order of magnitude estimate of the potential scale of impact of the pooled environmental insurance program jobs, it is forecasted that over a 10 year period, 50 projects accounting for 150 acres would be remediated and redeveloped. If Portland subsidized premiums for these projects at a level similar to Massachusetts, the total public investment would be approximately $2.5 million.

4.8 Historical Insurance Recovery Support

Portland could provide technical support to property owners in submitting a claim on historical insurance policies for environmental impacts. Prior to the mid 1980's, commercial general liability policies did not contain exclusions for liabilities caused by environmental damage. Since federal and state law has made liability for environmental contamination retroactive, cost recovery may be pursed from historical insurance policies that were in place when pollution occurred and that covered the property owner, operators, or other potentially liable parties. It takes technical expertise and resources to make a claim on a historical insurance policy, but case law makes Oregon one of the most favorable states in the country for these actions and they are becoming standard practice. In some cases, historical insurance claims have supported nearly 100 % of site assessment and remediation costs for projects ranging from small gas station cleanups to large, complex industrial sites.

Oregon Department of Environmental Quality has contracted with firms specializing in historical insurance recovery in the past to support cleanup of orphan sites. A relatively minor investment in staff or contractor resources could potentially generate millions of dollars to support assessment and cleanup of contamination. The insurance archaeology service could be provided as a fee-for-service payable upon settlement with the insurance carrier as a way to minimize expenditure of public resources.

For the purposes of quantifying an order of magnitude forecast of the impacts of this program, the following assumptions are made:

- Three insurance settlements completed per year
- $200,000 per year annual operating budget for program (one full time employee to manage with administrative and overhead included and with program reimbursed expenses of contractor upon settlement of claims)

Results

Based on those assumptions, the Historical Insurance Recovery program could be projected to facilitate cleanup and redevelopment of 30 brownfields representing 90 acres over a 10 years period. The public costs of this program are estimated at $2 million

4.9 Model Purchase and Sale Agreement

The legal transaction of contaminated property is a complicated and risk-laden operation. Portland could reduce transaction costs and uncertainty by creating a model purchase and sale agreement that includes indemnification terms and standard transfer issues such as due diligence period, timing of cleanup, warranties, and inspection periods. Such a model agreement would require few city resources to accomplish and could be useful for a large number of transactions. However, it is assumed that this tool, by itself, would not be considered of sufficient impact to account for redevelopment of a significant number of properties.

4.10 Superfund Policies

Policy proposals related to the Portland Harbor Superfund site are targeted to upland properties that are considered to be in the "Superfund shadow." The brownfield inventory estimates that there are at least 78 acres of potential contaminated, underutilized sites in this area, however these policies will facilitate transactions across a larger 112 acre area where investment has been hindered by the risk and uncertainty of liability associated with the Superfund sediment cleanup. These properties are not on the waterfront, but could be connected to sediment contamination in the harbor through the stormwater system. As the owner and operator of the stormwater system, Portland has some interest in reducing these potential sources of historic and on-going contamination.

Superfund Shadow Environmental Insurance Pool

To address "Superfund shadow" upland properties, Portland could allow project proponents to make a payment to Portland as closure for tailing environmental liability. Portland could in turn use those funds to buy insurance policies to cover a pooled group of sites. To be eligible to participate in the insurance pool, participants would be required to complete upland cleanup actions and implement stormwater best management practices. If the USEPA or other potentially liable parties seek contribution from that party, the claim would be directed to the environmental insurance policy.

For the purposes of quantifying a return on investment of the impacts of this program, the following assumptions are made:

- Assume two projects utilize the program per year (average size 3 acres)
- Assume $250,000 per year annual operating budget for program (one part time employee, along with legal support, administrative support and overhead included).

Results

Based on those assumptions, the Superfund Shadow pooled environmental insurance program could be projected to facilitate cleanup and redevelopment of 20 brownfields representing 60 acres of land over a 10 years period. The public costs of this program are estimated at $2.5 million.

Other Superfund Policy Options

The two other proposed options to promote property redevelopment in the Superfund Shadow are both related to federal regulatory policy and settlement of legal liability.

Federal Prospective Purchaser Agreements would provide a protection for new investors through a formal contract with the state that would be recognized by the US EPA. The program would build on the successful model of prospective purchaser agreements (PPA) currently in operation through Oregon DEQ. The state does not have authority to settle liability under the federal Superfund Law, so this recommendation would create a framework for the USEPA to recognize and approve PPAs in concert with DEQ.

The CERCLA de minimis Settlement policy concept is simply for USEPA to use its existing authority to provide expedited settlement agreements for owners of properties that likely cause minor or insignificant to the Portland Harbor.

Since both of these policies involve resources and policy decisions of the state and federal government, rather than financial investment, it is difficult to compare them to the other policies using the pro forma model. In general, it is assumed that these policies would involve a relatively minor investment of public funds and could be critical to allowing redevelopment of several properties a year, similar to the Superfund environmental insurance tool.

4.11 Return on Investment Summary

The return on investment analysis provides a framework for comparison of the potential economic impacts of proposed policies to promote brownfield cleanup and redevelopment. By necessity, the analysis is based on a number of assumptions and provides an order of magnitude estimate of benefits. More accurate estimates of the outcomes of implementing any of the policies can be made after the tools have been defined in greater detail by elected officials and implementing agencies This relative analysis does provide insight into the potential impacts of implementing the policies such as:

- The Remediation Tax Credit, Job Creation Tax Credit, Brownfield Land Bank, Property Tax Abatement, and Pooled Environmental

Insurance appear to have the greatest impact with each potentially facilitating redevelopment of about 150 acres.

- Greatest return on total tax revenues relative to public investment is provided by the Remediation Tax Credit, Pooled Environmental Insurance, and Historical Insurance Recovery (See Figure 4-2). These tools leverage private investment or bring outside resources to projects, thus minimizing the public funds needed to help a project achieve financial feasibility.

- Tax credits and tax abatements appear to have great potential to support redevelopment of brownfields that are close to financial feasibility, including the Standard Industrial, Downtown High Density, and Mixed Use Hub typologies

- To drive redevelopment in the Superfund Shadow and Harbor Waterfront typologies, multiple policy tools are needed, such as combining the Public Land Bank with Pooled Environmental Insurance, and a Remediation Tax Credit.

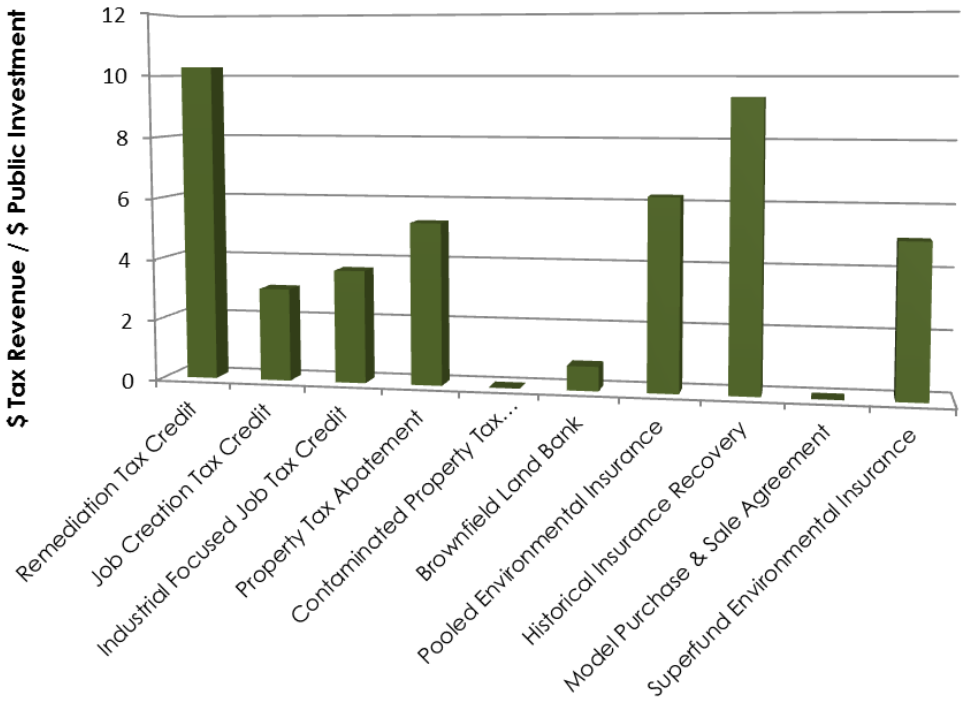
- There is potential for synergy between policies. For example, the effectiveness of a Public Land Bank would be greatly enhanced by a Remediation Tax Credit and Dedicated Brownfield Cleanup Fund to offset the costs of addressing contamination. The interactions between policies are too complex to quantify in a meaningful way in this analysis.

- Much of the employment and tax revenue benefit of brownfields is focused in office, commercial, and mixed use development in strong markets. These areas are also the most likely to redevelop without public investment.

- The implications of the costs and benefits of the different tools are distributed across local governments and the state is an important consideration. For example, the Remediation Tax Credit would provide tax reduction in state income tax and/or Portland business income tax, while the public costs of the Property Tax Abatement would be borne by local taxing districts.

- Incentives for redevelopment in industrial areas have the potential to reduce the projected shortfall in land supply, but will require significant investment with relatively low increase in Portland tax revenues. However, the tax revenues generated to Multnomah County and the State of Oregon for industrial redevelopment are substantial and support a rationale for shared investment in Portland industrial lands as a regional economic asset.

Figure 4-2. Return on Public Investment



Notes: Data was not available to estimate impact of Property Tax Assessment reforms or Model Purchase and Sale Agreement.

In setting policy priorities, the potential financial returns of a given policy should be considered with a number of other factors including costs and complexity to implement. Figure 4-3 provides a conceptual graphic of how the brownfield policy options align in terms of

- Potential impact—a combined relative ranking of acres potentially redeveloped and associated employment and tax revenue benefits. Policies forecasted to promote redevelopment of a large number of brownfields and produce employment and tax revenue benefits are ranked high and located on the right side of the graphic.

- Public Cost and Complexity—relative ranking that considers the level of public investment, administration of the program, and complexity. It has been the experience of other states that the private sector

responds much more favorably to brownfield incentives that can be accessed automatically with minimal administrative requirements. Programs with lower public costs and potentially streamlined operations are located on the top side of the graphic.

In terms of potential impact and public cost and complexity the highest rated policies are the Remediation Tax Credit and Historical Insurance Recovery Support. The Brownfield Land Bank has a high potential impact, but will likely require significant investment of public resources for it to be successful. Several low cost, low impact policies such as creating a Model Purchase and Sale Agreement represent actions Portland may want to take to build momentum for larger endeavors.

Table 4-4. Return on Investment Summary

Summary	Acres	Jobs	Total Cost	Portland Tax Revenues	Total State & Local Tax Revenues	Tax Revenue / Cost	$ Public Investment / Acre	$ Public Investment / Job
Remediation Tax Credit	150	9,800	$7,221,000	$13,970,000	$74,237,000	10	$48,000	$700
Job Creation Tax Credit	150	9,800	$24,557,000	$13,969,500	$74,237,000	3	$163,000	$2,500
Industrial Focused Job Tax Credit	100	1,600	$4,028,000	$2,133,500	$14,840,500	4	$40,000	$2,500
Property Tax Abatement	159	10,100	$16,800,000	$14,100,000	$88,800,000	5	$106,000	$1,700
Contaminated Property Tax Assessment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Brownfield Land Bank	180	8,000	$55,000,000	$6,525,300	$43,456,400	1	$305,000	$6,900
Pooled Environmental Insurance	150	1,850	$2,500,000	$2,271,400	$15,584,850	6	$17,000	$1,400
Historical Insurance Recovery	90	2,200	$2,000,000	$2,725,700	$18,701,800	9	$22,000	$910
Model Purchase & Sale Agreement	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Superfund Environmental Insurance	60	1,500	$2,500,000	$1,813,300	$12,466,200	5	$42,000	$1,670

Notes:

Job creation and tax revenue forecasts based on public benefit analysis model described in Section 3. Tax revenues represent annual revenues for one year.

For all policies except Remediation Tax Credit, Job Tax Credit, and Property Tax Abatement assumed 3 acre average brownfield property size, based on inventory of potential brownfields in Portland and assumed job creation and tax benefits based on Flex-Space / Business Park development scenario.

Figure 4-3

POLICY IMPACT AND COSTS SUMMARY ANALYSIS