# CITY OF PORTLAND
# ECONOMIC OPPORTUNITIES ANALYSIS:

## Section 2 and 3 – Employment Land Needs and Supply Analysis



## MARCH 2015 Proposed Draft

This EOA report has been funded through a grant from the State of Oregon Department of Land Conservation and Development.

**City of Portland Bureau of Planning & Sustainability**

**E. D. Hovee & Company, LLC**

Economic & Development Services

# EXECUTIVE SUMMARY

The EOA is an analysis of the 20-year supply and demand for employment development and land in the city. It is prepared according to State Administrative Rule OAR 660-09-0015 and consists of four sections:

1. Trends, Opportunities & Market Factors
2. Long Range Employment Forecast (Demand)
3. Buildable Land Inventory (Supply)
4. Community Choices (Comprehensive Plan proposals to meet employment land needs)

This report includes the second and third sections and presents the 2010-2035 employment forecast and resulting demand for employment land as well as the inventory of buildable employment land.

## KEY FINDINGS

- The Metro regional employment forecast allocates 511,000 jobs to the City of Portland in 2035, an addition of 141,600 new jobs in the 2010-2035 period.
- This job forecast translates into a demand for 70 million square feet of floor area in typical commercial and industrial building types, the equivalent of 2,560 acres of employment land.
- Portland's traded-sector economy needs an additional 350-580 acres of land for marine terminals, rail yards, and airport facilities. The range relates to two scenarios analyzed for marine terminal growth.
- Buildable Land Inventory identifies a supply of 3,200 acres of vacant and underutilized employment land, but it is not always the right type or in the right location.
- The City of Portland will need additional development capacity for industrial land, especially for Harbor Access Lands and in the Harbor and Airport Districts.
- Additional development capacity is also needed on the major institutional campuses, Central City Industrial, and Dispersed Employment geographies.

## EMPLOYMENT FORECAST AND LAND DEMAND

The City of Portland employment forecast is based on the Metro regional forecast of job growth. According to this forecast, Metro has prepared a baseline forecast for the Portland region in which employment is expected to increase 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 511,000 of these projected 1.5 million total jobs expected in 2035 to the City of Portland. When compared with actual 2010 employment of 370,000 jobs, the projected Portland job gain is approximately 141,600 jobs over the 2010-35 forecast period – an annual average growth rate of 1.3% and a 26% capture rate of regional employment growth.

The Economic Opportunity Analysis translates this forecast growth into demand for additional employment related development and land supply. After accounting for jobs that locate in residential areas (schools, home occupations, non-conforming uses), there is an estimated demand for 2,560 acres of employment land citywide in six typical commercial and industrial building types (such as office buildings or warehouse/distribution buildings).

Portland is a key freight distribution hub on the West Coast. As such, substantial additional land is needed for air, marine, and rail terminals that support the overall traded-sector economy. These specialized types of freight transportation facilities 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. An additional 350 to 580 acres of land is needed for these facilities and is added to the demand for industrial land in other building types.

### Figure 1. 2010-2035 Employment Forecast and Land Demand Summary

| | Jobs | | Acres | |
|---|---|---|---|---|
| **Aggregate Geography** | **#** | **%** | **#** | **%** |
| Central City | 44,740 | 32% | 150 | 6% |
| Industrial | 31,630 | 22% | 1,350 | 53% |
| Neighborhood Commercial | 35,140 | 25% | 690 | 27% |
| Institutions | 22,730 | 16% | 370 | 14% |
| Residential | 7,400 | 5% | NA | - |
| **Total** | **141,640** | **100%** | **2,560** | **100%** |

| **Traded Sector Support Facilities** | **Additional Acres** |
|---|---|
| Rail Yards | 200 |
| Marine Terminals* | 110/340 |
| Airport Facilities | 40 |
| **Total** | **350/580** |

* Two marine terminal forecast scenarios are analyzed. See Figure 17.

Source: E.D. Hovee & Company, LLC, and Bureau of Planning and Sustainability

## BUILDABLE LAND INVENTORY

The Buildable Land Inventory (BLI) is based on a GIS model developed by the Bureau of Planning and Sustainability (BPS) that looks at the difference between existing and allowed development to determine the remaining development capacity under the current comprehensive plan. The capacity is reduced to account for constraints such as infrastructure, brownfields, and natural resources protection. It also reduces capacity 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. The development capacity is also 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.

The citywide employment development capacity of the existing Comprehensive Plan is about 152 million square feet, which is distributed across the different employment geographies. The employment land supply is presented in three stages – the base supply (vacant and underutilized parcels), the constrained supply, and the (final) adjusted market supply (see Figure 2).

### Figure 2. Summary of 2035 Employment Development Capacity

| Aggregate Geography | Acres | Bldg SQFT | % of Base |
|---|---|---|---|
| Central City | 266 | 49,297,000 | 85% |
| Industrial | 1,365 | 59,442,000 | 52% |
| Neighborhood Commercial | 1,303 | 32,506,000 | 24% |
| Institutions | 306 | 10,676,000 | 100% |
| **Total** | **3,240** | **151,921,000** | **48%** |

Source: Bureau of Planning and Sustainability

## 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.

### Figure 3. 2035 Employment Land Needs Summary

| Employment Geography | Added Jobs | Land Demand | Existing Supply | Surplus/ Deficit | % Capacity |
|---|---|---|---|---|---|
| Central City Commercial | 34,120 | 60 | 201 | 141 | 335% |
| Central City Industrial | 10,620 | 90 | 65 | **-25** | **72%** |
| Harbor & Airport Districts* | 16,050 | 1,013 | 774 | **-239** | **76%** |
| Harbor Access Lands* | 2,070 | 207/437 | 113 | **-94/-324** | **55%/26%** |
| Columbia East | 9,310 | 350 | 356 | 6 | 102% |
| Dispersed Employment | 4,200 | 130 | 121 | **-9** | **93%** |
| Gateway Regional Center | 3,970 | 50 | 137 | 87 | 274% |
| Town Centers | 6,160 | 130 | 304 | 174 | 234% |
| Neighborhood Centers & Corridors | 25,010 | 510 | 863 | 353 | 169% |
| Institutions | 22,730 | 370 | 306 | **-64** | **83%** |
| Residential | 7,400 | - | - | **-** | **-** |
| **Total** | **141,640** | **2,910/3,140** | **3,240** | | |
| **Aggregate Geography** | | | | | |
| Central City | 44,740 | 150 | 266 | 116 | 177% |
| Industrial* | 31,630 | 1,700/1,930 | 1,365 | **-335/-565** | **80%/71%** |
| Neighborhood Commercial | 35,140 | 690 | 1,303 | 613 | 189% |
| Institutions | 22,730 | 370 | 306 | **-64** | **83%** |
| Residential | 7,400 | - | - | - | - |
| **Total** | **141,640** | **2,910/3,140** | **3,240** | | |

* Total land demand shown here includes Traded Sector Support Facilities in marine, rail and air terminals. Harbor Access Lands demand is shown with two marine-terminal forecast scenarios (see Figure 17).

Source: Bureau of Planning and Sustainability

Source: E.D. Hovee & Company, LLC, and Bureau of Planning and Sustainability

There are specific geographies that have a deficit or shortfall that will need to be addressed to provide an adequate supply of development capacity to meet the forecasted employment growth. Specifically, additional policy changes, zoning capacity, public investments, and development incentives will be needed to address capacity shortfalls in the **Central City Industrial, Harbor & Airport Districts, Harbor Access Lands, Dispersed Employment,** and **Institutions** geographies. The Comprehensive Plan update will need to identify changes to policy or zoning, public investments, development incentives or other means to address these deficits and meet the forecast demand.

# Table of Contents

# Table of Figures

# I. INTRODUCTION

As part of Periodic Review, the City of Portland is required to complete an Economic Opportunities Analysis (EOA) to comply with Oregon Statewide Planning Goal 9. The EOA evaluates the types and amounts of employment land needed to accommodate expected growth to 2035. The EOA is intended to inform the Comprehensive Plan Update, consistent with Statewide Planning Goal 9 and regional capacity analysis.

## ORGANIZATION OF EMPLOYMENT LAND NEEDS ANALYSIS

The Task 2 / 3 supply and demand analysis report is organized to cover the following topics:

- Employment Forecast and Land Demand Analysis
- Buildable Land Inventory
- Land Needs and Supply Reconciliation
- Short-Term Land Needs Analysis
- Lot Size Analysis

## METHODOLOGY

The EOA methodology of evaluating the adequacy of current development capacity has two parallel steps for estimating land demand to 2035 and current supply available to meet it, as summarized in (Figure 4). The first part determines the demand for developable land based on a future employment forecast. The process of estimating demand has many steps to translate Metro's regional employment forecast (jobs) into a demand for land (building square footage/acres) by employment geography types. The second part establishes the amount of the employment land supply available for development and is based on the Buildable Land Inventory (BLI). The BLI estimates the development capacity of vacant and underutilized land that is available for development, while factoring various constraints on development such as lack of infrastructure, natural resources, or brownfields. The final step is a reconciliation or comparison between the demand for employment land and the available supply to identify any unmet land needs – the shortfalls or gaps. Measures to address these gaps to ensure an adequate supply of land to meet forecasted demand will be addressed through the comprehensive plan update process.

This report was updated in 2015. Appendix C of the EOA Section 4 Report includes a detailed description of revisions in the 2015 update. The citywide employment forecast was reduced to be consistent with Metro's adopted employment allocation to the City of Portland in 2012. The short-term land supply demand horizon was extended to 2020 to address 5-year land needs. Harbor Access Lands was identified as a distinct employment geography and two marine terminal demand scenarios were analyzed there. The Employment Geographies map was revised to be consistent with the proposed update of the Comprehensive Plan. And the Buildable Land Inventory was updated, including revisions to the employment geographies, vacant and underutilized land map, and constraints mapping.

## Figure 4. EOA Methodology

### Demand

Forecast land demand to 2035

#### Region/City Forecast

Metro forecasts 537,000 new jobs in 7-county MSA from 2010 to 2035 and a 26% capture rate for Portland, consistent with post-1980 growth trends. Portland's employment forecast is for 141,600 new jobs by 2035

#### Sector Growth

Allocate employment to different employment sectors (manufacturing, finance, retail, etc.). Growth rates of different sectors are estimated from national and regional trends and adjusted by 2000-2008 city trends.

#### Building Space Needs by Type

Job growth by sector is allocated to six building types (e.g., office, warehouse), based on sector--to-building-type and jobs-per-square-foot assumptions.

#### Land Demand by Employment Geography

Building space needs are allocated to nine employment geographies (e.g., Central City Commercial). Each geography represents areas with a distinct mix of jobs, building types, and sites. Special needs for marine, airport, and rail terminals are based on throughput trends.

### Supply

Inventory current land capacity

#### Buildable Land Inventory

Underutilized land was inventoried as the sites most likely to accommodate new building space, based on development trends. The inventory consists of vacant land (undeveloped) and redevelopable sites (buildings with less than 20% of allowable zoning density). Industrial land is limited to vacant land.

#### Effective Supply of Constrained Land

The capacity of constrained sites were reduced to reflect the difficulty in developing sites with infrastructure needs, brownfields, environmental resources, historic sites, etc.

#### Adjustments

Mixed- Use - zoning districts can allow for mixed use development, which requires an allocation between employment and residential capacity.

Market Factor - in some areas, land is zoned to allow more development or taller buildings than the real estate market can support by 2035.

#### Land Supply by Employment Geography

Estimate available land supply for each employment geography.

### Demand/Supply Reconciliation

Forecast demand and effective supply were compared by employment geography. Supply shortfalls were identified in geographies where additional capacity is needed to meet projected demand.

# II. EMPLOYMENT & LAND DEMAND FORECAST

This chapter details the methodology used to forecast employment-related land needs within the City of Portland through 2035.

As stipulated by Statewide Planning Goal 9 (Economy of the State), the intent of the Economic Opportunities Analysis is to "compare the demand for industrial and other employment uses to the existing supply of such land." This section details the employment forecast that drives the demand for employment land. While employment growth serves as a major driver for land demand, the forecast process also recognizes that some needs (such as regional transportation facilities) require industrial land that can be more accurately estimated by the transportation throughput (e.g, marine cargo or airport passengers) handled at these facilities.

## EMPLOYMENT FORECAST METHODOLOGY

Metro prepares a regional forecast of population and employment growth for the 7-county PMSA region and then allocates that forecast to individual jurisdictions.[1] The Portland allocation anticipated job growth is translated into land demand via an excel worksheet model. The key steps in translating job growth into land demand are outlined below. The Portland employment forecast is dependent on two main factors – the total employment forecast for the region and the percent share of forecast growth assigned to Portland. In 2012, Metro adopted a single point regional forecast of 1.49 million total jobs in the region by 2035.[2] Supporting data tables are provided in Appendix C.

1. **Portland Metro Regional Employment Forecast.** The City of Portland employment forecast is based on the Metro regional forecast of job growth. With the baseline forecast, Portland PMSA non-farm employment would increase from recession dampened figure of less than 1 million jobs in 2010 to nearly 1.5 million in 2035, a gain of approximately 537,000 jobs with an average annual growth rate in the range of 1.8% per year over the 2010-2035 time period. Metro uses a forecasted employment figure as the starting point year (2010) of approximately 943,100 non-farm workers. For this EOA, the starting point has been adjusted to actual 2010 covered employment of 949,700 as reported by the Oregon Employment Department (OED) using the Quarterly Census of Employment and Wages (QCEW). Sector specific data is aggregated to cover 18 broad employment classifications consistent with the North American Industry Classification System (NAICS).

2. **Allocation of Metro Employment Forecast to City of Portland.** Metro allocates 517,000 total jobs by 2035 to the City of Portland. When compared with actual 2010 employment of 370,000 jobs, this results in a projected Portland job gain of

[1] The U.S. Census Bureau defines the Portland PMSA as a 7-county region consisting of Multnomah, Washington, Clackamas, Yamhill and Columbia Counties in Oregon together with Clark and Skamania Counties in Washington.

[2] Previously, Metro had used a range forecast. This forecast is based on Metro's "GAMMA" run of the 2035 forecast that was provided to the City of Portland in October 2011. Metro continues to refine the local jurisdiction allocation process, which is expected to be finalized in June 2012. The final allocation may vary, but is not expected to materially change the results of this analysis.

approximately 141,600 over the 2010-35 forecast period – an annual average growth rate of 1.3%.

3. **Allocation of Job Growth by Employment Geography.** The employment forecast is geo-coded to each of 10 employment geographies and a remainder "residential" geography based on actual covered employment records in 2010. An additional geographic-shift factor is also applied to the employment forecast for each geography, calculated by their relative employment trends between 2000 and 2008 (the peak-to-peak period of the last business cycle). Thus, the forecast reflects both sector trends at the national and regional level and local geography trends at the employment district level. Resulting detailed working data tables provide employment by geography and NAICS categories.

4. **Allocation of Job Growth by Building Type.** While Metro forecasts are classified by NAICS-specific employment or industrial sectors, the employment growth is translated to the demand of building square footage and acres of land for commercial and industrial land uses by allocating sector-specific job growth to each of six building types. General industrial, warehouse and flex space/business park categories are building types common to industrial employment uses. Office, retail and institutional building types are for commercial uses.

   The job growth allocations by geography (Step 3) are matched to the distribution of jobs by building type. Shifting geographic shares of employment accounted for by a particular building type are forecast forward to 2035. For example, geographies that have increased their share of the city's office employment are expected to continue to do so over the next 25 years – but at a rate of change slower than that of the last decade.

   This allocation is consistent with the Metro forecast distribution with minor adjustments based on a more detailed analysis of employment sector trends in Portland. For forecast steps 4-6, city-specific forecast modeling includes inputs from Metro (including the Metroscope model) together with results of an *Employment & Economic Trends Analysis* conducted by E. D. Hovee & Company, LLC for Metro in 2009, as further refined with input from the City of Portland Bureau of Planning and Sustainability.

5. **Building Space per Employee.** Industry standard estimates of the building square footage that houses a typical employee are applied to each of the six building types and to Portland's 10 employment geographies. These estimates are consistent with the Metro analysis with City-provided adjustments, especially with respect to analysis conducted for the City of Portland's industrial areas.[3]

[3] City of Portland, 2004 Industrial Districts Atlas

6. **Intensity of Development.** Floor area ratios (FARs) are a measure of building square footage on a site divided by site area (in square feet). FARs in this analysis reflect results of Metro employment study research together with input from the City of Portland Industrial Atlas (providing overall data for employees per acre as a composite control check on results of steps 5 and 6).

   Anticipated intensity of development is intended to increase somewhat over the 25-year forecast period, as available vacant sites are in shorter supply. The rate of FAR increase is greater for commercial than industrial building types and geographies.

7. **Building square feet is translated into land area** via Floor Area Ratios (FAR). A separate FAR is assumed for each building type and each geography. FARs are based on actual FARs that are increased over the 25 year forecast period to reflect increasing densities as the land supply becomes limited over time.

## Figure 5. Forecast Employment Lands Assumptions Summary

| Forecast Variable | Assumptions | Calculations in Appendix A |
|---|---|---|
| ***Employment Growth:*** | | |
| 1. Metro PMSA Job Forecast (2010-35) | 537,000 jobs (1.8% AAGR) | Figure 28 |
| 2. Portland Capture of PMSA Job Growth (% Portland Growth) | 26% Capture (1.3% AAGR) | Figure 29 |
| 1+2 Resulting Portland Job Forecast (25 Year) | 141,600 | Figure 30 |
| ***Building- Land Need:*** | | |
| 3. Job Allocation to Building Types | Does not vary | Figure 31 |
| 4. Typical Building Square Feet per Job | Does not vary | Figure 33 |
| 5. Floor Area Ratios (FARs) | Central City increases by 34%<br>Other non-industrial by 10%<br>Industrial constant. | Figure 34 |

Note: AAGR depicts average annual growth rate, calculated as a compound average.

Source: E. D. Hovee & Company, LLC.

8. **Employment Land Demand Results.** Results of this forecast and allocation process are presented in terms of added employment, building space needs, gross land acreage needs, and associated FARs over the 2010-35 horizon for each of the city's 10 employment geographies.

9. **Traded-Sector Support Facilities.** In addition to typical land absorption corresponding to employment growth in each standard building type, the City of Portland will need land set aside for atypical regional transportation facilities that support the regional economy such as airport aviation support, rail yard, and marine terminal needs. These added industrial land needs are more accurately estimated by the transportation throughput

handled at these significant regional transportation facilities (e.g., marine cargo and airport passengers). To prevent double counting, the typical land needs associated with the job growth of the sectors at these facilities (which are already counted in the forecast) are deducted from the total land forecast estimated by transportation throughput.

10. **Total Land Demand for Employment.** The overall demand for employment land is the combination of the demand for land for employment growth and traded-sector transportation facilities.

## EMPLOYMENT GEOGRAPHIES

The results of the employment forecast and resulting demand for development land are reported by ten summary employment land geographies, allowing development assumptions to vary across the City and provide more detail in describing job growth trends and forecasts together with associated building and anticipated land acreage needs. The employment geographies are subareas of the city that represent types of business districts as examined and defined in Section 1. While each geography has a mix of sectors, some geographies also have clear sector specializations. For example, 62% of the Central City Commercial jobs in 2008 were in the office sectors, 64% of industrial area jobs were in the industrial sectors, and 98% of the institutional campus jobs were in health care and education (see Figure 11 in EOA Section 1).

Each "employment land geography" represents (1) a collection of established business districts by type that reflects business location preferences (agglomeration) and community location preferences (comprehensive plan); (2) a segment of citywide demand for employment land, consisting of a distinct mix of business sectors and building types; and (3) a segment of the city's current developable land supply (see Figures 6, 7 and 8). Methodologically, the geographies represent a way of linking 25-year demand by site type to location advantages and developable land supply.

Figure 8 shows the employment geographies of the proposed Comprehensive Plan. It also depicts map changes from the existing Comprehensive Plan employment geographies that were used in EOA Section 1 to describe current conditions and trends. The proposed Comprehensive Plan geographies were used to estimate adequate existing and proposed capacity to meet the forecasted demand. Figure 9 depicts the configuration of the Harbor & Airport Districts and Harbor Access Lands geographies and the related multimodal freight infrastructure located there.

These employment geographies are summarized into four larger aggregate categories of: Central City, industrial, neighborhood commercial, and institutions. The residential geography is primarily associated with institutional uses occurring in residential areas, home occupations, non-conforming uses and ancillary employment with open space areas (ranging from golf courses to public parks).

.

## Figure 6. Employment Geographies

| Category | Employment Geography |
|---|---|
| **Central City** | Central City Commercial |
| | Central City Industrial |
| **Industrial** | Harbor & Airport Districts |
| | Harbor Access Lands |
| | Columbia East (east of 82nd Ave) |
| | Dispersed Employment |
| **Commercial** | Gateway Regional Center |
| | Town Centers |
| | Neighborhood Centers & Corridors |
| **Institutions** | Institutions |
| **Residential** | Residential areas and open space not included in the other geographies |

**Institutional Campuses**

| **Universities** | **Hospitals** |
|---|---|
| Reed College | Oregon Health & Science University |
| University of Portland | Shriner's Hospital |
| Concordia University | Portland Veteran's Hospital |
| Warner Pacific University | Providence Portland Medical Center |
| Lewis and Clark College | Kaiser Medical Centers |
| Portland Community College – Southeast | Legacy Emanuel Hospital |
| Portland Community College – Cascade | Legacy Good Samaritan Hospital |
| Portland Community College – Sylvania | |
| Multnomah University | |
| Western States Chiropractic College | |

Institutions included in other employment geographies:

*Portland State University (Central City)* *Adventist Medical Center (Gateway)*

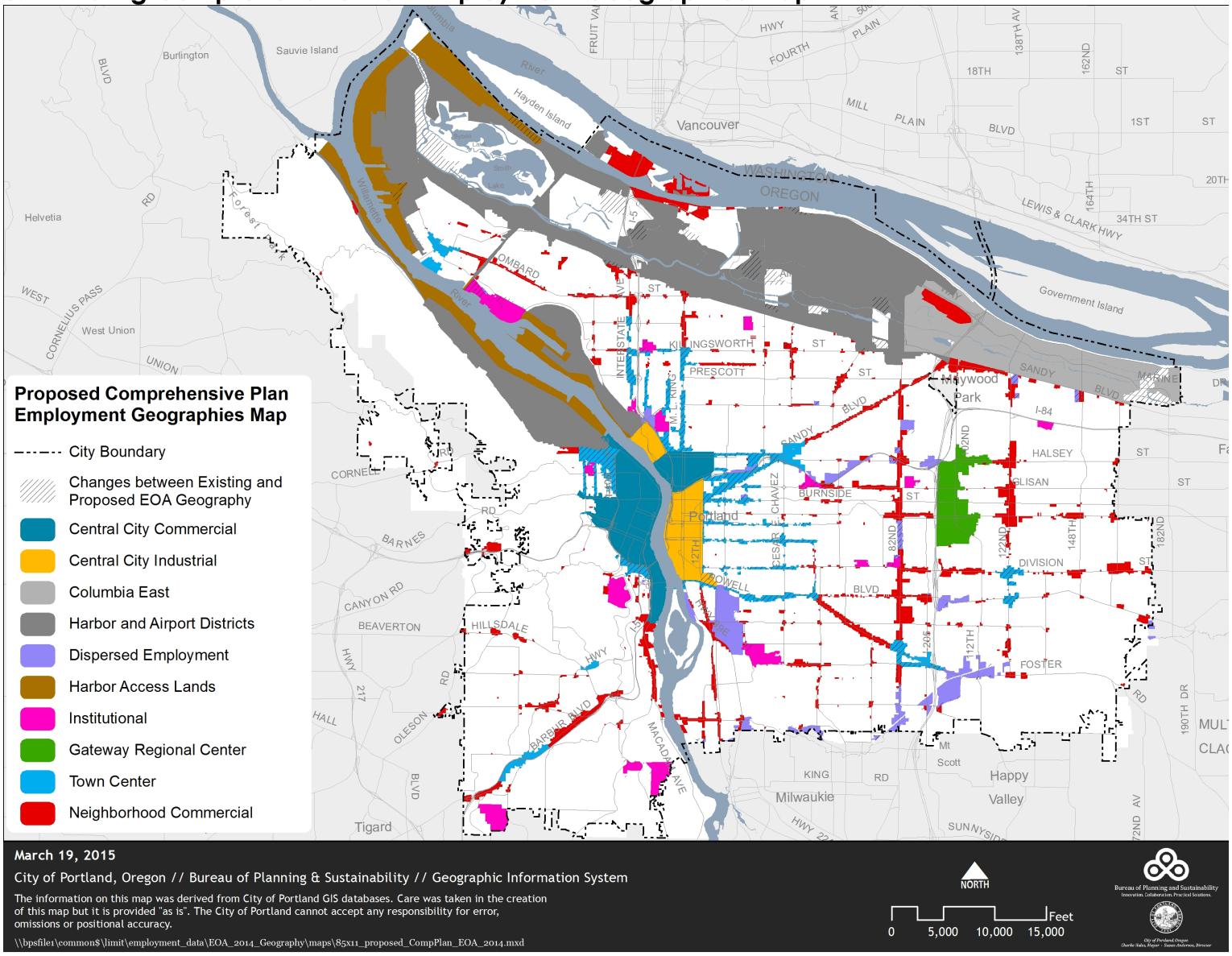
## Figure 7. Predominant Site Conditions of Employment Geographies

| Location | Types of Businesses | Density/site size | Features |
|---|---|---|---|
| **Central City** | | | |
| **Central City Commercial** | | | |
| Central City westside, Lloyd | Office, mixed employment | High, <1 acre | Regional CBD |
| **Central City Industrial** | | | |
| Central Eastside, L. Albina | Industrial, mixed employment | Medium, <3 acres | Incubator/industrial |
| **Industrial** | | | |
| **Harbor & Airport Districts** | | | |
| Harbor upland & Airport* | Distribution, manufacturing | Low, 1-100+ acres | Marine/rail/air hub |
| **Harbor Access Lands** | | | |
| Harbor frontage* | River-dependent/related industry | Low, 5-100+ acres | Deepwater channel |
| **Columbia East** | | | |
| Col. Corridor E of 82nd | Industrial, mixed employment | Low, 1-20 acres | Flex industrial parks |
| **Dispersed Employment** | | | |
| Neighborhoods | Industrial, mixed employment | Low, <1-10 acres | Freeway proximity |
| **Commercial** | | | |
| **Gateway Regional Center** | | | |
| I-84 at I-205 | Mixed employment | Medium, <1-6 acres | Transit/freeway hub |
| **Town Centers** | | | |
| Neighborhoods | Institutional, mixed commercial | Low/med., <1-3 acres | Mixed-use centers |
| **Neighborhood Centers & Corridors** | | | |
| Neighborhoods | Retail, mixed employment | Low, <1-10 acres | Commercial corridors |
| **Institutions** | | | |
| **Institutions** | | | |
| Neighborhoods | Hospitals, colleges | Low/med., >10 acres | 17 large campuses |

* The Harbor & Airport Districts includes the Northwest, Swan Island, Rivergate, and Airport industrial districts, excluding Harbor Access Lands that extends generally one block from the deepwater channel.

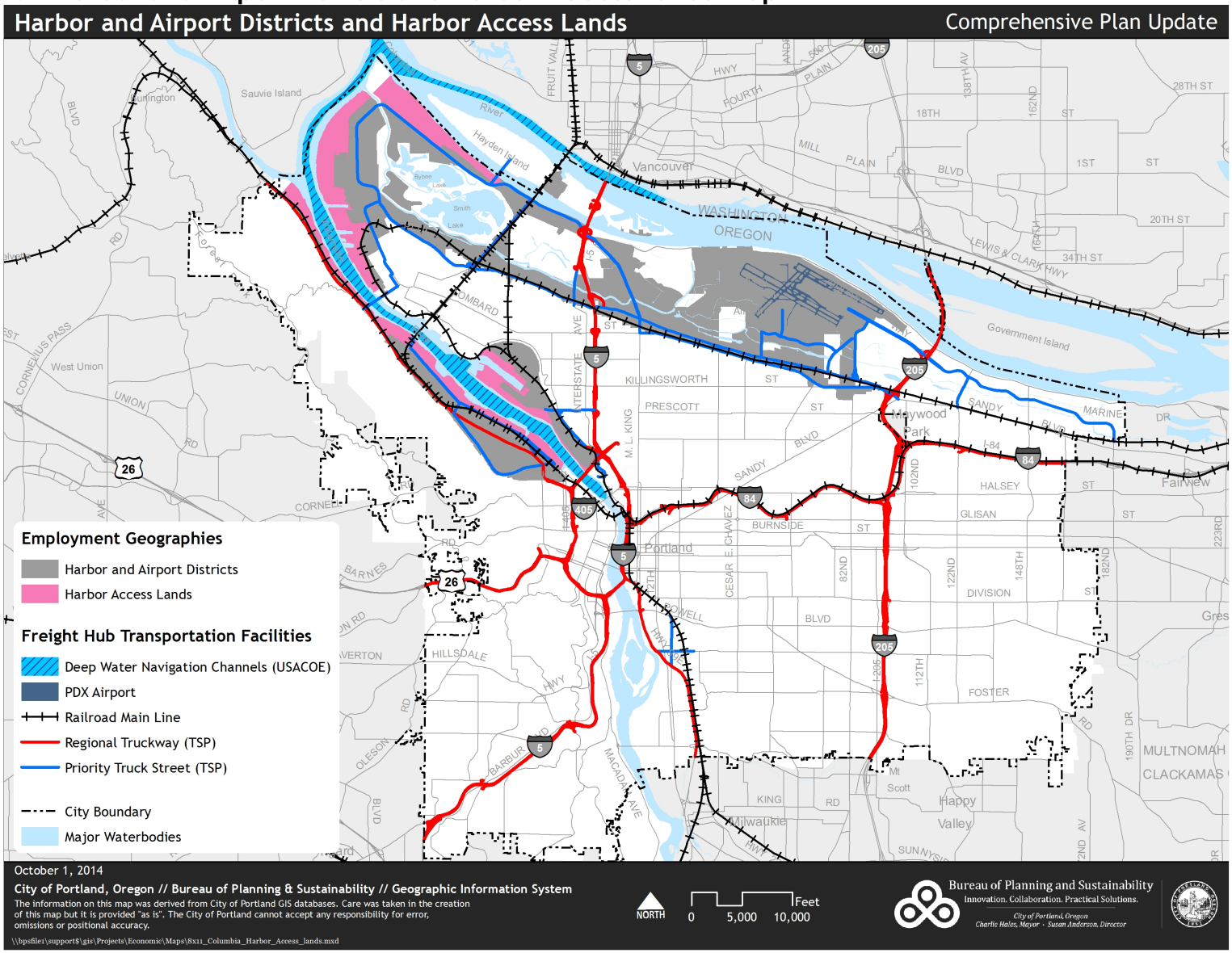
Source: Bureau of Planning and Sustainability

## Figure 8. Existing Comprehensive Plan Employment Geographies Map




Source: E.D. Hovee & Company, LLC, City of Portland Bureau of Planning & Sustainability.

## Figure 9. Harbor and Airport Districts and Harbor Access Lands Map




Source: E.D. Hovee & Company, LLC, City of Portland Bureau of Planning & Sustainability.

## EMPLOYMENT FORECAST RESULTS

Overall, Portland's employment growth is expected to capture approximately 26% of the region's employment growth. The forecast reflects an expectation of continued, but relatively slower, decline in the City's overall share of regional employment. In 2010 Portland had nearly 39% of the region's job base. This forecast estimates that share will decline to 34% by 2035. While each of Portland's 18 job sectors have 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. Figure 10 shows the distribution of the employment forecast by sector. The institutional sectors (health and education) account for nearly 52,000 new jobs or 36% of the growth. 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 new jobs by 2035.

### Figure 10. City of Portland Employment Forecast by Sector

| Employment Sector | 2010 | 2035 | Job Change 2010-35 | Avg Rate of Growth 2010-35 |
|---|---|---|---|---|
| Agriculture & Mining | 392 | 353 | (39) | -0.4% |
| Construction | 14,224 | 21,539 | 7,315 | 1.7% |
| Manufacturing | 25,035 | 24,076 | (959) | -0.2% |
| Wholesale Trade | 18,009 | 23,009 | 5,000 | 1.0% |
| Retail Trade | 31,060 | 32,963 | 1,903 | 0.2% |
| Transportation, Warehousing & Utilities | 23,676 | 34,978 | 11,302 | 1.6% |
| Information | 9,640 | 13,761 | 4,121 | 1.4% |
| Finance | 17,048 | 24,270 | 7,222 | 1.4% |
| Real Estate | 7,946 | 15,366 | 7,420 | 2.7% |
| Professional Services | 26,943 | 38,861 | 11,918 | 1.5% |
| Management | 14,322 | 21,683 | 7,361 | 1.7% |
| Administrative & Waste Services | 18,449 | 28,110 | 9,661 | 1.7% |
| Educational Services | 37,937 | 61,196 | 23,259 | 1.9% |
| Health & Social Services | 50,616 | 78,876 | 28,260 | 1.8% |
| Arts, Entertainment & Recreation | 6,741 | 8,493 | 1,752 | 0.9% |
| Accomodation & Food Services | 35,102 | 44,222 | 9,120 | 0.9% |
| Other Services | 16,802 | 23,076 | 6,274 | 1.3% |
| Government (Civilian) | 15,498 | 16,251 | 753 | 0.2% |
| **TOTAL EMPLOYMENT** | **369,440** | **511,083** | **141,643** | **1.3%** |
| City Share of Portland Metro Employment | 39% | 34% | 26% | |

Source: E. D. Hovee & Company, LLC based on Metro projection and City/Metro forecast 2035 allocation.

The City of Portland employment forecast allocation of 141,600 additional jobs is distributed to the employment geographies based on actual employment distribution in 2010 and trends from the recent 2000-2008 business cycle (Figure 11).

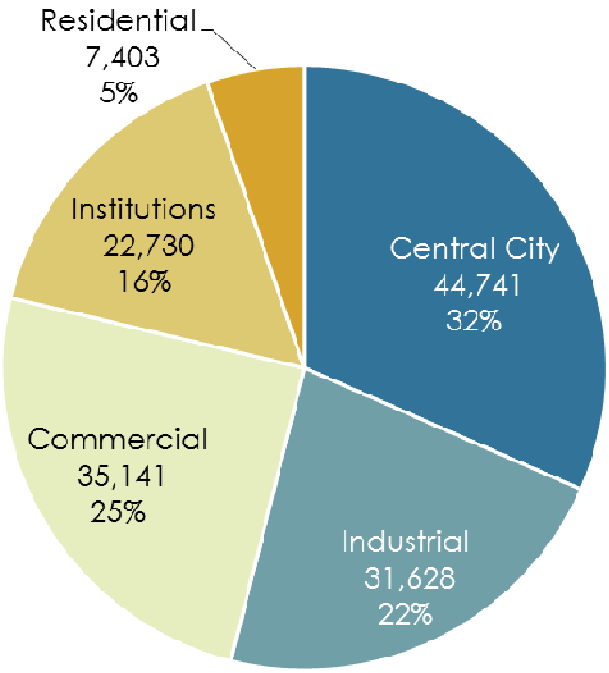
## Figure 11. Employment Forecast by Employment Geography

| Employment Geography | 2010 Actual Jobs Number | 2010 Actual Jobs Share | Added Jobs Number | Added Jobs Share | 2035 Total Number | 2035 Total Share |
|---|---|---|---|---|---|---|
| Central City Commercial | 104,394 | 28% | 34,124 | 24% | 138,518 | 27% |
| Central City Industrial | 19,171 | 5% | 10,617 | 7% | 29,788 | 6% |
| Harbor & Airport Districts | 45,274 | 12% | 16,046 | 11% | 61,320 | 12% |
| Harbor Access Lands | 8,579 | 2% | 2,074 | 1% | 10,653 | 2% |
| Columbia East | 17,764 | 5% | 9,308 | 7% | 27,072 | 5% |
| Dispersed Employment | 15,286 | 4% | 4,200 | 3% | 19,486 | 4% |
| Gateway Regional Center | 10,059 | 3% | 3,970 | 3% | 14,029 | 3% |
| Town Centers | 11,557 | 3% | 6,160 | 4% | 17,717 | 3% |
| Neighborhood Centers & Corridors | 71,233 | 19% | 25,011 | 18% | 96,244 | 19% |
| Institutions | 31,868 | 9% | 22,730 | 16% | 54,598 | 11% |
| Residential | 34,675 | 9% | 7,403 | 5% | 42,078 | 8% |
| **Total** | **369,860** | **100%** | **141,643** | **100%** | **511,503** | **100%** |
| **Aggregate Geography** | | | | | | |
| Central City | 123,565 | 33% | 44,741 | 32% | 168,306 | 33% |
| Industrial | 86,903 | 23% | 31,628 | 22% | 118,531 | 23% |
| Commercial | 92,849 | 25% | 35,141 | 25% | 127,990 | 25% |
| Institutions | 31,868 | 9% | 22,730 | 16% | 54,598 | 11% |
| Residential | 34,675 | 9% | 7,403 | 5% | 42,078 | 8% |
| **Total** | **369,860** | **100%** | **141,643** | **100%** | **511,503** | **100%** |

Source: E.D. Hovee & Company, LLC

The share of employment distributed to different areas is not expected to change very much. About one-third or 45,000 new jobs are expected in the Central City (Figure 12). Industrial area jobs are forecast to account for about 22% of citywide employment growth. Campus institutions are expected to expand with about 23,000 new jobs or 16% of the job growth, which will raise their share of the City's overall employment.

**Figure 12. 2010-2035 Employment Growth Distribution**




Source: E.D. Hovee & Company, LLC

## EMPLOYMENT LAND DEMAND

The employment forecast allocation is translated into a resulting demand for building square footage and land (Figure 13). The employment growth is expected to generate the demand for nearly 77 million square feet of building space, requiring approximately 2,560 acres of buildable land area. The Central City land demand is 150 acres, and an additional 690 acres of land is needed for development in the Neighborhood Commercial geographies elsewhere in Portland. Job growth on institutional campuses will need capacity for about 13 million square feet of buildings or about 370 acres of buildable land. The largest demand for land will be for approximately 1,400 acres of industrial land (excluding freight terminals), which is to be expected given the lower employment densities (jobs per acre) and FARs for industrial buildings.

Also, approximately 7,400 of the new jobs created (or 5% of the total job growth) is allocated to residential and open-space designated areas of the city. This growth is primarily associated with institutional uses occurring in residential areas. It also includes schools, churches, home occupations and non-conforming uses and ancillary employment with open space areas (ranging from golf courses to public parks). For the purposes of forecasting future demand for employment land, it is assumed that the jobs in the residential areas locate on residential land that is not part of the employment buildable land supply and not considered further in the EOA.

## Figure 13. Employment Forecast Land Demand (2010-2035)

| Employment Geography | Added Jobs | Square Feet | Total Acres* | FAR* |
|---|---|---|---|---|
| Central City Commercial | 34,124 | 13,598,000 | 60 | 5.20 |
| Central City Industrial | 10,617 | 5,218,000 | 90 | 1.33 |
| Harbor & Airport Districts* | 16,046 | 11,909,000 | 773 | 0.35 |
| Harbor Access Lands* | 2,074 | 1,494,000 | 97 | 0.35 |
| Columbia East | 9,308 | 6,140,000 | 350 | 0.40 |
| Dispersed Employment | 4,200 | 2,060,000 | 130 | 0.36 |
| Gateway Regional Center | 3,970 | 1,996,000 | 50 | 0.92 |
| Town Centers | 6,160 | 3,199,000 | 130 | 0.56 |
| Neighborhood Centers & Corridors | 25,011 | 11,549,000 | 510 | 0.52 |
| Institutions | 22,730 | 12,892,000 | 370 | 0.80 |
| Residential | 7,403 | NA | NA | NA |
| **Total** | **141,643** | **70,055,000** | **2,560** | |
| | | | | |
| **Aggregate Geography** | | | | |
| Central City | 44,741 | 18,816,000 | 150 | 2.88 |
| Industrial | 31,628 | 21,603,000 | 1,350 | 0.37 |
| Neighborhood Commercial | 35,141 | 16,744,000 | 690 | 0.56 |
| Institutions | 22,730 | 12,892,000 | 370 | 0.80 |
| Residential | 7,403 | NA | NA | NA |
| **Total** | **141,643** | **70,055,000** | **2,560** | |

* Total land and FAR shown here do not include Traded Sector Support Facilities in marine, rail and air terminals. See Figures 16 and 17.
Source: E.D. Hovee & Company, LLC

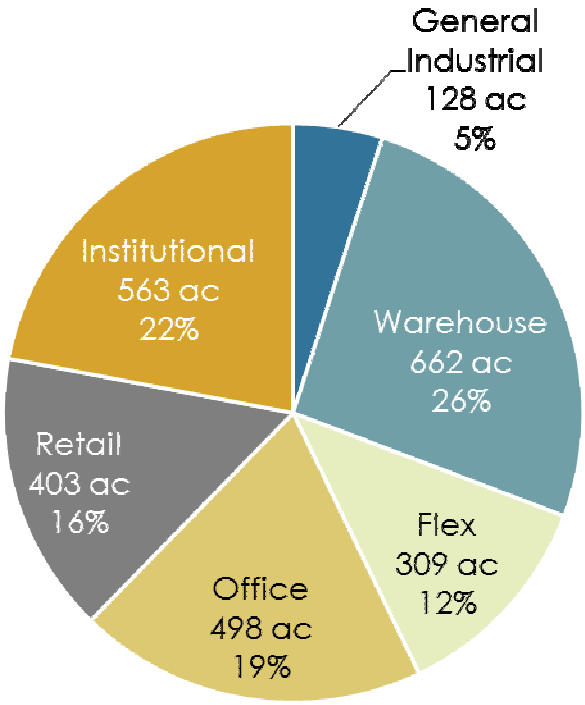
## EMPLOYMENT LAND NEED BY BUILDING TYPE

Figure 14 and 15 disaggregate projected employment land need (in terms of jobs, building square feet and land acres) by building type. Building types roughly correspond to industrial or commercial sectors, however, each geography has a mix of these building types. For example, while much of professional services employment is accommodated by office space, a portion of the demand ends in street-level retail spaces, and another portion in flex (or business park) space.

The table also illustrates that most employment-related demand – even within some industrial areas – derives from the commercial building types (office, retail and institutional). Citywide, 57% of the land demand forecasted is associated with commercial building types – including office, retail and institutional space.

Figure 15 provides the detail for the different types of job growth and land demand within each of Portland's major employment geographies. For industrial buildings, major sources of demand are expected to be associated with warehouse and flex space, with little added net demand projected for general industrial space. With commercial buildings, the primary need is anticipated to be for institutional space (including education and health care) followed by office and retail space.

**Figure 14. Employment Land Demand by Building Type**




Source: E.D. Hovee & Company, LLC.

Commercial building types comprise smaller but still substantial shares of anticipated land need within industrial geographies. For example, in the Central City Incubator geography (the Central Eastside and Lower Albina) commercial building types account for two-thirds of projected land demand; and for the Columbia Harbor geography this proportion accounts for one-quarter of the land demand.

The employment forecast projects that a significant 36% of new employment is expected to be within the health and education sectors. A significant portion of these jobs will be within institutional campuses with about one-half of the institutional building space and land demand allocated for the 17 campuses that make up the institutional employment geography, with the other half spread across the other employment geographies. This distribution and demand is consistent with recent trends in which institutions, especially heath care, appear to be decentralizing and bringing services closer to where people live.

Land demand is also influenced by FARs, as less dense building types (such as retail and warehousing) generate more land demand than building types such as office for an equivalent number of jobs. The FAR assumptions utilized in the forecast are presented in Figure 36 of Appendix A.

## Figure 15. Employment Land Demand by Building Type

| | Industrial Uses | | | Commercial Uses | | |
|---|---|---|---|---|---|---|
| | Jobs | Bldg Sq Ft | Acres | Jobs | Bldg Sq Ft | Acres |
| | **General Industrial** | | | **Office** | | |
| Central City Commercial | (178) | (62,000) | (0) | 22,272 | 7,795,000 | 24 |
| Central City Industrial | 516 | 478,000 | 11 | 5,222 | 1,828,000 | 19 |
| Harbor & Airport Districts* | 347 | 322,000 | 21 | 6,044 | 2,115,000 | 133 |
| Harbor Access Lands* | 173 | 160,000 | 10 | 733 | 257,000 | 16 |
| Columbia East | 765 | 708,000 | 41 | 3,618 | 1,266,000 | 70 |
| Dispersed Employment | 561 | 519,000 | 34 | 3,129 | 1,095,000 | 69 |
| Gateway Regional Center | 16 | 5,000 | 0 | 1,062 | 372,000 | 5 |
| Town Centers | 54 | 19,000 | 1 | 1,328 | 465,000 | 16 |
| Neighb. Centers & Corridors | 106 | 98,000 | 9 | 10,372 | 3,630,000 | 128 |
| Institutions | (0) | 0 | (0) | 1,927 | 675,000 | 18 |
| **Total** | **2,255** | **2,247,000** | **128** | **57,892** | **19,498,000** | **498** |
| | **Warehouse & Distribution*** | | | **Retail** | | |
| Central City Commercial | 134 | 47,000 | 0 | 6,015 | 2,827,000 | 21 |
| Central City Industrial | 995 | 775,000 | 17 | 1,479 | 695,000 | 31 |
| Harbor & Airport Districts* | 5,296 | 6,687,000 | 437 | 1,745 | 820,000 | 54 |
| Harbor Access Lands* | 477 | 601,000 | 40 | 157 | 74,000 | 5 |
| Columbia East | 1,825 | 2,304,000 | 132 | 1,535 | 722,000 | 41 |
| Dispersed Employment | (12) | (15,000) | (1) | (280) | (131,000) | (9) |
| Gateway Regional Center | (29) | (10,000) | (0) | 920 | 432,000 | 27 |
| Town Centers | (4) | (1,000) | (0) | 932 | 438,000 | 32 |
| Neighb. Centers & Corridors | 497 | 388,000 | 35 | 7,591 | 3,568,000 | 158 |
| Institutions | 11 | 4,000 | 0 | 2,013 | 946,000 | 42 |
| **Total** | **9,457** | **10,780,000** | **662** | **22,657** | **10,391,000** | **403** |
| | **Flex*** | | | **Instititutional** | | |
| Central City Commercial | 2,150 | 752,000 | 3 | 3,731 | 2,239,000 | 10 |
| Central City Industrial | 1,026 | 615,000 | 7 | 1,379 | 827,000 | 9 |
| Harbor & Airport Districts* | 2,357 | 1,812,000 | 118 | 256 | 153,000 | 10 |
| Harbor Access Lands* | 477 | 367,000 | 24 | 58 | 35,000 | 2 |
| Columbia East | 1,191 | 915,000 | 53 | 373 | 224,000 | 13 |
| Dispersed Employment | 659 | 506,000 | 33 | 143 | 86,000 | 6 |
| Gateway Regional Center | 19 | 7,000 | 0 | 1,983 | 1,190,000 | 17 |
| Town Centers | 124 | 44,000 | 2 | 3,725 | 2,235,000 | 82 |
| Neighb. Centers & Corridors | 1,520 | 910,000 | 68 | 4,924 | 2,954,000 | 107 |
| Institutions | 5 | 3,000 | 0 | 18,775 | 11,265,000 | 308 |
| **Total** | **9,831** | **5,931,000** | **309** | **39,552** | **21,208,000** | **563** |
| | **Total Industrial** | | | **Total Commercial** | | |
| Central City Commercial | 2,106 | 737,000 | 3 | 32,018 | 12,861,000 | 54 |
| Central City Industrial | 2,537 | 1,868,000 | 36 | 8,081 | 3,350,000 | 59 |
| Harbor & Airport Districts | 8,001 | 8,821,000 | 576 | 8,045 | 3,088,000 | 197 |
| Harbor Access Lands | 1,127 | 1,128,000 | 74 | 947 | 366,000 | 23 |
| Columbia East | 3,781 | 3,927,000 | 225 | 5,527 | 2,212,000 | 124 |
| Dispersed Employment | 1,208 | 1,010,000 | 66 | 2,992 | 1,050,000 | 66 |
| Gateway Regional Center | 5 | 2,000 | (0) | 3,965 | 1,994,000 | 50 |
| Town Centers | 175 | 62,000 | 3 | 5,985 | 3,138,000 | 130 |
| Neighb. Centers & Corridors | 2,124 | 1,396,000 | 112 | 22,887 | 10,152,000 | 393 |
| Institutions | 16 | 7,000 | 0 | 22,715 | 12,886,000 | 368 |
| **Total** | **21,542** | **18,958,000** | **1,098** | **120,101** | **51,097,000** | **1,465** |

* Total land demand shown here includes Traded Sector Support Facilities in marine, rail and air terminals.

Source: E.D. Hovee & Company, LLC.

## ADDITIONAL DEMAND FOR INDUSTRIAL LAND

Additional land demand is projected for freight terminals, a prominent land use in Portland, because their building density does not match typical industrial building types and their growth is more accurately estimated by transportation throughput than employment trends.

Portland is a key freight distribution hub and export gateway on the West Coast and is Oregon's largest seaport, rail hub, and airport. As such, air, marine, and rail terminals are prominent land uses in Portland's industrial districts. These freight terminals support the overall traded-sector economy by enhancing access of regional exporters to international and domestic markets, supporting local access and continuing investment in national-system freight infrastructure, and attracting diverse distribution and manufacturing businesses to the region. In turn, goods production industries (distinct from services) make up 81% of the export income in this region's "trade-dependent" economy, in contrast to the 71% national average (see Brookings Institution export analysis, 2013).

The adopted 2009 Climate Action Plan notes the importance of freight system efficiency, and included the following objective:

> *"Improve the efficiency of freight movement within and through the Portland metropolitan area (Urban Form and Mobility Objective 7)."*

Central to the efficiency of the freight system is the location of industrial areas and the integration with the regional transportation system. Minimizing emissions from freight movement requires protecting and improving intermodal facilities and continuing to connect them to the transportation system. Enhancing strong connections to marine and rail shipment is particularly important because movement of freight with those modes requires a much lower energy cost per ton. In the absence of strong rail and marine connections, more freight will be moved long distance through the Portland region in trucks.

Freight terminal land uses are exceptionally land-intensive. On-site employment is very low at these national/international transportation facilities, but substantial direct and supported job impacts of these facilities is located at other sites in the city, region, and Pacific Northwest.[4] An alternative method is used here to estimate their land needs for two reasons. First, the warehouse and other standard building types used to estimate the land needs of job growth at these freight terminals (see Figure 15) do not match their large site size and low building density. Second, their land needs are more closely related to the volume of transportation throughput handled at these facilities than to related sector employment trends. The overall freight volume handled in the Portland region is forecast to roughly double in tonnage and triple in value between 2007 and 2040 (see EOA Section 1 and the Draft Portland/Vancouver Commodity Flow Forecast, 2014). The resulting additional land demand for these traded-sector support facilities is summarized in Figure 16.

[4] Martin Associates, *Economic Impact of the Port of Portland*, 2011

## Figure 16. Additional Land Demand for Traded Sector Support Facilities

| Traded Sector Support Facilities | Demand (acres) |
|---|---|
| PDX Aviation Support | 40 |
| Rail Yard Expansion | 200 |
| Marine Terminals (Scenarios A/B) | 110/340 |
| **Total** | **350/580** |

Source: Bureau of Planning and Sustainability.

In order to avoid double counting, the estimated land needs of freight terminals are calculated as the difference between their employment-based land need and the land need attributable to transportation throughput, as shown in Figure 17. Marine terminal land needs are expected to be met in the Harbor Access Lands geography, and the rail yard and airport-support facility land needs apply to the Harbor and Airport Districts geography. The overall employment forecast in these geographies reflects existing employers and does not change with this additional land demand.

## Figure 17. Estimation of Land Demand for Traded-Sector Support Facilities

| Traded Sector Support Facilities | Transportation-Trend Forecast (Acres) | Employment-Trend Forecast | | Additional Land Need (Difference) |
|---|---|---|---|---|
| | | New Jobs | Acres | |
| **PDX Aviation Support Facilities*** | | | | |
| Air Transportation and Terminal Services | 72 | 2,450 | 136 | -64 |
| Air Cargo and Car Rental | 135 | 670 | 29 | 106 |
| Other Airport Employers | | 140 | 4 | -4 |
| Total | 207 | 3,260 | 169 | 37 |
| **Rail Yard Expansion** | | | | |
| Rail Yards | 200 | ** | ** | 200 |
| **Marine Terminals** | | | | |
| Scenario A: Low Cargo Forecast*** | 125 | 325 | 19 | 106 |
| Scenario B: Mid-range Cargo Forecast*** | 392 | 850 | 50 | 342 |

* The Airport Futures Plan (2010) used transportation-trend forecasts to estimate these land needs.
** Railroads are not included in Covered Employment data used in employment trends forecast.
*** Marine terminal growth scenarios compare (A) ECONW's "low" capacity need estimate (auto terminals only) and (B) ECONW's mid-range capacity need estimate for new auto, grain, and dry bulk facilities (EOA Task 1 Appendix C).
Source: Bureau of Planning and Sustainability

### *PDX Airport*

The PDX Airport today occupies approximately 2,800 acres, excluding the adjacent Cascade Station and Portland International Center areas. The 2010 Airport Futures Plan and PDX Master Plan were adopted in 2011 by the City of Portland and Port of Portland as a long-range development plan for PDX. These plans included a detailed analysis of airport land needs to 2035 based on an aviation demand forecast (passengers and air cargo) and analysis of specific facility expansion needs. The PDX Master Plan identifies 207 acres of additional land need for new and expanded facilities. However, there is an overlap or double-counting with the

employment-based forecast. The employment located in the airport geography is forecast to generate 175 acres of land demand in standard building types. This employment land demand is deducted from the land need estimated in the Airport Futures Plan, which is derived from air travel demand forecasts rather than employment forecasts.

Figure 17 compares these forecast methods by types of airport facilities. The Airport Futures Plan found that projected passenger travel growth by 2035 can be accommodated by existing runways, so the employment growth associated with air transportation and terminal services can be accommodated. However, land needs for air cargo couriers, general aviation (non-scheduled flights), and rental car lots are more land-intensive than estimated by the employment-based forecast (see Appendix A, Figure 37). Combining the net result of all airport facilities, Airport Futures found an additional 37 acres of 2010-2035 land demand for airport facilities beyond the employment-based forecast. This additional demand for aviation support facilities is rounded to 40 acres and applied as a separate line item in the land demand forecast.

### *Rail Yard Expansion*

Portland is the Pacific Northwest's rail transportation hub, and seven larger rail yards currently occupy approximately 700 acres in Portland's industrial districts. The employment-based forecast allocates no land for railroad or rail yard expansion, because rail transportation employment is not included in Covered Employment data used for the forecast. Rail yard expansion since 2004 has consisted of the Port of Portland's Ramsey Yard and South Rivergate Yard, providing approximately 25 acres of new yard space. While long-term needs and railroad investment plans remain uncertain, likely demand for expansion and modernization of yard facilities is estimated at approximately 200 acres, based on projected rail tonnage growth and the typical size of new rail yards.

Long-term rail transportation forecasts anticipate robust growth. BST Associates projected 2010-2030 freight rail tonnage growth by type for the Oregon Lower Columbia and Oregon Coast areas[5]:

- 4.1% (moderate) to 7.3% (high) average annual growth rate (AAGR) for marine-related rail, such as the trains served by Barnes, Ramsey and South Rivergate Yards in Portland;
- 2% AAGR for merchandise trains, such as those served by Albina Yard in Portland; and
- 3.5% AAGR for domestic intermodal trains, such as those served by Brooklyn and Lake Yards in Portland.

Put in context, growth at 2.9% AAGR would approximately double the local rail tonnage handled in 25 years.

In addition to the recent expansion at Ramsey and South Rivergate Yards, construction of a new domestic intermodal yard at Troutdale was discussed and met community objections. Afterward, Union Pacific moved their domestic intermodal operations from Albina Yard to Brooklyn Yard, to improve efficient use of available yard capacity. Nationally, Union Pacific constructed 5

[5] BST Associates, *Pacific NW Marine Cargo Forecast Update and Rail Capacity Assessment*, October, 2011

intermodal yards between 2000 and 2005, ranging from 130 to 320 acres in size and averaging 224 acres. To accommodate increasing rail operations, rail yard land demand to 2035 is estimated at 200 acres, which conceptually could consist of a new domestic intermodal yard or the combined expansion of existing yards and smaller new yards.

A Union Pacific representative commented that a 200-acre rail demand forecast to 2035 is not unreasonable. The railroad's long-term plans are unclear in the current economic climate. Expansion for energy-related cargo exports is a wildcard that was not factored into local demand forecasts. The organization has a five-year plan that describes track capacity. For the Portland area, short-term plans assume working within their existing land holdings. The railroad generally focuses on consolidation and efficiencies within urban areas, and if necessary, relocation, such as the recent relocation of intermodal facilities to Brooklyn Yard.

### *Marine Terminals*

Portland Harbor serves as a major economic engine for the regional economy. These port terminals function as public infrastructure, facilitating economic activity for other industries in the region. Studies indicate that cargo and manufacturing activities dependent on waterborne transportation contribute significantly to the metro region's economy. Estimates of the economic impacts generated by marine-related activity in Portland range from 20,000 to 100,000 jobs and from $1.4 to 3.4 billion annually in regional income.[6]

Harbor industrial development tends to have low floor-to-area ratios (FAR) and a relatively low number of on-site jobs per acre. But industrial lands in general, and harbor lands in particular, are an important piece of the regional economic base, which supports a much larger number of jobs in other economic sectors. Despite declining employment in the Harbor Access Lands geography during the 2000-2008 business cycle, like the employment losses in Downtown Portland and some other geographies in this period, Portland Harbor experienced an increase in cargo tonnage at a faster pace than the rate of industrial land development in the area.[7] Employment losses during this period are partly associated with the listing of the extensive Portland Harbor Superfund Project in 2000, which has constrained vacant land development that would typically result from business turnover on affected sites.

Given the robust cargo forecasts and projected marine terminal needs described in EOA Section 1 and the disconnected relationship between employment growth and cargo activity in the harbor, an alternative land needs forecast is particularly needed for marine terminal development. ECONorthwest identifies several forecast scenarios for marine cargo tonnage and associated land needs in Portland in EOA Section 1, Appendix C.[8] The commodity forecasts summarized by ECONorthwest are expressed as a range. To inform community choices, two harbor growth scenarios are analyzed here. Scenario A is the low end of the demand forecast. Scenario B is the mid-range demand forecast. The impacts of these choice are described in more detail in Section 4.

6 Entrix, Inc., West Hayden Island (WHI) Economic Foundation Study, July 2010.

7 ECONorthwest, Portland Harbor: Industrial Land Supply Analysis, May 2012.

8 ECONorthwest, Portland Harbor: Industrial Land Supply Analysis, May 2012.

**Harbor Growth Scenario A** is derived from the low end of the demand forecast estimated by ECONorthwest at 187,000 metric tons for automobile cargo only (see Exhibit 3-6 in EOA Section 1, Appendix C). For "practical" site sizes of auto terminals (a conservative land need assumption), this tonnage results in 150 acres of overall land need by 2040, adjusted to 125 acres by 2035. The 125-acre overall land need for marine terminal growth is further adjusted to 106 acres (rounded to 110) to avoid double-counting land needs estimated by the employment-trends forecast (see Figure 17). This scenario could potentially be met in the existing Harbor Access Lands geography by vacant and redevelopable land development at T-6 (approximately 40 vacant acres), T-4 (approximately 30 redevelopable acres at the former Cargill terminal), and/or an assembled brownfield development site around the former Time Oil terminal (an assembled site of up to 84 acres is analyzed by ECONorthwest in EOA Section 1, Appendix C).

**Harbor Growth Scenario B** consists of ECONorthwest's mid-range demand forecast (5,760,000 metric tons) with an expected land need of 470 acres (see Exhibit 3-7 in EOA Section 1, Appendix C), which is adjusted for the year 2035 to 392 acres (rounded to 390). Based on the development trends of new terminals being constructed on the West Coast, land need for marine cargo is typically expected to be for parcels larger than 100 acres to accommodate some form of rail access and ensure facility competitiveness.[9] This scenario anticipates the need for 270 acres of land need for auto terminal development and 100-acre grain and dry bulk terminal sites large enough for conventional unit-train rail loop access. Again, as with Scenario A, these combined land needs are adjusted to approximately 340 acres (see Figure 17) to avoid double-counting land needs estimated by the employment-trends forecast. West Hayden Island is the only site in the Portland Urban Services Area where this combined need could potentially be met, due to the geometric requirements for a modern rail loop. The new on-site marine terminal employment in Scenario B is estimated to be 850 jobs.

## TOTAL EMPLOYMENT LAND DEMAND

The employment growth forecast demand is combined with the traded sector transportation facilities to determine the total land need (Figure 18).

[9] Entrix, Inc., West Hayden Island (WHI) Economic Foundation Study, July 2010.

## Figure 18. 2035 Employment Development Capacity Demand

| Employment Geography | Added Jobs | Building SQFT | Total Acres | Avg FAR |
|---|---|---|---|---|
| Central City Commercial | 34,124 | 13,598,000 | 60 | 5.20 |
| Central City Industrial | 10,617 | 5,218,000 | 90 | 1.33 |
| Harbor & Airport Districts | 16,046 | 11,909,000 | 773 | 0.35 |
| Harbor Access Lands | 2,074 | 1,494,000 | 97 | 0.35 |
| Columbia East | 9,308 | 6,140,000 | 350 | 0.40 |
| Dispersed Employment | 4,200 | 2,060,000 | 130 | 0.36 |
| Gateway Regional Center | 3,970 | 1,996,000 | 50 | 0.92 |
| Town Centers | 6,160 | 3,199,000 | 130 | 0.56 |
| Neighborhood Centers & Corridors | 25,011 | 11,549,000 | 510 | 0.52 |
| Institutions | 22,730 | 12,892,000 | 370 | 0.80 |
| Residential | 7,403 | NA | NA | NA |
| **Total** | **141,643** | **70,055,000** | **2,560** | |
| **Aggregate Geography** | | | | |
| Central City | 44,741 | 18,816,000 | 150 | 2.88 |
| Industrial | 31,628 | 21,603,000 | 1,350 | 0.37 |
| Neighborhood Commercial | 35,141 | 16,744,000 | 690 | 0.56 |
| Institutions | 22,730 | 12,892,000 | 370 | 0.80 |
| Residential | 7,403 | NA | NA | NA |
| **Total** | **141,643** | **70,055,000** | **2,560** | |
| **Additional Land Need for Traded Sector Support Facilities** | | | | |
| PDX Aviation Support | 3,220 | | 40 | |
| Rail Yard Expansion | NA | | 200 | |
| Marine Terminals (Scenarios A/B) | 325/850 | | 110/340 | |
| **Total** | | | **350/580** | |
| **Total Land Demand** | | | **2,910/3,140** | |

Source: E.D. Hovee & Company, LLC, and Bureau of Planning and Sustainability.

## SHORT-TERM EMPLOYMENT FORECAST AND LAND DEMAND

The State of Oregon Administrative Rules also require cities to provide an adequate short-term land supply "to respond to economic development opportunities as they arise." The Metro regional forecast predicts a robust recovery from the national recession. Consequently, the City of Portland is expected to add 95,000 jobs or 67% of the forecasted employment growth in the 2010-2020 period. If this predicted growth occurs, it will generate the demand for about 2,000 acres of employment land. Land demand over the remainder of the planning period is projected to grow at lower rates, following the job-growth trajectory shown in Figure 32. Additional freight terminal demand is expected to occur episodically after 2020 through individual terminal investment decisions, except that a currently proposed marine terminal (Pembina) is included in short-term demand. Short-term land need for this marine terminal is estimated at 36 acres, which assumes an approximate 40-acre development site and excludes 4 acres to prevent double-counting of land need estimated by the employment-trends forecast.

**Figure 19. 2010-2020 Short-Term Employment Forecast and Land Demand**

| Employment Geography | Added Jobs | Building SQFT | Total Acres |
|---|---|---|---|
| Central City Commercial | 22,600 | 8,951,000 | 40 |
| Central City Industrial | 7,560 | 3,885,000 | 75 |
| Harbor & Airport Districts | 12,660 | 10,067,000 | 659 |
| Harbor Access Lands | 1,630 | 1,263,000 | 118 |
| Columbia East | 6,980 | 4,867,000 | 279 |
| Dispersed Employment | 3,030 | 1,673,000 | 109 |
| Gateway Regional Center | 2,460 | 1,220,000 | 33 |
| Town Centers | 3,860 | 1,985,000 | 86 |
| Neighborhood Centers & Corridors | 16,280 | 7,658,000 | 362 |
| Institutions | 13,440 | 7,562,000 | 224 |
| Residential | 4,110 | NA | NA |
| **Total** | **94,610** | **49,131,000** | **1,985** |

Source: E.D. Hovee & Company, LLC., and Bureau of Planning and Sustainability

## PARCEL SIZE DEMAND ASSESSMENT

This assessment is based on the same parcel distribution by geography as demand experienced 1999-2011 for parcels experiencing new construction (year built as of 2000 or later) but with smoothing (or interpolation) of demand to in-between sizes with no demonstrated demand from 1999-2011.

This parcel size distribution reflects the pattern of activity that occurred during the last decade, a period of slower job growth regionally and in Portland than is forecast over the next 25 years. Future parcel size requirements may well vary from experience of recent years.

A pivotal factor suggesting a need for a greater mix of large parcels is the need to accommodate more job growth than has occurred in the last decade. To the extent that achieving more aggressive job growth targets depends on ability to accommodate larger employers (especially within industrial geographies), more large acreage sites may be required. Otherwise, Portland runs a greater risk of losing these large employers to sites elsewhere in the region or outside the Portland metro area altogether. Also noted is that presence of constrained sites (as with brownfields and environmental constraints) within the remaining inventory may require larger sites in terms of gross acreage to get to the same net yield as may have been experienced previously with less constrained sites. Therefore, this demand assessment includes the additional need for one large (50 acre) site in the Harbor and Airport Districts. This demand assessment also includes the traded sector land needs, which are expected to be located in the area as well.

## Figure 20. Land Demand by Parcel Size (acres)

| | Gross Acreage Land Need (2010-35) by Parcel Size | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **EOA Geographies** | **< 1** | **1 - 3** | **3 - 5** | **6 - 10** | **10-20** | **20-50** | **50-100** | **> 100** | **Total** | **Total >1** |
| Central City Commercial | 33 | 9 | 9 | 10 | 0 | 0 | 0 | 0 | 60 | 27 |
| Central City Industrial | 54 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 90 | 36 |
| Harbor & Airport Districts | 71 | 135 | 213 | 166 | 126 | 52 | 50 | 200 | 1,013 | 942 |
| Harbor Access Lands | 1 | 6 | 9 | 11 | 11 | 49 | 50 | 300 | 437 | 435 |
| Columbia East | 9 | 85 | 78 | 67 | 111 | 0 | 0 | 0 | 350 | 341 |
| Dispersed Employment | 38 | 26 | 23 | 23 | 20 | 0 | 0 | 0 | 130 | 92 |
| Gateway Regional Center | 18 | 13 | 11 | 9 | 0 | 0 | 0 | 0 | 50 | 32 |
| Town Centers | 84 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 130 | 46 |
| Neighb. Centers & Corridors | 276 | 77 | 91 | 65 | 0 | 0 | 0 | 0 | 510 | 234 |
| **Total** | **584** | **432** | **434** | **350** | **269** | **101** | **100** | **500** | **2,770** | **2,186** |
| **Aggregate Geographies** | | | | | | | | | | |
| Central City | 86 | 45 | 9 | 10 | 0 | 0 | 0 | 0 | 150 | 64 |
| Industrial | 119 | 252 | 322 | 266 | 269 | 101 | 100 | 500 | 1,930 | 1,811 |
| Neighborhood Commercial | 379 | 136 | 102 | 74 | 0 | 0 | 0 | 0 | 690 | 311 |
| **Total** | **584** | **432** | **434** | **350** | **269** | **101** | **100** | **500** | **2,770** | **2,186** |

* Harbor Access Lands demand shown here includes marine terminal forecast Scenario B for 340 acres (see Figure 17). Scenario A would exclude the 100+ acre site demand and add 70 acres to the 20-100 acre categories.

Source: E.D. Hovee & Company, LLC, and Bureau of Planning and Sustainability.

Conversely, there are factors which suggest at least some potential that demand will adjust to available supply over time on smaller parcels that previously may have been bypassed. These factors include increasing interest by firms already heavily invested in Portland to make do with existing sites and/or acquire smaller, nearby (and in some cases multiple) sites for incremental expansion. This approach can be facilitated with greater regulatory flexibility and targeted infrastructure investments to make more efficient use of a shrinking supply of remaining vacant as well as redevelopable in-city inventory.

This assessment also suggests the need for monitoring of actual development site sizes over the course of the forecast period – with capacity for plan adjustments if warranted by demonstrated site size demand not being met by the remaining site inventory.

# III. SUPPLY: BUILDABLE LAND INVENTORY

As stipulated by Goal 9 (Economy of the State), the intent of the Economic Opportunities Analysis is to "compare the demand for industrial and other employment uses to the existing supply of such land." This section analyzes the Buildable Land Inventory as Portland's measure of employment land supply.

The Buildable Land Inventory (BLI) is based on a GIS model developed by the Bureau of Planning and Sustainability (BPS) that looks at the difference between existing and allowed development to determine the development capacity of the current comprehensive plan. This report summarizes the methodology and results of the employment land portion of the BLI. A full description of the BLI with supporting maps can be found in the *Buildable Land Inventory* background report.

## METHODOLOGY

The BPS Development Capacity Analysis (DCA) model is a series of steps or filters to identify the acreage of land that is available for development or redevelopment in Portland.

1. Identify vacant land.
2. Identify land likely to redevelop.
3. Discount capacity based on physical constraints
4. Adjust capacity for mixed use development and market factors

### *Base Land Supply – Vacant and Redevelopable Land*

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 geographies and parcels less than 1,500 square feet were not considered viable for commercial development.

The development analysis in the Task 1 report shows that only 50-70% of the development activity in Portland is taking place on totally vacant sites. The second step in the inventory is a more complicated process to identify non-vacant parcels that are significantly under-developed or underutilized and are likely to redevelop. The DCA model uses existing building area to calculate the likelihood of redevelopment based on the rationale that parcels with smaller building coverage compared to what is allowed by current zoning regulations are likely to redevelop given the potential for a new larger building to absorb the value of the existing building into the development costs. Within the Central City, a parcel must have less than 20% of the allowed floor area and have an improvement-to-land ratio (I/L ratio) of less than 50%. I/L ratios are used because improvement and land values are more accurately recorded in the Central City. 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). 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). For underutilized parcels that will redevelop, the existing building square footage is deducted from the zoned capacity, so only the net new development capacity is counted.

For the Industrial areas, underutilized parcels are treated differently. Industrial Sanctuary designated parcels are limited to vacant parcels. Underutilized parcels are not included in this analysis because there are no FAR limits in the Portland industrial zones and industrial development tends to have lower building coverage with large areas for outdoor storage and vehicle maneuvering areas. However, developed parcels designated Central Employment and Mixed Employment that currently utilize less than 10% of their allowed floor area (regardless of the improvement-to-land ratio) are considered underutilized and included in the land supply because these parcels tend to include a wider mix of uses with more intensive development.

Institutional uses warrant special consideration because their land use patterns are distinct from other employers. Medical and higher education institutions often tend to cluster all or a significant portion of their activity into campuses, requiring larger parcels or aggregations of parcels, developing land more intensively (e.g. with structured parking) and locating in a variety of zones other than commercial and industrial (such as residential). For the BLI, 17 individual campuses are identified and the development capacity is determined through an assessment of current land use approvals and base zoning minus existing buildings.

### *Development Constraints*

Constrained lands include sites that lack needed infrastructure (e.g. sites without sewer service) or have other physical or regulatory constraints on development, such as environmentally sensitive areas, historic landmarks, steep slopes, and flood hazards. Each constraint is defined and mapped and a discount factor is determined to reflect the degree of site utilization expected on land affected by each constraint.

The discount factor is determined in a two-step process. The first step is characterizing the constraint as high, medium, or low based on consultation with the City of Portland's development review staff at the Bureaus of Development Services, Transportation, Water, and Environmental Services.[10] Then this factor is adjusted based on a review of development rates of various constrained sites compared to unconstrained sites for the 1999-2011 period (Appendix B). This analysis included both the rate of development (avoidance) as well as the overall amount of development to determine the level of constraint. The constraint analysis considered the impact of 52 different characteristics that are grouped into six categories and sorted by geographic area.[11] An additional discount factor of -10% is applied to sites with two overlapping constraints or -20% for sites with more than three constraints. Institutional campuses are not included in this adjustment factor because the master planning process to establish the development capacity has already factored most of these constraints.

[10] BPS, 2012 Buildable Land Inventory, Appendix A

[11] Constraint discount factors are not calculated for the Institutional geography because it assumed that these constraints are factored into the campus master plans that are the basis for determining the development capacity of the 17 campuses.

## Figure 21. Development Constraint Factors

| Constraint | Adjusted Capacity Utilization | Constraint | Adjusted Capacity Utilization |
|---|---|---|---|
| **Environmental** | | **Historic Landmarks** | |
| Central City | 75% | Central City | 55% |
| Industrial | 50% | Industrial | 55% |
| Commercial | 35% | Commercial | 55% |
| | | | |
| **Infrastructure** | | **Low** | |
| Central City | 75% | Central City | 85% |
| Industrial | 75% | Industrial | 85% |
| Commercial | 75% | Commercial | 85% |
| | | | |
| **Brownfields** | | **Greenway** | |
| Central City | 90% | Central City | 75% |
| Industrial | 40% | Industrial | 50% |
| Commercial | 50% | Commercial | 55% |

Source: E.D. Hovee & Company, LLC and Bureau of Planning and Sustainability

### *Adjustments*

### Mixed-Use Zoning

In most of the City of Portland's commercial land use zones residential uses are an allowed use, and over the last 15 years Portland has seen a significant amount of mixed use, residential development in these areas, especially in the Central City. Therefore, in this capacity analysis a certain amount of the development capacity is assumed to develop as residential space and therefore not available for employment uses. The residential share is based on a review of building permit activity in commercial areas from 2002-2008.[12]

## Figure 22. Mixed Use Zoning Residential Share Factors

| | Comprehensive Plan Designation | Residential Share | Central City Residential Share |
|---|---|---|---|
| EX | Central Employment | 75% | 63% |
| CX | Central Commercial | 55% | 40% |
| UC | Urban Commercial | 75% | 40% |
| CG | General Commercial | 25% | 40% |
| NC | Neighborhood Commercial | 30% | 40% |
| IR | Institutional Residential | 5% | 78% |
| ME | Mixed Employment | 0% | 63% |

Source: Bureau of Planning and Sustainability

[12] The most robust permit data was in the EX, CX, and UC designations. For the GC, NC, IR, and ME designations there was less mixed use data, so the factors are more conservative and assume less mixed use residential space.

### Market Development Rates

This factor adjusts the land supply to reflect market supportable building capacity for the commercial geographies. In the commercial areas outside the Central City, the commercial development capacity allowed by zoning regulations is greater than what the private market is expected to develop. For example, most town centers and commercial corridors allow for 3:1 FARs. Even after some of the floor area is allocated to residential space (see above), the commercial space is greater than what the private sector typically develops. Parking plays a substantial factor in these determinations because FARs over 0.50 typically require some mix of structured parking and/or high transit mode split. Future market conditions are difficult to predict. These market factors are based on the average FARs estimated by the demand forecast in these geographies (total building area divided by total land area). Therefore, the commercial or employment capacity is capped at a maximum market-supportable FAR.

### Figure 23. Commercial FAR Market Factor

| Employment Geography | Commercial FAR Cap |
|---|---|
| Gateway Regional Center | 0.95 |
| Town Centers | 0.54 |
| Neighborhood Commercial | 0.52 |

Source: E.D. Hovee & Company, LLC

A review of development trends in the Central City shows that most development incorporates floor area bonuses that exceed the base standards in the BLI, therefore no market factor is needed in the Central City.[13] The development capacity of industrial areas is not regulated by FARs so no factor is needed there. The Institutional campus capacity has been determined by the campus master plan process, so the market factor does not apply.

## EMPLOYMENT LAND SUPPLY

The employment development capacity is about 152 million square feet, which is distributed across the different employment geographies. The employment land supply is presented in three stages – the base supply (vacant and underutilized parcels), the constrained supply (capacity after constraint deductions), and the (final) adjusted market supply (Figure 24). Appendix C includes a more detailed analysis of the land supply with vacant and redevelopment capacity distributed by lot size.

[13] 2012 Central City Development Capacity Analysis

## Figure 24. Buildable Land Inventory by Employment Geography

| Employment Geography | Base Supply Bldg Sq Ft | Constrained Supply Bldg Sq Ft | Constrained Supply % of Base | Market Adjusted Supply Bldg Sq Ft | Market Adjusted Supply % of Base | Acres |
|---|---|---|---|---|---|---|
| Central City Commercial | 54,137,000 | 45,517,000 | 84% | 45,517,000 | 84% | 201 |
| Central City Industrial | 4,161,000 | 3,780,000 | 91% | 3,780,000 | 91% | 65 |
| Harbor & Airport Districts | 66,215,000 | 35,664,000 | 54% | 33,704,000 | 51% | 774 |
| Harbor Access Lands | 15,374,000 | 4,932,000 | 32% | 4,932,000 | 32% | 113 |
| Columbia East | 23,330,000 | 15,519,000 | 67% | 15,519,000 | 67% | 356 |
| Dispersed Employment | 8,906,000 | 5,287,000 | 59% | 5,287,000 | 59% | 121 |
| Gateway Regional Center | 12,588,000 | 8,992,000 | 71% | 5,483,000 | 44% | 137 |
| Town Centers | 25,875,000 | 22,644,000 | 88% | 7,485,000 | 29% | 304 |
| Neighborhood Centers & Corridors | 97,316,000 | 72,838,000 | 75% | 19,538,000 | 20% | 863 |
| Institutions | 10,676,000 | 10,676,000 | 100% | 10,676,000 | 100% | 306 |
| **Total** | **318,578,000** | **225,849,000** | **71%** | **151,921,000** | **48%** | **3,240** |
| **Aggregate Geography** | | | | | | |
| Central City | 58,298,000 | 49,297,000 | 85% | 49,297,000 | 85% | 266 |
| Industrial | 113,825,000 | 61,402,000 | 54% | 59,442,000 | 52% | 1,365 |
| Neighborhood Commercial | 135,779,000 | 104,474,000 | 77% | 32,506,000 | 24% | 1,303 |
| Institutions | 10,676,000 | 10,676,000 | 100% | 10,676,000 | 100% | 306 |
| **Total** | **318,578,000** | **225,849,000** | **71%** | **151,921,000** | **48%** | **3,240** |

Source: Bureau of Planning and Sustainability

The City of Portland has about 3,200 acres of buildable land. Approximately 68% of the development capacity is vacant land and 32% is underutilized, redevelopable land.

The Central City Commercial geography has a significant amount of zoned development capacity for employment uses – 54 million square feet. Various constraints reduce that capacity by 16% to 46 million square feet, the equivalent of 201 acres. The Central City Industrial geography is composed primarily of industrial zoned land, so there is less capacity – about 4.2 million square feet of base supply that constraints reduce by 9% to 3.8 million square feet, or 65 acres of buildable land.

The City of Portland's industrial areas have about 2,472 acres of vacant land and 135 acres of redevelopable land, but 48% of that capacity is constrained, leaving about 1,365 acres available for future employment growth. Harbor & Airport Districts has the bulk of this industrial capacity – 774 acres, and about 113 acres are located along the waterfront in the Harbor Access Lands. The Columbia East geography has 356 acres of capacity, and another 121 acres is scattered through the Dispersed Employment areas.

The neighborhood commercial areas outside the Central City have a tremendous amount of development capacity, even after accounting for mixed use residential development, totaling about 136 million square feet. Constraints reduce this capacity by 23%, but it is the market adjustment factor (based largely on patterns of development activity experienced in recent years) that reduces the capacity by another 53%. The net result is capacity for 33 million square feet, or 1,303 acres.

Institutional campuses have the potential for about 10.7 million square feet of development, or 306 acres of capacity.

## SHORT-TERM EMPLOYMENT LAND SUPPLY

The State of Oregon Administrative Rules also requires cities to assess the short-term land demand and supply. As defined in these rules, "engineering feasibility is sufficient to qualify land for the short term supply" and funding availability is not required. For the most part, the land within Portland has services available or proximate to the sites such that development is not dependent on major public infrastructure investments. The major short-term constraint will be brownfields, especially within the Portland Harbor Superfund area. Due to overlapping constraints with infrastructure deficiencies and natural resource protections, the overall impact to the land supply is relatively minor – about 360 acres of development capacity.

## Figure 25. Short-Term Land Supply

| | Building Square Feet | | | |
|---|---|---|---|---|
| Employment Geography | Base Supply | Constrained Supply | Adjusted Supply | Acres |
| Central City Commercial | 54,137,000 | 40,309,000 | 40,309,000 | 178 |
| Central City Industrial | 4,161,000 | 3,439,000 | 3,439,000 | 59 |
| Harbor & Airport Districts | 66,215,000 | 29,169,000 | 27,209,000 | 625 |
| Harbor Access Lands | 15,374,000 | 2,578,000 | 2,578,000 | 59 |
| Columbia East | 23,330,000 | 14,832,000 | 14,832,000 | 340 |
| Dispersed Employment | 11,434,000 | 6,907,000 | 6,907,000 | 105 |
| Gateway Regional Center | 12,588,000 | 7,965,000 | 4,456,000 | 111 |
| Town Centers | 25,875,000 | 21,685,000 | 7,095,000 | 288 |
| Neighborhood Centers & Corridors | 97,316,000 | 69,915,000 | 18,368,000 | 811 |
| Institutions | 9,045,000 | 7,048,000 | 7,048,000 | 306 |
| **Total** | **319,475,000** | **203,847,000** | **132,241,000** | **2,883** |
| | | | | |
| **Aggregate Geography** | | | | |
| Central City | 58,298,000 | 43,748,000 | 43,748,000 | 237 |
| Industrial | 116,353,000 | 53,486,000 | 51,526,000 | 1,129 |
| Neighborhood Commercial | 135,779,000 | 99,565,000 | 29,919,000 | 1,210 |
| Institutions | 9,045,000 | 7,048,000 | 7,048,000 | 306 |
| **Total** | **319,475,000** | **203,847,000** | **132,241,000** | **2,883** |

Source: E.D. Hovee & Company, LLC, and Bureau of Planning and Sustainability

## PARCEL SIZE ASSESSMENT

The parcel size assessment distributes the employment development capacity across the same range as demand assessment. This assessment does not include the Institutional campus geography because that capacity was calculated using master plan methodology. The industrial geographies only include parcels greater than 0.5 acres

As to be expected with a virtually land-locked, developed city, most of the development capacity is in smaller parcels. In fact, no vacant parcels greater than 100 acres are currently identified in the industrial geographies. About 51% of the Central City capacity and 30% of the Neighborhood Commercial capacity is tied up in small parcels that are less than one acre.

## Figure 26. Land Supply by Parcel Size (acres)

| | Existing Buildable Land Inventory by Parcel Size (acres) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **EOA Geographies** | **< 1** | **1 - 3** | **3 - 5** | **6 - 10** | **10-20** | **20-50** | **50-100** | **> 100** | **Total** | **Total >1** |
| Central City Commercial | 90 | 39 | 32 | 6 | 10 | 24 | 0 | 0 | 201 | 111 |
| Central City Industrial | 45 | 13 | 6 | 2 | 0 | 0 | 0 | 0 | 65 | 21 |
| Harbor & Airport Districts | 8 | 76 | 64 | 86 | 111 | 164 | 310 | 0 | 774 | 811 |
| Harbor Access Lands | 0 | 4 | 0 | 3 | 23 | 42 | 41 | 0 | 113 | 113 |
| Columbia East | 6 | 23 | 19 | 27 | 45 | 96 | 140 | 0 | 356 | 350 |
| Dispersed Employment | 7 | 22 | 19 | 2 | 6 | 21 | 45 | 0 | 121 | 114 |
| Gateway Regional Center | 14 | 61 | 33 | 14 | 15 | 0 | 0 | 0 | 137 | 123 |
| Town Centers | 153 | 88 | 35 | 21 | 5 | 2 | 0 | 0 | 304 | 151 |
| Neighb. Centers & Corridors | 227 | 218 | 101 | 59 | 91 | 96 | 71 | 0 | 863 | 636 |
| **Total** | **550** | **543** | **308** | **220** | **305** | **445** | **607** | **0** | **2,934** | **2,429** |
| **Aggregate Geographies** | | | | | | | | | | |
| Central City | 135 | 52 | 38 | 8 | 10 | 24 | 0 | 0 | 266 | 131 |
| Industrial | 21 | 125 | 102 | 118 | 185 | 324 | 536 | 0 | 1,365 | 1,388 |
| Neighborhood Commercial | 394 | 367 | 169 | 94 | 111 | 98 | 71 | 0 | 1,303 | 909 |
| **Total** | **550** | **543** | **308** | **220** | **305** | **445** | **607** | **0** | **2,934** | **2,429** |

* Industrial geography parcels smaller than 1/2 acre are not included in the total supply.

Source: Bureau of Planning and Sustainability

# IV. DEMAND & SUPPLY RECONCILIATION

As stipulated by Goal 9 (Economy of the State), the intent of the Economic Opportunities Analysis is to "compare the demand for industrial and other employment uses to the existing supply of such land." This section compares the demand for employment land from the employment forecast with the land supply from BLI to identify gaps or land needs to meet future employment growth.

## EMPLOYMENT LAND NEEDS

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.

Because calculations are made by employment geography, there may be an adequate land supply for some inventory categories, with deficits noted for others.

### Figure 27. Employment Land Needs

| Employment Geography | Added Jobs | Land Demand | Existing Supply | Surplus/ Deficit | % Capacity |
|---|---|---|---|---|---|
| Central City Commercial | 34,120 | 60 | 201 | 141 | 335% |
| Central City Industrial | 10,620 | 90 | 65 | **-25** | **72%** |
| Harbor & Airport Districts* | 16,050 | 1,013 | 774 | **-239** | **76%** |
| Harbor Access Lands* | 2,070 | 207/437 | 113 | **-94/-324** | **55%/26%** |
| Columbia East | 9,310 | 350 | 356 | 6 | 102% |
| Dispersed Employment | 4,200 | 130 | 121 | **-9** | **93%** |
| Gateway Regional Center | 3,970 | 50 | 137 | 87 | 274% |
| Town Centers | 6,160 | 130 | 304 | 174 | 234% |
| Neighborhood Centers & Corridors | 25,010 | 510 | 863 | 353 | 169% |
| Institutions | 22,730 | 370 | 306 | **-64** | **83%** |
| Residential | 7,400 | - | - | **-** | **-** |
| **Total** | **141,640** | **2,910/3,140** | **3,240** | | |
| **Aggregate Geography** | | | | | |
| Central City | 44,740 | 150 | 266 | 116 | 177% |
| Industrial* | 31,630 | 1,700/1,930 | 1,365 | **-335/-565** | **80%/71%** |
| Neighborhood Commercial | 35,140 | 690 | 1,303 | 613 | 189% |
| Institutions | 22,730 | 370 | 306 | **-64** | **83%** |
| Residential | 7,400 | - | - | - | - |
| **Total** | **141,640** | **2,910/3,140** | **3,240** | | |

* Total land demand shown here includes Traded Sector Support Facilities in marine, rail and air terminals. Harbor Access Lands demand is shown with two marine-terminal forecast scenarios (see Figure 17).

Source: Bureau of Planning and Sustainability

## Figure 28. 2010-2035 Parcel Size Assessment Reconciliation

| | Gross Acreage Land Need (2010-35) by Parcel Size | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **EOA Geographies** | **< 1** | **1 - 3** | **3 - 5** | **6 - 10** | **10-20** | **20-50** | **50-100** | **> 100** | **Total** | **Total >1** |
| Central City Commercial | 58 | 30 | 23 | -3 | 10 | 24 | 0 | 0 | 141 | 83 |
| Central City Industrial | -9 | -24 | 6 | 2 | 0 | 0 | 0 | 0 | -25 | -16 |
| Harbor & Airport Districts | -63 | -59 | -149 | -80 | -15 | 112 | 260 | -200 | -240 | -131 |
| Harbor Access Lands | -1 | -2 | -9 | -8 | 12 | -7 | -9 | -300 | -323 | -322 |
| Columbia East | -3 | -63 | -59 | -39 | -66 | 96 | 140 | 0 | 6 | 9 |
| Dispersed Employment | -31 | -4 | -4 | -22 | -15 | 21 | 45 | 0 | -9 | 22 |
| Gateway Regional Center | -4 | 48 | 22 | 5 | 15 | 0 | 0 | 0 | 87 | 90 |
| Town Centers | 69 | 42 | 35 | 21 | 5 | 2 | 0 | 0 | 174 | 105 |
| Neighb. Centers & Corridors | -50 | 141 | 10 | -5 | 91 | 96 | 71 | 0 | 353 | 402 |
| **Total** | **-34** | **111** | **-126** | **-129** | **37** | **344** | **507** | **-500** | **164** | **243** |
| **Aggregate Geographies** | | | | | | | | | | |
| Central City | 48 | 7 | 29 | -1 | 10 | 24 | 0 | 0 | 116 | 68 |
| Industrial | -98 | -127 | -221 | -149 | -84 | 222 | 436 | -500 | -565 | -422 |
| Neighborhood Commercial | 16 | 231 | 66 | 21 | 111 | 98 | 71 | 0 | 613 | 598 |
| **Total** | **-34** | **111** | **-126** | **-129** | **37** | **344** | **507** | **-500** | **164** | **243** |

Source: E.D. Hovee & Company, LLC, and Bureau of Planning and Sustainability

## OBSERVATIONS BY EMPLOYMENT GEOGRAPHY

These observations are based on an assessment of the overall capacity and demand to determine the land needs, as well as the range of parcel sizes. In cases where there is a shortfall, there may be a secondary analysis of the employment demand to determine the type of space/use that will be needed in the future.

**Central City Commercial**: The Central City Commercial areas have a surplus of capacity, even after accounting for mixed-use residential space, primarily due to the high FARs and continued availability of development sites in the Pearl and South Waterfront sub-districts.

**Central City Industrial**: The Central Eastside and Lower Albina districts have a strong demand for building space, especially for emerging small business that are seeking cheaper, Class B and C office space that account for about 49% of the employment growth. The existing buildable land supply only covers 72% of the demand. To effectively overcome the shortfall, additional capacity should be targeted to the specific demand opportunities of this "incubator" geography, particularly for Class B/C office and flex space development attractive to cost-conscious tenants. Additional development capacity could be provided through rezoning, such as to expand allowances for industrial office development, and/or incentives to leverage higher rates of redevelopment. These actions are discussed in the EOA Section 4 report.

**Harbor Access Lands**: This geography is the Portland Harbor industrial area, where sites generally have dock access to the deep-water navigation channel. This distinctive geography is the land area available for continuing growth of marine terminals and other marine industrial facilities at Portland Harbor. Two marine terminal growth scenarios are analyzed in this

geography to inform community choices. Under the low forecast scenario, the existing buildable land supply in the Harbor Access Lands geography meets 55% of forecast demand, leaving an estimated 94-acre shortfall in growth capacity to 2035. Under the mid-range forecast scenario, existing buildable land meets only 26% of forecast demand, resulting in a 324-acre shortfall. Options to meet these shortfalls involve policy tradeoffs addressing public spending priorities, environmental protection, neighborhood compatibility, economic development, transportation infrastructure, and equity, as described in the EOA Section 4 report.

**Harbor and Airport Districts**: The Harbor and Airport Districts contain more gross developable land (1,520 acres) than any other geography, though much of it is constrained by brownfield contamination, infrastructure deficiencies, and environmental protection regulations that reduce the effective supply to 774 acres. The Harbor and Airport Districts are also a distinctive geography with 24% of the land demand associated with traded-sector transportation support facilities for railroad and airport growth. The existing buildable land supply in this geography meets 76% of forecast demand, leaving an estimated 239-acre shortfall in 25-year growth capacity. Like Harbor Access Lands, options to meet these shortfalls involve policy tradeoffs as described in the EOA Section 4 report.

**Columbia East**: This industrial area has a minor surplus of 6 acres. There is a surplus of larger 20-50 acre and 50-100 acres sites, which is balanced by a deficit for some of the small to medium sized sites. Constraints, such as infrastructure deficiencies and brownfields, account for 33% of the base supply. If these constraints are partially remedied through public investment and incentives, additional surplus capacity could be available to meet comparable demand for warehouse and flex space development in the Harbor and Airport Districts.

**Dispersed Employment**: Forecast land demand for this relatively small employment geography results in a shortfall of 9 acres. Existing growth capacity meets approximately 93% of forecast demand. While this "business park" geography typically includes substantial landscaping and building amenities to attract office tenants, neighborhood compatibility concerns can limit options for expansion of this geography. Over two-thirds of forecast job growth and building area in the Dispersed Employment geography is for office sector businesses.

**Gateway Regional Center**: This geography has a surplus of 87 acres of development capacity, even after discounting the zoned capacity by 56% for constraint and market factors. The Gateway supply consists predominantly (55%) of smaller parcels of less than 3 acres, but this capacity is generally matched to the expected demand.

**Town Centers**: This mixed-use geography consists of the eight town centers. Five existing town centers are designated in Metro's 2040 Plan, and the Comprehensive Plan Update proposes additional town center designations in the Northwest District, Killingsworth/Interstate, and Midway (122nd/Division). Strong employment growth is forecast in this geography, driven particularly by the institutional space needs that account for 70% of forecast Town Centers demand. The forecast land needs for town centers is based on the five existing town centers, and has not been updated to match those currently proposed. However, the capacity needs of the Town Centers and Neighborhood Commercial geographies are interrelated and more than amply met in the 25-year planning horizon. Specifically, the existing buildable land inventory meets an

estimated 274% of forecast demand for town center land needs and 234% of the related neighborhood commercial land needs. Moreover, demand for town center densities may be more accurately estimated by the existing town centers. Also, the level of existing development and market trends in these town centers varies widely. In the 2000-2008 business cycle, for example, most of the town center job growth was in Hollywood, attributable primarily to medical office expansion from the nearby Providence hospital campus.

**Neighborhood Centers & Corridors**: Nearly 18% of citywide employment growth is allocated to this extensive geography, which drives a demand for over 510 acres of employment land. This geography also has a surplus of about 350 acres of capacity, even after discounting the zoned capacity for mixed use residential and market factors. As with the Town Centers geography, most of the Neighborhood Commercial capacity is in smaller, underutilized, redevelopable sites. To the extent that capacity shortages are not effectively addressed in other geographies (especially for commercial and institutional uses), some of the unmet demand might be shifted to this employment geography.

**Institutions**: The larger campus institutions have strong demand corresponding to 16% of the city's projected employment growth. The unused portion of development capacity under current master plans and zoning accounts for a significant amount of development capacity, but still leaves a shortfall of about 2.2 million square feet of development or about 64 acres.

## OTHER ISSUES

### *Short-Term Forecast and Land Needs*

The Metro regional forecast predicts a robust recovery from the national recession. Consequently, the City of Portland is expected to add 95,000 jobs or 67% of the forecasted employment growth between 2010 and 2020. If this predicted growth occurs, it will generate the demand for 1,950 acres of employment land. The traded-sector transportation facilities represent a longer term investment in the regional economy, so that land demand is not included in the short-term forecast, except for one currently proposed marine terminal. Fortunately, most of Portland's land supply is available for development in the short-term, with the exception of brownfields. The constraint and market factor analysis of the Buildable Land Inventory also removes 52% of the gross development capacity of vacant and underutilized land. The remaining market-effective supply is expected to be generally available as short-term supply with the exception of brownfields. Relatively diverse surplus capacity in the Columbia East geography can likely meet short-term land needs in the Harbor and Airport Districts, but additional efforts will be needed to meet short-term capacity shortfalls in the Central City Industrial, Dispersed Employment, and Harbor Access Lands geographies.

## Figure 29. 2010-2020 Short-Term Employment Land Needs

| Employment Geography | 2010-2020 Added Jobs | 2010-2020 Land Demand | Land Supply | Surplus/ Deficit |
|---|---|---|---|---|
| Central City Commercial | 22,600 | 40 | 178 | 138 |
| Central City Industrial | 7,560 | 75 | 59 | -15 |
| Harbor & Airport Districts | 12,660 | 659 | 625 | -35 |
| Harbor Access Lands | 1,630 | 118 | 59 | -59 |
| Columbia East | 6,980 | 279 | 340 | 62 |
| Dispersed Employment | 3,030 | 109 | 105 | -4 |
| Gateway Regional Center | 2,460 | 33 | 111 | 78 |
| Town Centers | 3,860 | 86 | 288 | 202 |
| Neighborhood Centers & Corridors | 16,280 | 362 | 811 | 449 |
| Institutions | 13,440 | 224 | 306 | 82 |
| Residential | 4,110 | NA | NA | NA |
| **Total** | **94,610** | **1,985** | **2,883** | **898** |

Source: E.D. Hovee & Company, LLC, and Bureau of Planning and Sustainability
Note: Harbor and Airport Districts demand does not include land for traded-sector support facilities.

### *Lot Size Assessment*

The reconciliation of the lot size assessment varies widely, but overall about 53% of the demand is for parcels of less than 6 acres while 48% of the supply consists of small parcels less than 6 acres. Each of the employment geographies with a capacity shortfall has a different need for lot sizes.

In the Central City Industrial geography, the need is for small parcels of less than 3 acres, which matches the supply, but there is not enough overall capacity. The Harbor and Airport Districts and Harbor Access Lands are unique in that there is a need for smaller parcels of less than 20 acres with a small surplus of medium sized parcels of 20-100 acres, but large (550 acres) demand for 100+ acre sites, primarily for marine terminal and rail yard development. Columbia East and Dispersed Employment have a similar pattern of a need for small parcels with slight surpluses in the medium sized parcels. The town centers have a need for small parcels. Overall, there is a lot of surplus capacity of small parcels in the Neighborhood Commercial geography that could provide some relief for the smaller, incubator businesses and services forecasted for the other geographies.

Portland's land supply of larger sites will tighten over the long term as a land-locked city, and other jurisdictions in the metropolitan area can generally be expected to address that regional demand. Land-assembly and site-assistance efforts also provide opportunities to meet location-specialized demand in Portland, such as freight terminal expansion.

# APPENDIX A. EMPLOYMENT FORECAST DETAILS

The tables in this appendix provide detail on five forecast elements:

- Metro's forecast, the basis of the Portland forecast;
- 2008 City employment share, and the decreasing share trend employed in the low and mid forecasts;
- The allocation of jobs to building types (consistent across scenarios)
- Square foot per employee assumptions (consistent across scenarios)
- Floor Area Ratios (varies across scenarios)

## Figure 30. Metro's Seven County PMSA Forecast: Total Jobs by 2035

| NAICS | Employment Sector | Actual QCEW 2010 | 7-County PMSA Forecast Employment 2015 | 2020 | 2025 | 2030 | 2035 | Job Change 2010-35 | % of Growth 2010-35 |
|---|---|---|---|---|---|---|---|---|---|
| 11 & 21 | Agriculture & Mining | 1,100 | 1,530 | 1,400 | 1,320 | 1,250 | 1,200 | 100 | 0.3% |
| 23 | Construction | 43,620 | 61,550 | 65,010 | 69,010 | 74,060 | 79,930 | 36,310 | 2.5% |
| 31-33 | Manufacturing | ###### | 117,100 | 119,740 | 121,040 | 122,360 | 123,890 | 17,431 | 0.6% |
| 42 | Wholesale Trade | 52,961 | 61,130 | 66,600 | 71,600 | 76,800 | 81,880 | 28,919 | 1.8% |
| 44-45 | Retail Trade | ###### | 113,200 | 114,820 | 118,270 | 123,490 | 129,200 | 28,597 | 1.0% |
| 22, 48-49 | Transportation, Warehousing & Utilities | 32,051 | 43,090 | 47,140 | 50,180 | 53,580 | 57,300 | 25,249 | 2.4% |
| 51 | Information | 22,426 | 24,560 | 27,930 | 31,470 | 35,250 | 38,740 | 16,314 | 2.2% |
| 52 | Finance | 39,322 | 49,170 | 53,710 | 58,110 | 62,370 | 67,740 | 28,418 | 2.2% |
| 53 | Real Estate | 15,940 | 27,160 | 29,800 | 32,210 | 34,700 | 37,300 | 21,360 | 3.5% |
| 54 | Professional Services | 51,937 | 59,540 | 67,390 | 74,590 | 82,340 | 90,650 | 38,713 | 2.3% |
| 55 | Management | 23,067 | 24,960 | 28,700 | 32,590 | 37,140 | 42,260 | 19,193 | 2.5% |
| 56 | Administrative & Waste Services | 51,601 | 68,100 | 75,430 | 82,280 | 88,790 | 95,140 | 43,539 | 2.5% |
| 61 | Educational Services | 19,718 | 24,960 | 28,350 | 31,630 | 34,870 | 38,490 | 18,772 | 2.7% |
| 62 | Health & Social Services | ###### | 127,390 | 150,540 | 170,610 | 192,050 | 214,710 | 100,849 | 2.6% |
| 71 | Arts, Entertainment & Recreation | 13,571 | 14,240 | 16,030 | 17,700 | 19,260 | 20,690 | 7,119 | 1.7% |
| 72 | Accommodation & Food Services | 80,675 | 89,630 | 98,440 | 106,410 | 114,550 | 122,990 | 42,315 | 1.7% |
| 81 | Other Services | 39,254 | 40,920 | 47,660 | 53,740 | 59,760 | 65,240 | 25,986 | 2.1% |
| 92 | Government (Civilian) | ###### | 142,570 | 150,950 | 159,400 | 167,560 | 179,590 | 38,060 | 1.0% |
| Total Employment | | ###### | ######## | ######## | ######## | ######## | ######## | **537,244** | **1.8%** |

Notes: QCEW is the Quarterly Census of Employment and Wages, Oregon Employment Department (OED).
All Metro gamma forecast numbers rounded to nearest ten employees.
2010 are Metro modeled forecast outcomes.
AAGR denotes annual average growth rate (compounded).

Source: Metro 2012 Adopted Forecast.

## Figure 31. City Share of PMSA Employment: 2008 and Projected

| | | Portland as Share of Metro Area | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Actual Jobs | | Forecast City of Portland Employment | | | | |
| NAICS | Employment Sector | 2008 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 |
| 11 & 21 | Agriculture & Mining | 1.5% | 35.6% | 35.2% | 34.3% | 33.0% | 31.4% | 29.4% |
| 23 | Construction | 30.9% | 32.6% | 32.2% | 31.4% | 30.2% | 28.7% | 26.9% |
| 31-33 | Manufacturing | 24.7% | 23.5% | 23.2% | 22.6% | 21.8% | 20.7% | 19.4% |
| 42 | Wholesale Trade | 35.4% | 34.0% | 33.6% | 32.7% | 31.5% | 30.0% | 28.1% |
| 44-45 | Retail Trade | 30.6% | 30.9% | 30.5% | 29.7% | 28.6% | 27.2% | 25.5% |
| 22, 48-49 | Transportation, Warehousing & Utilities | 72.7% | 73.9% | 73.0% | 71.1% | 68.5% | 65.1% | 61.0% |
| 51 | Information | 46.4% | 43.0% | 42.5% | 41.4% | 39.9% | 37.9% | 35.5% |
| 52 | Finance | 44.7% | 43.4% | 42.8% | 41.8% | 40.2% | 38.2% | 35.8% |
| 53 | Real Estate | 47.7% | 49.8% | 49.2% | 48.0% | 46.2% | 43.9% | 41.2% |
| 54 | Professional Services | 50.6% | 51.9% | 51.2% | 50.0% | 48.1% | 45.7% | 42.9% |
| 55 | Management | 60.4% | 62.1% | 61.3% | 59.8% | 57.6% | 54.7% | 51.3% |
| 56 | Administrative & Waste Services | 37.9% | 35.8% | 35.3% | 34.4% | 33.1% | 31.5% | 29.5% |
| 61 | Educational Services* | 194.2% | 192.4% | 190.0% | 185.3% | 178.4% | 169.5% | 159.0% |
| 62 | Health & Social Services | 45.2% | 44.5% | 43.9% | 42.8% | 41.2% | 39.2% | 36.7% |
| 71 | Arts, Entertainment & Recreation | 43.6% | 49.7% | 49.1% | 47.8% | 46.1% | 43.8% | 41.0% |
| 72 | Accomodation & Food Services | 42.2% | 43.5% | 43.0% | 41.9% | 40.3% | 38.3% | 36.0% |
| 81 | Other Services | 43.1% | 42.8% | 42.3% | 41.2% | 39.7% | 37.7% | 35.4% |
| 92 | Government (Civilian)* | 12.5% | 11.0% | 10.8% | 10.5% | 10.2% | 9.6% | 9.0% |
| **Total** | | **38.3%** | **38.9%** | **39.4%** | **39.0%** | **37.9%** | **36.4%** | **34.4%** |

Notes: * Metro public education re-allocated to educational services to match OED.
All Metro gamma forecast numbers rounded to nearest ten employees.
2010 are Metro modeled forecast outcomes.
AAGR denotes annual average growth rate (compounded).
Source: Metro, Oregon Employment Department, and E. D. Hovee & Company, LLC.

## Figure 32. City of Portland Employment Forecast by Sector

| NAICS | Employment Sector | Jobs within City of Portland: QCEW 2010 | Forecast Employment by Year: 2015 | 2020 | 2025 | 2030 | 2035 | Job Change 2010-35 | Avg Rate of Growth 2010-35 |
|---|---|---|---|---|---|---|---|---|---|
| 11 & 21 | Agriculture & Mining | 392 | 538 | 480 | 436 | 392 | 353 | (39) | -0.4% |
| 23 | Construction | 14,224 | 19,821 | 20,416 | 20,864 | 21,279 | 21,539 | 7,315 | 1.7% |
| 31-33 | Manufacturing | 25,035 | 27,195 | 27,118 | 26,391 | 25,353 | 24,076 | (959) | -0.2% |
| 42 | Wholesale Trade | 18,009 | 20,529 | 21,810 | 22,574 | 23,010 | 23,009 | 5,000 | 1.0% |
| 44-45 | Retail Trade | 31,060 | 34,515 | 34,139 | 33,855 | 33,593 | 32,963 | 1,903 | 0.2% |
| 22, 48-49 | Transportation, Warehousing & Utilities | 23,676 | 31,435 | 33,535 | 34,368 | 34,873 | 34,978 | 11,302 | 1.6% |
| 51 | Information | 9,640 | 10,426 | 11,562 | 12,542 | 13,351 | 13,761 | 4,121 | 1.4% |
| 52 | Finance | 17,048 | 21,053 | 22,425 | 23,358 | 23,825 | 24,270 | 7,222 | 1.4% |
| 53 | Real Estate | 7,946 | 13,371 | 14,306 | 14,887 | 15,241 | 15,366 | 7,420 | 2.7% |
| 54 | Professional Services | 26,943 | 30,504 | 33,668 | 35,876 | 37,636 | 38,861 | 11,918 | 1.5% |
| 55 | Management | 14,322 | 15,305 | 17,161 | 18,761 | 20,318 | 21,683 | 7,361 | 1.7% |
| 56 | Administrative & Waste Services | 18,449 | 24,045 | 25,972 | 27,275 | 27,971 | 28,110 | 9,661 | 1.7% |
| 61 | Educational Services | 37,937 | 47,426 | 52,529 | 56,423 | 59,112 | 61,196 | 23,259 | 1.9% |
| 62 | Health & Social Services | 50,616 | 55,927 | 64,448 | 70,319 | 75,223 | 78,876 | 28,260 | 1.8% |
| 71 | Arts, Entertainment & Recreation | 6,741 | 6,985 | 7,668 | 8,152 | 8,429 | 8,493 | 1,752 | 0.9% |
| 72 | Accomodation & Food Services | 35,102 | 38,514 | 41,249 | 42,927 | 43,915 | 44,222 | 9,120 | 0.9% |
| 81 | Other Services | 16,802 | 17,298 | 19,646 | 21,327 | 22,538 | 23,076 | 6,274 | 1.3% |
| 92 | Government (Civilian) | 15,498 | 15,418 | 15,919 | 16,183 | 16,167 | 16,251 | 753 | 0.2% |
| **Total Employment** | | **369,440** | **430,306** | **464,052** | **486,518** | **502,226** | **511,083** | **141,643** | **1.3%** |
| City Share of Portland Metro Employment | | 38.9% | 39.4% | 39.0% | 37.9% | 36.4% | 34.4% | **26.4%** | |

Source: E. D. Hovee & Company, LLC based on Metro projection and City/Metro forecast 2035 allocation.

## Figure 33. Employment to Building Types

| NAICS | Employment Sector | General Industrial | Warehouse | Flex/BP | Office | Retail | Institution |
|---|---|---|---|---|---|---|---|
| 11 & 21 | Ag, Mining | 3% | 3% | 3% | 72% | 18% | - |
| 23 | Construction | 41% | - | 14% | 28% | 17% | - |
| 31-33 | Manufacturing | 76% | - | 11% | 5% | 8% | - |
| 42 | Wholesale | - | 65% | 13% | 13% | 9% | - |
| 44-45 | Retail | - | - | - | - | 100% | - |
| 22, 48-49 | Transport, Warehouse & Utilities | - | 55% | 11% | 31% | 3% | - |
| 51 | Information | - | - | 35% | 45% | 20% | - |
| 52 | Finance | - | - | 5% | 88% | 7% | - |
| 53 | Real Estate | - | - | 24% | 67% | 8% | - |
| 54 | Professional Services | - | - | 3% | 91% | 6% | - |
| 55 | Management | - | - | - | 100% | - | - |
| 56 | Admin, Waste | - | - | 31% | 57% | 12% | - |
| 61 | Education | - | - | - | 10% | 5% | 85% |
| 62 | Health & Social Services | - | - | - | 15% | 15% | 70% |
| 71 | Arts, Entertainment, Recreation | - | - | - | 79% | 21% | - |
| 72 | Accommodation & Food Service | - | - | - | 45% | 55% | - |
| 81 | Other Services | - | - | - | 34% | 66% | - |
| 92 | Government | - | - | - | 87% | 13% | - |

Source: Metro, BPS, and E. D. Hovee & Company, LLC.

## Figure 34. Net Job Growth by Building Type & Employment Geography (2010-35)

| Employment Geography | General Industrial | Warehouse | Flex/BP | Office | Retail | Institution | Total |
|---|---|---|---|---|---|---|---|
| Central City Commercial | (178) | 134 | 2,150 | 22,272 | 6,015 | 3,731 | 34,124 |
| Central City Industrial | 516 | 995 | 1,026 | 5,222 | 1,479 | 1,379 | 10,617 |
| Harbor & Airport Districts | 347 | 5,296 | 2,357 | 6,044 | 1,745 | 256 | 16,046 |
| Harbor Access Lands | 173 | 477 | 477 | 733 | 157 | 58 | 2,074 |
| Columbia East | 765 | 1,825 | 1,191 | 3,618 | 1,535 | 373 | 9,308 |
| Dispersed Employment | 561 | (12) | 659 | 3,129 | (280) | 143 | 4,200 |
| Gateway Regional Center | 16 | (29) | 19 | 1,062 | 920 | 1,983 | 3,970 |
| Town Centers | 54 | (4) | 124 | 1,328 | 932 | 3,725 | 6,160 |
| Neighb. Centers and Corridors | 106 | 497 | 1,520 | 10,372 | 7,591 | 4,924 | 25,011 |
| Residential | (105) | 266 | 303 | 2,184 | 550 | 4,205 | 7,403 |
| Institutions | (0) | 11 | 5 | 1,927 | 2,013 | 18,775 | 22,730 |
| **Total** | **2,255** | **9,457** | **9,831** | **57,892** | **22,657** | **39,552** | **141,643** |
| **Aggregate Geography** | | | | | | | |
| Central City | (178) | 134 | 2,150 | 22,272 | 6,015 | 3,731 | 34,124 |
| Industrial | 1,846 | 7,587 | 4,684 | 13,524 | 3,157 | 830 | 31,628 |
| Incubator | 516 | 995 | 1,026 | 5,222 | 1,479 | 1,379 | 10,617 |
| Neighborhoods | 70 | 731 | 1,966 | 14,947 | 9,993 | 14,837 | 42,544 |
| Institutions | (0) | 11 | 5 | 1,927 | 2,013 | 18,775 | 22,730 |
| **Total** | **2,255** | **9,457** | **9,831** | **57,892** | **22,657** | **39,552** | **141,643** |

Source: Metro, BPS, and E. D. Hovee & Company, LLC.

Note: Figures exclude employment allocated to non-employment geographies including areas designated for residential and open space use.

## Figure 35. Square Feet per Employee

| Employment Geography | General Industrial | Warehouse | Flex/BP | Office | Retail | Institution |
|---|---|---|---|---|---|---|
| Central City Commercial | 350 | 350 | 350 | 350 | 470 | 600 |
| Central City Industrial | 926 | 780 | 599 | 350 | 470 | 600 |
| Harbor & Airport Districts | 926 | 1,263 | 769 | 350 | 470 | 600 |
| Harbor Access Lands | 926 | 1,263 | 769 | 350 | 470 | 600 |
| Columbia East | 926 | 1,263 | 769 | 350 | 470 | 600 |
| Dispersed Employment | 926 | 1,263 | 769 | 350 | 470 | 600 |
| Gateway Regional Center | 350 | 350 | 350 | 350 | 470 | 600 |
| Town Centers | 350 | 350 | 350 | 350 | 470 | 600 |
| Neighborhood Centers and Corridors | 926 | 780 | 599 | 350 | 470 | 600 |
| Residential | 926 | 780 | 599 | 350 | 470 | 600 |
| Institutions | 350 | 350 | 599 | 350 | 470 | 600 |
| *Notes* | *Atlas + acts like office in urban geogs* | *Atlas + acts like office in urban geogs* | *Atlas + acts like office in urban geogs* | *Industry standard range: 250-350* | *Industry standard assumption* | *Metro assumption* |

Sources: Metro, Portland Bureau of Planning & Sustainability, and E. D. Hovee & Company, LLC.

## Figure 36. Floor Area Ratios

**2010 Base Floor Area Ratios (FARs)**

| Employment Geography | General Industrial | Warehouse | Flex/BP | Office | Retail | Institution |
|---|---|---|---|---|---|---|
| Central City Commercial | 5.00 | 5.00 | 5.00 | 7.00 | 3.00 | 5.00 |
| Central City Industrial | 1.00 | 1.00 | 2.00 | 2.00 | 0.50 | 2.00 |
| Harbor & Airport Districts | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| Harbor Access Lands | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| Columbia East | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Dispersed Employment | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| Gateway Regional Center | 0.60 | 0.60 | 1.50 | 1.50 | 0.35 | 1.50 |
| Town Centers | 0.50 | 0.50 | 0.50 | 0.60 | 0.30 | 0.60 |
| Neighb. Centers and Corridors | 0.30 | 0.25 | 0.30 | 0.60 | 0.50 | 0.60 |
| Residential | 0.40 | 0.40 | 0.40 | 0.55 | 0.40 | 0.55 |
| Institutions | 0.50 | 0.50 | 0.50 | 0.80 | 0.50 | 0.80 |

**2035 Floor Area Ratios (FARs)**

| Employment Geography | General Industrial | Warehouse | Flex/BP | Office | Retail | Institution |
|---|---|---|---|---|---|---|
| Central City Commercial | 5.79 | 5.79 | 5.79 | 9.38 | 3.47 | 5.79 |
| Central City Industrial | 1.16 | 1.16 | 2.32 | 2.68 | 0.58 | 2.32 |
| Harbor & Airport Districts | 0.35 | 0.35 | 0.35 | 0.41 | 0.35 | 0.35 |
| Harbor Access Lands | 0.40 | 0.40 | 0.40 | 0.46 | 0.40 | 0.40 |
| Columbia East | 0.40 | 0.40 | 0.40 | 0.46 | 0.40 | 0.40 |
| Dispersed Employment | 0.35 | 0.35 | 0.35 | 0.41 | 0.35 | 0.35 |
| Gateway Regional Center | 0.69 | 0.69 | 1.74 | 2.01 | 0.41 | 1.74 |
| Town Centers | 0.58 | 0.58 | 0.58 | 0.80 | 0.35 | 0.69 |
| Neighb. Centers and Corridors | 0.35 | 0.29 | 0.35 | 0.80 | 0.58 | 0.69 |
| Residential | 0.46 | 0.46 | 0.46 | 0.74 | 0.46 | 0.64 |
| Institutions | 0.58 | 0.58 | 0.58 | 1.07 | 0.58 | 0.93 |

Source: Metro, Portland Bureau of Planning & Sustainability, and E. D. Hovee & Company, LLC.

## Figure 37. Estimated 2010-2035 Land Need for Airport Facilities

| Facility | Airport Futures Need | Acres | Job Trend Demand Acres | Additional Land Demand for Airport Facilities |
|---|---|---|---|---|
| **Air Transportation & Terminal Services** | | **52** | **136** | **-84** |
| Customer Parking | 11,372 spaces | 16 | | |
| Employee Parking | 556 spaces | 6 | | |
| RON Aircraft Parking | 23 acres | 23 | | |
| Airport Maintenance | 2 acres | 2 | | |
| Airport Fire & Rescue | 3 acres | 3 | | |
| Aircraft Fuel Storage | 2 acres | 2 | | |
| **Rental Car Agencies** | | **21** | **11** | **10** |
| Rental Car Ready/Return | 1219 spaces | 12 | | |
| Rental Car Service | 9.2 acres | 9 | | |
| **General Aviation** | 20 acres | **20** | **0.2** | **20** |
| **Air Cargo Couriers** | | **113** | **18** | **95** |
| Air Cargo Warehouse | 613,000 s.f. | 14 | | |
| Air Cargo Landside | 1,005,000 s.f. | 23 | | |
| Air Cargo Ramp | 369,000 s.y. | 76 | | |
| **Other Airport Employers** | | | **4** | **-4** |
| **Total** | | **207** | **169** | **37** |

Source: Bureau of Planning and Sustainability

# APPENDIX B. CONSTRAINED LANDS DEVELOPMENT RATES

The constraint analysis considered the impact of different characteristics that are grouped into seven broad categories and mapped according to the BLI.

## Figure 38. BLI Constraints

**Infrastructure**

*Transportation*
2008 Volume to Capacity Ratios
Streets Connectivity Standards
ODOT Highway Interchanges
Improved and Unimproved Streets
Pedestrian System
*Water Service*
Water Deficient Service Areas
*Sewer Service*
Infrastructure Constrained Areas: Sewer
*Stormwater*
Stormwater System
Depth to Seasonal High Water
Soil Infiltration Capability
Wellfield Protection Areas

**Environmental**

Wetlands
Environmental Conservation Overlay Zones
All slopes over 25%
FEMA 100-Year Floodplain Map

**Brownfields**

DEQ Environmental Cleanup Sites I (ECSI)
DEQ Confirmed Release Sites (CRL)
DEQ Underground Storage Tank Cleanup Sites (UST)

**Greenway**

Willamette Greenway Setback

**Low**

Scenic Area View Corridors
Historic and Conservation Districts
Archaeological Areas

**Historic**

Historic and Conservation Landmarks

**Full**

OS Comprehensive Plan Map Designation
Environmental Protection Zones
FEMA Floodway Map
Beds and banks of navigable waterways
Public rights-of-way
Land within the City but outside the Urban Growth Boundary

Source: Bureau of Planning and Sustainability

A discount factor is determined to reflect the degree of impact each constraint has on development. The first step is characterizing the constraint as high, medium, or low based on consultation with the City of Portland's development review staff at the Bureaus of Development Services, Transportation, Water, and Environmental Services. Then the factor is adjusted based on a review of development rates of various constrained sites compared to unconstrained sites for the 1999-2011 period. This analysis included both the rate of development (avoidance) as well as the overall amount of development to determine the level of constraint by type of constraint and by geographic area.

## Figure 39. Development Rate Calculations by Constraint Type and Aggregated Geography

| | 1999-2011 Land Development Rate | Development Rate as % of Unconstrained | 1999-2011 FAR | 1999-2011 FAR % of Unconstrained | 2010-2035 Composite Rate | Jun 2011 BLI Constraint | Adjusted Constraint | Comments |
|---|---|---|---|---|---|---|---|---|
| **Environmental** (Wetlands, C zones, Floodplain, Slopes) | | | | | | | | |
| Central City | 5.1% | 31.1% | 1.02 | 44.1% | 13.7% | 55% | 75% | |
| Industrial | 20.6% | 40.8% | 0.15 | 47.4% | 19.4% | 55% | 50% | |
| Commercial | 18.0% | 38.5% | 0.28 | 71.0% | 27.4% | 55% | 35% | |
| **Infrastructure** | | | | | | | | |
| Central City | 9.2% | 55.4% | 0.36 | 15.7% | 8.7% | 85% | 75% | |
| Industrial | 14.1% | 27.8% | 0.17 | 53.5% | 14.9% | 85% | 75% | |
| Commercial | 20.8% | 44.5% | 0.21 | 52.4% | 23.3% | 85% | 75% | |
| **Brownfields** | | | | | | | | |
| Central City | 39.0% | 100.0% | 2.14 | 92.1% | 92.1% | 85% | 90% | |
| Industrial | 31.3% | 61.8% | 0.20 | 62.9% | 38.9% | 85% | 40% | |
| Commercial | 48.8% | 100.0% | 0.19 | 47.9% | 47.9% | 85% | 50% | |
| **Historic Landmarks** | | | | | | | | |
| Central City | 17.6% | 100.0% | 4.32 | 186.3% | 186.3% | 55% | 55% | Too few cases |
| Industrial | 0.0% | 0.0% | 0.00 | 0.0% | 0.0% | 55% | 55% | |
| Commercial | 100.0% | 100.0% | 0.39 | 100.1% | 100.1% | 55% | 55% | |
| **Low** (Historic Districts, View Corridors) | | | | | | | | |
| Central City | 4.5% | 27.2% | 0.69 | 29.6% | 8.1% | 85% | 85% | Too few cases |
| Industrial | 0.0% | 0.0% | 0.00 | 0.0% | 0.0% | 85% | 85% | |
| Commercial | 32.4% | 69.6% | 0.76 | 192.6% | 134.0% | 85% | 85% | |
| **Greenway** | | | | | | | | |
| Central City | 11.0% | 66.5% | 1.81 | 78.1% | 51.9% | 55% | 75% | |
| Industrial | 30.1% | 59.6% | 0.23 | 72.1% | 42.9% | 55% | 50% | |
| Commercial | 4.7% | 10.1% | 0.82 | 207.9% | 21.0% | 55% | 55% | |
| **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% | | | |

Source: E.D. Hovee & Company, LLC and Bureau of Planning and Sustainability

# APPENDIX C. BUILDABLE LAND INVENTORY TABLES

Detailed tables of the Buildable Land Inventory, March 9, 2015, are provided in the following pages.

The net building square footage is the total building square footage allowed under current comprehensive plan designations less existing building square footage.

In the industrial geographies, vacant land and underutilized parcels smaller than 0.5 acres are not included. Vacant land supply in the Harbor and Airport Districts excludes 45 acres of land held as long-term aviation reserve that exceeds forecast airport land demand.

Institutional campus capacity is based on approved master plans, although vacant and underutilized parcels are reported.

## Figure 40. Existing Buildable Land Inventory – Net Building Square Footage (part 1)

| | Less than .5 acres | | | .5 to 1 acre | | | 1 to 3 acres | | | 3 to 5 acres | | | 6 to 10 acres | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Employment Geography | Before Constraints | After Constraints | After Market Adjustment | Before Constraints | After Constraints | After Market Adjustment | Before Constraints | After Constraints | After Market Adjustment | Before Constraints | After Constraints | After Market Adjustment | Before Constraints | After Constraints | After Market Adjustment |
| **Central City Commercial** | 7,458,954 | 7,168,395 | 7,168,395 | 15,082,741 | 13,262,744 | 13,262,744 | 10,562,071 | 8,838,975 | 8,838,975 | 8,043,441 | 7,165,619 | 7,165,619 | 1,467,324 | 1,466,445 | 1,466,445 |
| Vacant | 5,024,102 | 4,831,410 | 4,831,410 | 9,613,958 | 8,300,630 | 8,300,630 | 6,776,999 | 5,754,933 | 5,754,933 | 5,729,395 | 5,232,750 | 5,232,750 | 1,467,324 | 1,466,445 | 1,466,445 |
| Redevelopment | 2,434,852 | 2,336,985 | 2,336,985 | 5,468,783 | 4,962,114 | 4,962,114 | 3,785,072 | 3,084,042 | 3,084,042 | 2,314,045 | 1,932,868 | 1,932,868 | 0 | 0 | 0 |
| **Central City Industrial** | 869,924 | 813,310 | 813,310 | 1,935,945 | 1,768,046 | 1,768,046 | 779,761 | 735,157 | 735,157 | 418,253 | 355,991 | 355,991 | 156,725 | 107,390 | 107,390 |
| Vacant | 517,375 | 481,089 | 481,089 | 1,588,023 | 1,443,271 | 1,443,271 | 669,450 | 624,846 | 624,846 | 377,287 | 318,407 | 318,407 | 71,119 | 37,267 | 37,267 |
| Redevelopment | 352,549 | 332,221 | 332,221 | 347,922 | 324,775 | 324,775 | 110,310 | 110,310 | 110,310 | 40,965 | 37,584 | 37,584 | 85,606 | 70,123 | 70,123 |
| **Columbia East** | 68,322 | 48,329 | 48,329 | 433,726 | 273,239 | 273,239 | 1,733,500 | 994,145 | 994,145 | 1,276,242 | 813,788 | 813,788 | 1,688,867 | 1,185,501 | 1,185,501 |
| Vacant | 68,322 | 48,329 | 48,329 | 433,726 | 273,239 | 273,239 | 1,696,117 | 980,738 | 980,738 | 1,222,732 | 760,279 | 760,279 | 1,631,745 | 1,128,378 | 1,128,378 |
| Redevelopment | 0 | 0 | 0 | 0 | 0 | 0 | 37,383 | 13,408 | 13,408 | 53,510 | 53,510 | 53,510 | 57,122 | 57,122 | 57,122 |
| **Dispersed Employment** | 574,417 | 486,760 | 486,760 | 392,721 | 302,229 | 302,229 | 1,058,976 | 964,494 | 964,494 | 1,243,260 | 815,384 | 815,384 | 87,417 | 68,362 | 68,362 |
| Vacant | 411,765 | 341,904 | 341,904 | 278,923 | 199,532 | 199,532 | 673,107 | 619,556 | 619,556 | 891,055 | 557,954 | 557,954 | 77,736 | 58,680 | 58,680 |
| Redevelopment | 162,653 | 144,856 | 144,856 | 113,798 | 102,697 | 102,697 | 385,869 | 344,938 | 344,938 | 352,205 | 257,430 | 257,430 | 9,681 | 9,681 | 9,681 |
| **Harbor Access Lands** | 15,401 | 4,121 | 4,121 | 58,769 | 19,678 | 19,678 | 792,719 | 159,444 | 159,444 | 0 | 0 | 0 | 712,955 | 137,162 | 137,162 |
| Vacant | 15,401 | 4,121 | 4,121 | 58,769 | 19,678 | 19,678 | 792,719 | 159,444 | 159,444 | 0 | 0 | 0 | 712,955 | 137,162 | 137,162 |
| Redevelopment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Harbor & Airport Districts** | 322,017 | 222,379 | 222,379 | 546,823 | 333,418 | 333,418 | 5,305,626 | 3,305,611 | 3,305,611 | 4,200,872 | 2,795,405 | 2,795,405 | 6,116,175 | 3,733,979 | 3,733,979 |
| Vacant | 296,115 | 203,042 | 203,042 | 471,523 | 287,332 | 287,332 | 4,356,793 | 2,491,811 | 2,491,811 | 3,460,304 | 2,137,397 | 2,137,397 | 6,116,175 | 3,733,979 | 3,733,979 |
| Redevelopment | 25,902 | 19,338 | 19,338 | 75,300 | 46,086 | 46,086 | 948,833 | 813,800 | 813,800 | 740,568 | 658,007 | 658,007 | 0 | 0 | 0 |
| **Institutions** | 115,142 | 98,993 | 98,993 | 185,281 | 150,267 | 150,267 | 547,201 | 501,121 | 501,121 | 211,523 | 211,523 | 211,523 | 413,929 | 408,680 | 408,680 |
| Vacant | 27,763 | 24,876 | 24,876 | 70,722 | 50,512 | 50,512 | 82,478 | 79,853 | 79,853 | 0 | 0 | 0 | 73,174 | 67,925 | 67,925 |
| Redevelopment | 87,379 | 74,117 | 74,117 | 114,559 | 99,755 | 99,755 | 464,723 | 421,268 | 421,268 | 211,523 | 211,523 | 211,523 | 340,754 | 340,754 | 340,754 |
| **Neighb. Centers & Corridors** | 8,369,894 | 7,377,669 | 2,529,903 | 10,486,461 | 9,013,718 | 2,604,137 | 24,239,252 | 20,999,875 | 4,940,778 | 11,458,184 | 9,500,028 | 2,289,372 | 6,910,433 | 5,622,587 | 1,345,485 |
| Vacant | 2,207,670 | 1,893,701 | 941,703 | 2,404,360 | 2,053,136 | 868,822 | 4,930,012 | 3,906,226 | 1,345,207 | 2,784,657 | 2,373,626 | 899,379 | 2,257,363 | 1,703,804 | 578,799 |
| Redevelopment | 6,162,224 | 5,483,968 | 1,588,199 | 8,082,102 | 6,960,582 | 1,735,315 | 19,309,240 | 17,093,649 | 3,595,571 | 8,673,528 | 7,126,402 | 1,389,993 | 4,653,070 | 3,918,782 | 766,686 |
| **Gateway Regional Center** | 424,413 | 345,002 | 209,110 | 634,386 | 516,248 | 360,687 | 4,840,996 | 4,064,126 | 2,436,215 | 3,537,351 | 2,476,419 | 1,311,382 | 1,641,898 | 875,837 | 572,277 |
| Vacant | 195,649 | 177,630 | 115,674 | 296,577 | 233,587 | 202,328 | 1,784,821 | 1,319,622 | 888,452 | 1,490,073 | 994,080 | 656,292 | 115,187 | 81,550 | 57,594 |
| Redevelopment | 228,764 | 167,371 | 93,437 | 337,809 | 282,662 | 158,359 | 3,056,175 | 2,744,505 | 1,547,763 | 2,047,279 | 1,482,339 | 655,090 | 1,526,711 | 794,287 | 514,683 |
| **Town Centers** | 4,250,089 | 3,889,602 | 1,779,372 | 5,302,560 | 4,845,755 | 1,995,748 | 7,945,151 | 7,308,225 | 2,166,396 | 3,111,738 | 2,815,239 | 857,304 | 3,213,218 | 2,799,527 | 506,588 |
| Vacant | 1,385,433 | 1,277,955 | 757,187 | 1,389,458 | 1,292,599 | 714,408 | 2,092,273 | 1,859,454 | 886,967 | 914,607 | 770,198 | 339,456 | 385,765 | 217,689 | 94,835 |
| Redevelopment | 2,864,656 | 2,611,648 | 1,022,185 | 3,913,102 | 3,553,156 | 1,281,340 | 5,852,878 | 5,448,771 | 1,279,429 | 2,197,131 | 2,045,042 | 517,848 | 2,827,453 | 2,581,838 | 411,753 |
| **Outside Geographies** | 411,917 | 318,675 | 318,675 | 100,780 | 87,148 | 87,148 | 770,814 | 644,578 | 644,578 | 818,086 | 342,668 | 342,668 | 189,055 | 125,799 | 125,799 |
| Vacant | 133,059 | 94,644 | 94,644 | 60,953 | 47,490 | 47,490 | 408,609 | 352,498 | 352,498 | 699,068 | 246,903 | 246,903 | 93,604 | 48,648 | 48,648 |
| Redevelopment | 278,858 | 224,031 | 224,031 | 39,827 | 39,657 | 39,657 | 362,205 | 292,080 | 292,080 | 119,018 | 95,766 | 95,766 | 95,452 | 77,151 | 77,151 |
| **Grand Total** | **22,764,189** | **20,604,783** | **13,510,895** | **35,764,084** | **31,139,496** | **21,724,346** | **58,814,298** | **48,664,567** | **25,835,730** | **34,368,815** | **27,418,001** | **17,084,374** | **22,603,527** | **16,529,177** | **9,655,576** |
| | | | | | | | | | | | | | | | |
| **Aggregate Geography** | | | | | | | | | | | | | | | |
| Central City | 8,328,878 | 7,981,705 | 7,981,705 | 17,018,686 | 15,030,791 | 15,030,791 | 11,341,831 | 9,574,132 | 9,574,132 | 8,461,693 | 7,521,609 | 7,521,609 | 1,624,049 | 1,573,835 | 1,573,835 |
| Industrial | 980,158 | 761,589 | 761,589 | 1,432,039 | 928,564 | 928,564 | 8,890,821 | 5,423,694 | 5,423,694 | 6,720,374 | 4,424,577 | 4,424,577 | 8,605,414 | 5,125,003 | 5,125,003 |
| Neighborhood Commercial | 13,044,396 | 11,612,273 | 4,518,385 | 16,423,408 | 14,375,722 | 4,960,572 | 37,025,399 | 32,372,226 | 9,543,389 | 18,107,274 | 14,791,686 | 4,458,059 | 11,765,549 | 9,297,951 | 2,424,349 |
| Institutions | 115,142 | 98,993 | 98,993 | 185,281 | 150,267 | 150,267 | 547,201 | 501,121 | 501,121 | 211,523 | 211,523 | 211,523 | 413,929 | 408,680 | 408,680 |
| Outside Geographies | 411,917 | 318,675 | 318,675 | 100,780 | 87,148 | 87,148 | 770,814 | 644,578 | 644,578 | 818,086 | 342,668 | 342,668 | 189,055 | 125,799 | 125,799 |
| **Total** | **22,880,490** | **20,773,235** | **13,679,347** | **35,160,193** | **30,572,491** | **21,157,342** | **58,576,067** | **48,515,751** | **25,686,913** | **34,318,950** | **27,292,063** | **16,958,436** | **22,597,996** | **16,531,268** | **9,657,666** |

Source: Bureau of Planning and Sustainability

## Figure 41. Existing Buildable Land Inventory – Net Building Square Footage (part 2)

| | 10 to 20 acres | | | 20 to 50 acres | | | More than 50 acres | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Employment Geography | Before Constraints | After Constraints | After Market Adjustment | Before Constraints | After Constraints | After Market Adjustment | Before Constraints | After Constraints | After Market Adjustment | Total Before Constraints | Total After Constraints | Total Adjusted Capacity | Employment Geography |
| **Central City Commercial** | 3,846,700 | 2,211,264 | 2,211,264 | 7,676,187 | 5,403,200 | 5,403,200 | 0 | 0 | 0 | 54,137,418 | 45,516,641 | **45,516,641** | **Central City Commercial** |
| Vacant | 2,577,380 | 1,498,461 | 1,498,461 | 6,204,834 | 4,358,700 | 4,358,700 | 0 | 0 | 0 | 37,393,992 | 31,443,329 | **31,443,329** | Vacant |
| Redevelopment | 1,269,320 | 712,803 | 712,803 | 1,471,352 | 1,044,500 | 1,044,500 | 0 | 0 | 0 | 16,743,426 | 14,073,312 | **14,073,312** | Redevelopment |
| **Central City Industrial** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4,160,607 | 3,779,894 | **3,779,894** | **Central City Industrial** |
| Vacant | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3,223,255 | 2,904,880 | **2,904,880** | Vacant |
| Redevelopment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 937,352 | 875,014 | **875,014** | Redevelopment |
| **Columbia East** | 4,175,124 | 1,962,393 | 1,962,393 | 5,582,630 | 4,197,991 | 4,197,991 | 8,439,811 | 6,091,741 | 6,091,741 | 23,329,900 | 15,518,799 | **15,518,799** | **Columbia East** |
| Vacant | 4,175,124 | 1,962,393 | 1,962,393 | 5,582,630 | 4,197,991 | 4,197,991 | 8,439,811 | 6,091,741 | 6,091,741 | 23,181,885 | 15,394,759 | **15,394,759** | Vacant |
| Redevelopment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 148,015 | 124,040 | **124,040** | Redevelopment |
| **Dispersed Employment** | 448,556 | 246,238 | 246,238 | 1,381,040 | 929,710 | 929,710 | 4,294,052 | 1,960,903 | 1,960,903 | 8,906,021 | 5,287,319 | **5,287,319** | **Dispersed Employment** |
| Vacant | 429,890 | 228,733 | 228,733 | 1,297,140 | 862,041 | 862,041 | 3,869,291 | 1,792,295 | 1,792,295 | 7,517,142 | 4,318,790 | **4,318,790** | Vacant |
| Redevelopment | 18,665 | 17,505 | 17,505 | 83,899 | 67,669 | 67,669 | 424,762 | 168,608 | 168,608 | 1,388,880 | 968,528 | **968,528** | Redevelopment |
| **Harbor Access Lands** | 3,828,944 | 1,013,492 | 1,013,492 | 3,136,373 | 1,812,583 | 1,812,583 | 6,844,578 | 1,790,058 | 1,790,058 | 15,374,339 | 4,932,417 | **4,932,417** | **Harbor Access Lands** |
| Vacant | 3,762,054 | 982,785 | 982,785 | 3,136,373 | 1,812,583 | 1,812,583 | 6,844,578 | 1,790,058 | 1,790,058 | 15,307,449 | 4,901,710 | **4,901,710** | Vacant |
| Redevelopment | 66,891 | 30,706 | 30,706 | 0 | 0 | 0 | 0 | 0 | 0 | 66,891 | 30,706 | **30,706** | Redevelopment |
| **Harbor & Airport Districts** | 8,733,231 | 4,831,675 | 4,831,675 | 13,293,376 | 7,161,036 | 7,161,036 | 28,019,141 | 13,502,903 | 13,502,903 | 66,215,243 | 35,664,026 | **33,703,826** | **Harbor & Airport Districts** |
| Vacant | 7,052,983 | 3,825,774 | 3,825,774 | 12,489,855 | 6,604,339 | 6,604,339 | 27,970,408 | 13,485,842 | 13,485,842 | 61,918,039 | 32,566,474 | **30,606,274** | Vacant |
| Redevelopment | 1,680,248 | 1,005,901 | 1,005,901 | 803,521 | 556,697 | 556,697 | 48,733 | 17,061 | 17,061 | 4,297,204 | 3,097,552 | **3,097,552** | Redevelopment |
| **Institutions** | 1,358,631 | 1,355,693 | 1,355,693 | 2,660,874 | 1,606,056 | 1,606,056 | 3,551,957 | 3,524,122 | 3,524,122 | 9,044,538 | 7,856,455 | **7,856,455** | **Institutions** |
| Vacant | 520,681 | 517,864 | 517,864 | 2,020,558 | 989,912 | 989,912 | 441,122 | 413,287 | 413,287 | 3,236,498 | 2,144,230 | **2,144,230** | Vacant |
| Redevelopment | 837,950 | 837,830 | 837,830 | 640,317 | 616,144 | 616,144 | 3,110,835 | 3,110,835 | 3,110,835 | 5,808,039 | 5,712,225 | **5,712,225** | Redevelopment |
| **Neighb. Centers & Corridors** | 13,024,936 | 10,210,661 | 2,052,426 | 14,185,307 | 5,892,257 | 2,166,026 | 8,641,139 | 4,221,700 | 1,609,674 | 97,315,607 | 72,838,494 | **19,537,802** | **Neighb. Centers & Corridors** |
| Vacant | 1,386,237 | 1,061,958 | 377,167 | 5,825,183 | 3,093,500 | 1,460,730 | 6,842,496 | 3,159,166 | 1,350,845 | 28,637,977 | 19,245,118 | **7,822,652** | Vacant |
| Redevelopment | 11,638,699 | 9,148,703 | 1,675,259 | 8,360,124 | 2,798,756 | 705,296 | 1,798,643 | 1,062,534 | 258,829 | 68,677,630 | 53,593,377 | **11,715,149** | Redevelopment |
| **Gateway Regional Center** | 1,508,503 | 714,299 | 593,382 | 0 | 0 | 0 | 0 | 0 | 0 | 12,587,548 | 8,991,931 | **5,483,052** | **Gateway Regional Center** |
| Vacant | 54,086 | 40,564 | 29,301 | 0 | 0 | 0 | 0 | 0 | 0 | 3,936,393 | 2,847,033 | **1,949,640** | Vacant |
| Redevelopment | 1,454,417 | 673,734 | 564,081 | 0 | 0 | 0 | 0 | 0 | 0 | 8,651,155 | 6,144,897 | **3,533,412** | Redevelopment |
| **Town Centers** | 1,930,580 | 879,940 | 129,169 | 121,958 | 105,822 | 50,243 | 0 | 0 | 0 | 25,875,294 | 22,644,111 | **7,484,820** | **Town Centers** |
| Vacant | 135,278 | 132,585 | 37,636 | 41,030 | 24,894 | 23,441 | 0 | 0 | 0 | 6,343,844 | 5,575,374 | **2,853,931** | Vacant |
| Redevelopment | 1,795,302 | 747,355 | 91,532 | 80,928 | 80,928 | 26,802 | 0 | 0 | 0 | 19,531,450 | 17,068,738 | **4,630,889** | Redevelopment |
| **Outside Geographies** | 1,613,378 | 1,217,133 | 1,217,133 | 3,857,675 | 1,034,533 | 1,034,533 | 2,596,463 | 328,994 | 328,994 | 10,358,169 | 4,099,528 | **4,099,528** | **Outside Geographies** |
| Vacant | 825,582 | 664,947 | 664,947 | 2,539,353 | 462,267 | 462,267 | 2,565,797 | 298,328 | 298,328 | 7,326,024 | 2,215,725 | **2,215,725** | Vacant |
| Redevelopment | 787,796 | 552,186 | 552,186 | 1,318,323 | 572,266 | 572,266 | 30,666 | 30,666 | 30,666 | 3,032,145 | 1,883,804 | **1,883,804** | Redevelopment |
| **Grand Total** | **41,698,012** | **25,633,974** | **16,604,051** | **52,255,670** | **28,404,655** | **24,622,845** | **62,428,303** | **31,231,722** | **28,619,696** | **327,304,683** | **227,129,615** | **153,200,553** | **Grand Total** |
| | | | | | | | | | | | | | |
| **Aggregate Geography** | | | | | | | | | | | | | **Aggregate Geography** |
| Central City | 3,846,700 | 2,211,264 | 2,211,264 | 7,676,187 | 5,403,200 | 5,403,200 | 0 | 0 | 0 | 58,298,025 | 49,296,535 | **49,296,535** | Central City |
| Industrial | 17,185,855 | 8,053,798 | 8,053,798 | 23,393,419 | 14,101,320 | 14,101,320 | 47,597,583 | 23,345,606 | 23,345,606 | 113,825,503 | 61,402,561 | **59,442,361** | Industrial |
| Neighborhood Commercial | 16,464,019 | 11,804,900 | 2,774,977 | 14,307,265 | 5,998,078 | 2,216,269 | 8,641,139 | 4,221,700 | 1,609,674 | 135,778,449 | 104,474,536 | **32,505,674** | Neighborhood Commercial |
| Institutions | 1,358,631 | 1,355,693 | 1,355,693 | 2,660,874 | 1,606,056 | 1,606,056 | 3,551,957 | 3,524,122 | 3,524,122 | 9,044,538 | 7,856,455 | **7,856,455** | Institutions |
| Outside Geographies | 1,613,378 | 1,217,133 | 1,217,133 | 3,857,675 | 1,034,533 | 1,034,533 | 2,596,463 | 328,994 | 328,994 | 10,358,169 | 4,099,528 | **4,099,528** | Outside Geographies |
| **Total** | **40,468,584** | **24,642,788** | **15,612,865** | **51,895,420** | **28,143,187** | **24,361,377** | **62,387,142** | **31,420,422** | **28,808,396** | **327,304,683** | **227,129,615** | **153,200,553** | **Total** |

Source: Bureau of Planning and Sustainability

## Figure 42. Existing Buildable Land Inventory – Net Land Acres (part 1)

| | Less than .5 acres | | | .5 to 1 acre | | | 1 to 3 acres | | | 3 to 5 acres | | | 6 to 10 acres | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Employment Geography | Before Constraints | After Constraints | After Market Adjustment | Before Constraints | After Constraints | After Market Adjustment | Before Constraints | After Constraints | After Market Adjustment | Before Constraints | After Constraints | After Market Adjustment | Before Constraints | After Constraints | After Market Adjustment |
| **Central City Commercial** | 33 | 32 | 32 | 67 | 59 | 59 | 47 | 39 | 39 | 36 | 32 | 32 | 6 | 6 | 6 |
| Vacant | 22 | 21 | 21 | 42 | 37 | 37 | 30 | 25 | 25 | 25 | 23 | 23 | 6 | 6 | 6 |
| Redevelopment | 11 | 10 | 10 | 24 | 22 | 22 | 17 | 14 | 14 | 10 | 9 | 9 | 0 | 0 | 0 |
| **Central City Industrial** | 15 | 14 | 14 | 33 | 31 | 31 | 13 | 13 | 13 | 7 | 6 | 6 | 3 | 2 | 2 |
| Vacant | 9 | 8 | 8 | 27 | 25 | 25 | 12 | 11 | 11 | 7 | 5 | 5 | 1 | 1 | 1 |
| Redevelopment | 6 | 6 | 6 | 6 | 6 | 6 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| **Columbia East** | 2 | 1 | 1 | 10 | 6 | 6 | 40 | 23 | 23 | 29 | 19 | 19 | 39 | 27 | 27 |
| Vacant | 2 | 1 | 1 | 10 | 6 | 6 | 39 | 23 | 23 | 28 | 17 | 17 | 37 | 26 | 26 |
| Redevelopment | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| **Dispersed Employment** | 13 | 11 | 11 | 9 | 7 | 7 | 24 | 22 | 22 | 29 | 19 | 19 | 2 | 2 | 2 |
| Vacant | 9 | 8 | 8 | 6 | 5 | 5 | 15 | 14 | 14 | 20 | 13 | 13 | 2 | 1 | 1 |
| Redevelopment | 4 | 3 | 3 | 3 | 2 | 2 | 9 | 8 | 8 | 8 | 6 | 6 | 0 | 0 | 0 |
| **Harbor Access Lands** | 0 | 0 | 0 | 1 | 0 | 0 | 18 | 4 | 4 | 0 | 0 | 0 | 16 | 3 | 3 |
| Vacant | 0 | 0 | 0 | 1 | 0 | 0 | 18 | 4 | 4 | 0 | 0 | 0 | 16 | 3 | 3 |
| Redevelopment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Harbor & Airport Districts** | 7 | 5 | 5 | 13 | 8 | 8 | 122 | 76 | 76 | 96 | 64 | 64 | 140 | 86 | 86 |
| Vacant | 7 | 5 | 5 | 11 | 7 | 7 | 100 | 57 | 57 | 79 | 49 | 49 | 140 | 86 | 86 |
| Redevelopment | 1 | 0 | 0 | 2 | 1 | 1 | 22 | 19 | 19 | 17 | 15 | 15 | 0 | 0 | 0 |
| **Institutions** | 3 | 2 | 2 | 4 | 3 | 3 | 13 | 12 | 12 | 5 | 5 | 5 | 10 | 9 | 9 |
| Vacant | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 0 | 0 | 0 | 2 | 2 | 2 |
| Redevelopment | 2 | 2 | 2 | 3 | 2 | 2 | 11 | 10 | 10 | 5 | 5 | 5 | 8 | 8 | 8 |
| **Neighb. Centers & Corridors** | 370 | 326 | 112 | 463 | 398 | 115 | 1,070 | 927 | 218 | 506 | 419 | 101 | 305 | 248 | 59 |
| Vacant | 97 | 84 | 42 | 106 | 91 | 38 | 218 | 172 | 59 | 123 | 105 | 40 | 100 | 75 | 26 |
| Redevelopment | 272 | 242 | 70 | 357 | 307 | 77 | 852 | 755 | 159 | 383 | 315 | 61 | 205 | 173 | 34 |
| **Gateway Regional Center** | 11 | 9 | 5 | 16 | 13 | 9 | 121 | 101 | 61 | 88 | 62 | 33 | 41 | 22 | 14 |
| Vacant | 5 | 4 | 3 | 7 | 6 | 5 | 45 | 33 | 22 | 37 | 25 | 16 | 3 | 2 | 1 |
| Redevelopment | 6 | 4 | 2 | 8 | 7 | 4 | 76 | 68 | 39 | 51 | 37 | 16 | 38 | 20 | 13 |
| **Town Centers** | 173 | 158 | 72 | 215 | 197 | 81 | 323 | 297 | 88 | 126 | 114 | 35 | 131 | 114 | 21 |
| Vacant | 56 | 52 | 31 | 56 | 53 | 29 | 85 | 76 | 36 | 37 | 31 | 14 | 16 | 9 | 4 |
| Redevelopment | 116 | 106 | 42 | 159 | 144 | 52 | 238 | 221 | 52 | 89 | 83 | 21 | 115 | 105 | 17 |
| **Outside Geographies** | 9 | 7 | 7 | 2 | 2 | 2 | 18 | 15 | 15 | 19 | 8 | 8 | 4 | 3 | 3 |
| Vacant | 3 | 2 | 2 | 1 | 1 | 1 | 9 | 8 | 8 | 16 | 6 | 6 | 2 | 1 | 1 |
| Redevelopment | 6 | 5 | 5 | 1 | 1 | 1 | 8 | 7 | 7 | 3 | 2 | 2 | 2 | 2 | 2 |
| **Grand Total** | **635** | **565** | **262** | **834** | **724** | **321** | **1,808** | **1,528** | **569** | **941** | **748** | **321** | **697** | **522** | **233** |
| | | | | | | | | | | | | | | | |
| **Aggregate Geography** | | | | | | | | | | | | | | | |
| Central City | 48 | 46 | 46 | 100 | 89 | 89 | 60 | 52 | 52 | 43 | 38 | 38 | 9 | 8 | 8 |
| Industrial | 23 | 17 | 17 | 33 | 21 | 21 | 204 | 125 | 125 | 154 | 102 | 102 | 198 | 118 | 118 |
| Neighborhood Commercial | 553 | 492 | 189 | 694 | 608 | 205 | 1,514 | 1,325 | 367 | 721 | 596 | 169 | 477 | 384 | 94 |
| Institutions | 3 | 2 | 2 | 4 | 3 | 3 | 13 | 12 | 12 | 5 | 5 | 5 | 10 | 9 | 9 |
| Outside Geographies | 9 | 7 | 7 | 2 | 2 | 2 | 18 | 15 | 15 | 19 | 8 | 8 | 4 | 3 | 3 |
| **Total** | **635** | **565** | **262** | **834** | **724** | **321** | **1,808** | **1,528** | **569** | **941** | **748** | **321** | **697** | **522** | **233** |

Source: Bureau of Planning and Sustainability

## Figure 43. Existing Buildable Land Inventory – Net Land Acres (part 2)

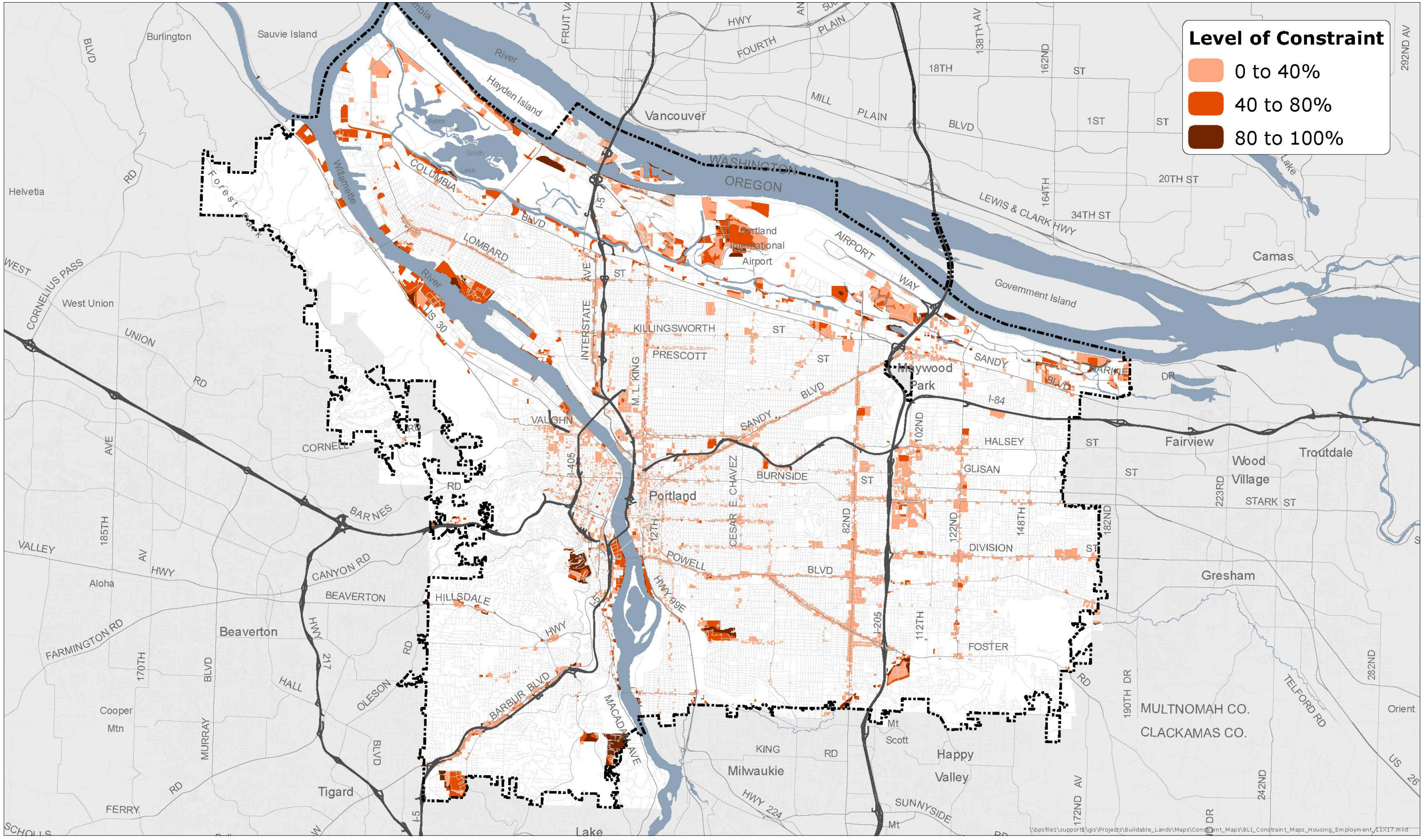
| | 10 to 20 acres | | | 20 to 50 acres | | | More than 50 acres | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Employment Geography | Before Constraints | After Constraints | After Market Adjustment | Before Constraints | After Constraints | After Market Adjustment | Before Constraints | After Constraints | After Market Adjustment | Total Before Constraints | Total After Constraints | Total Adjusted Capacity | Employment Geography |
| **Central City Commercial** | 17 | 10 | 10 | 34 | 24 | 24 | 0 | 0 | 0 | 239 | 201 | **201** | **Central City Commercial** |
| Vacant | 11 | 7 | 7 | 27 | 19 | 19 | 0 | 0 | 0 | 165 | 139 | **139** | Vacant |
| Redevelopment | 6 | 3 | 3 | 6 | 5 | 5 | 0 | 0 | 0 | 74 | 62 | **62** | Redevelopment |
| **Central City Industrial** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 72 | 65 | **65** | **Central City Industrial** |
| Vacant | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | 50 | **50** | Vacant |
| Redevelopment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 15 | **15** | Redevelopment |
| **Columbia East** | 96 | 45 | 45 | 128 | 96 | 96 | 194 | 140 | 140 | 536 | 356 | **356** | **Columbia East** |
| Vacant | 96 | 45 | 45 | 128 | 96 | 96 | 194 | 140 | 140 | 532 | 353 | **353** | Vacant |
| Redevelopment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | **3** | Redevelopment |
| **Dispersed Employment** | 10 | 10 | 6 | 6 | 32 | 21 | 21 | 99 | 45 | 45 | 204 | **121** | **Dispersed Employment** |
| Vacant | 10 | 10 | 5 | 5 | 30 | 20 | 20 | 89 | 41 | 41 | 173 | **99** | Vacant |
| Redevelopment | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 10 | 4 | 4 | 32 | **22** | Redevelopment |
| **Harbor Access Lands** | 88 | 23 | 23 | 72 | 42 | 42 | 157 | 41 | 41 | 353 | 113 | **113** | **Harbor Access Lands** |
| Vacant | 86 | 23 | 23 | 72 | 42 | 42 | 157 | 41 | 41 | 351 | 113 | **113** | Vacant |
| Redevelopment | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | **1** | Redevelopment |
| **Harbor & Airport Districts** | 200 | 111 | 111 | 305 | 164 | 164 | 643 | 310 | 310 | 1,520 | 819 | **774** | **Harbor & Airport Districts** |
| Vacant | 162 | 88 | 88 | 287 | 152 | 152 | 642 | 310 | 310 | 1,421 | 748 | **703** | Vacant |
| Redevelopment | 39 | 23 | 23 | 18 | 13 | 13 | 1 | 0 | 0 | 99 | 71 | **71** | Redevelopment |
| **Institutions** | 31 | 31 | 31 | 61 | 37 | 37 | 82 | 81 | 81 | 208 | 180 | **180** | **Institutions** |
| Vacant | 12 | 12 | 12 | 46 | 23 | 23 | 10 | 9 | 9 | 74 | 49 | **49** | Vacant |
| Redevelopment | 19 | 19 | 19 | 15 | 14 | 14 | 71 | 71 | 71 | 133 | 131 | **131** | Redevelopment |
| **Neighb. Centers & Corridors** | 575 | 451 | 91 | 626 | 260 | 96 | 381 | 186 | 71 | 4,296 | 3,216 | **863** | **Neighb. Centers & Corridors** |
| Vacant | 61 | 47 | 17 | 257 | 137 | 64 | 302 | 139 | 60 | 1,264 | 850 | **345** | Vacant |
| Redevelopment | 514 | 404 | 74 | 369 | 124 | 31 | 79 | 47 | 11 | 3,032 | 2,366 | **517** | Redevelopment |
| **Gateway Regional Center** | 38 | 18 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 314 | 224 | **137** | **Gateway Regional Center** |
| Vacant | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 98 | 71 | **49** | Vacant |
| Redevelopment | 36 | 17 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 216 | 153 | **88** | Redevelopment |
| **Town Centers** | 78 | 36 | 5 | 5 | 4 | 2 | 0 | 0 | 0 | 1,051 | 920 | **304** | **Town Centers** |
| Vacant | 5 | 5 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 258 | 227 | **116** | Vacant |
| Redevelopment | 73 | 30 | 4 | 3 | 3 | 1 | 0 | 0 | 0 | 794 | 694 | **188** | Redevelopment |
| **Outside Geographies** | 37 | 28 | 28 | 89 | 24 | 24 | 60 | 8 | 8 | 238 | 94 | **94** | **Outside Geographies** |
| Vacant | 19 | 15 | 15 | 58 | 11 | 11 | 59 | 7 | 7 | 168 | 51 | **51** | Vacant |
| Redevelopment | 18 | 13 | 13 | 30 | 13 | 13 | 1 | 1 | 1 | 70 | 43 | **43** | Redevelopment |
| **Grand Total** | **1,171** | **763** | **364** | **1,326** | **683** | **506** | **1,538** | **864** | **695** | **8,872** | **6,393** | **3,209** | **Grand Total** |
| | | | | | | | | | | | | | |
| **Aggregate Geography** | | | | | | | | | | | | | **Aggregate Geography** |
| Central City | 17 | 10 | 10 | 34 | 24 | 24 | 0 | 0 | 0 | 311 | 266 | **266** | Central City |
| Industrial | 395 | 190 | 185 | 511 | 334 | 324 | 1,015 | 590 | 536 | 2,454 | 1,493 | **1,365** | Industrial |
| Neighborhood Commercial | 691 | 504 | 111 | 631 | 264 | 98 | 381 | 186 | 71 | 5,662 | 4,360 | **1,303** | Neighborhood Commercial |
| Institutions | 31 | 31 | 31 | 61 | 37 | 37 | 82 | 81 | 81 | 208 | 180 | **180** | Institutions |
| Outside Geographies | 37 | 28 | 28 | 89 | 24 | 24 | 60 | 8 | 8 | 238 | 94 | **94** | Outside Geographies |
| **Total** | **1,171** | **763** | **364** | **1,326** | **683** | **506** | **1,538** | **864** | **695** | **8,872** | **6,393** | **3,209** | **Total** |

Source: Bureau of Planning and Sustainability

# APPENDIX D. BUILDABLE LAND INVENTORY MAP

A map of the Buildable Land Inventory, March 2015, by constraint levels is provided below. The underutilized parcels and constraint levels identified are based on the proposed Comprehensive Plan, including proposed land use designations on the plan map and 60% brownfield redevelopment capacity in Industrial and Neighborhood Commercial geographies.

**Figure 44. Buildable Land Inventory Map of Proposed Comprehensive Plan**




**Buildable Lands Inventory | Employment Buildable Lands**

**City of Portland | Bureau of Planning and Sustainability | Geographic Information System**

*This work was supported, in part, by a grant from the Oregon Department of Land Conservation and Development.*

March 13, 2015



Bureau of Planning and Sustainability
Innovation. Collaboration. Practical Solutions.