Residential Buildable Lands Inventory

Methodology and Summary Results
As Adopted

Ordinance 191547
December 2023

THE BUREAU OF
PLANNING &
SUSTAINABILITY

LANGUAGE ACCESS

The City of Portland is committed to providing meaningful access.
To request translation, interpretation, modifications, accommodations, or other auxiliary aids or services, contact 503-823-7700, Relay: 711.

Traducción e Interpretación | Biên Dịch và Thông Dịch | अनुवादन तथा व्याख्या | 口笔译服务 | Устный и письменный перевод | Turjumaad iyo Fasiraad | Письмовий і усний переклад | Traducere și interpretariat | Chiaku me Awewen Kapas | 翻訳または通訳 | ການແປພາສາ ຫຼື ການອະທິບາຍ | الترجمة التحريرية أو الشفهية

www.portland.gov/bps/accommodation

Table of Contents

Introduction

This document presents the City of Portland's 2023 Residential Buildable Lands Inventory (BLI), which is based on a Geographic Information System (GIS) model developed by the Bureau of Planning and Sustainability (BPS). The Residential BLI is an assessment of the City's residential development capacity under current City plans and zoning and market conditions. Oregon's statewide planning goals require cities to maintain at least a 20-year supply of land to accommodate forecasted housing growth. This Residential BLI is a critical component of the Housing Needs Analysis (HNA)[1] to identify whether there is an adequate supply of land to meet future housing needs through the year 2045.

There are several reasons for conducting this analysis:

- to quantify the existing residential development capacity within Portland under the current Comprehensive Plan and zoning regulations;
- to identify likely redevelopment scenarios and prospective clusters of future development activity by identifying sites that are likely to develop based on market feasibility and development potential;
- to estimate development capacity for different areas of the City;
- to serve as a basis for predicting residential growth under different development scenarios; and
- to help measure the possible impact of recommended land use plans, by predicting where residential growth may occur, which provides a basis to evaluate impacts – for example, impacts to the transportation system, tree canopy, housing supply, and air quality.

Important note: This is a 'supply-side' analysis. The model does not predict market demand for new construction. It only identifies lands within the City that could potentially become available for development/redevelopment should market demand exist.

[1] Statewide Planning Goal 10 requires cities to inventory "buildable lands" and ensure there is enough zoned land to accommodate their housing needs over the next 20 years. The HNA addresses how the City of Portland will accommodate future population growth by ensuring there is enough zoned land for housing, and that specific housing production strategies are created to support the development of needed housing.

Buildable Lands Inventory (BLI) Model Methodology

The BLI is based on a GIS model developed by BPS that applies a market-feasible development capacity analysis, which calculates the likelihood of development for different housing types. This model identifies capacity where development is financially feasible.

The BLI model consists of five steps, each of which is explained in detail in the following pages.

1. Calculate existing development in terms of building square footage and number of residential units;
2. identify likely development parcels based on development feasibility and site condition (vacant/non-vacant underutilized);
3. calculate gross development capacity using a matrix derived from market research;
4. apply development constraints to determine remaining, estimated development capacity in terms of number of residential units; and
5. integrate permit data for new housing units built since 2020 as 'realized' capacity.

Step 1. Calculate Existing Development

The BLI model uses the latest taxlot data from Multnomah County as the base dataset. The model uses only those taxlots with a centroid (the center point of the parcel) within the Portland urban service boundary (USB). The primary fields used for the analysis include those relating to the property type and description, property value, and ownership. Several other datasets related to building footprints, location, zoning and overlays, market and development information, and other information are then joined to the taxlot data for the analysis to occur.

Existing Development

The first main step in the BLI model is to analyze existing development to determine how much of each development parcel's potential capacity is currently being used to understand whether a site is likely to have a net positive increase in capacity.

Existing building square footage and residential unit counts are determined using the City of Portland's building footprint GIS layer. If the building square footage is not known for a site, or the data is missing

from the dataset, the model treats that site as having no existing development (until a square footage value exists in the building footprints layer).[2]

The model takes residential units from the building footprint layer when that data exists. When data about residential units does not exist and the zone is residential, the model approximates the number of existing units by using the building square footage, if known, and calculates the residential portion by applying market data from the 'Zoning Capacity' spreadsheet (which is described in the following section). In the single-dwelling zones ('R' zones), the model assumes lots with a building footprint of at least 600 square feet are occupied by one unit unless a different number exists in the residential unit count of the building footprint layer.

Step 2. Identify Development Parcels

The second step in the BLI model is to identify potential vacant and non-vacant development sites that are significantly underutilizing their potential development capacity. The methodology used to identify non-vacant underutilized parcels is significantly more involved than for vacant parcels.

Table 1. Approaches to Identifying Vacant and Underutilized Sites

Site Status	Approach
Vacant	Determined by the property descriptions in the Multnomah County Assessor database ("Vacant Land"), as well as a building footprint coverage threshold. If the building footprint on a given site covers less than five percent of the site area, the site is considered vacant.
Non-vacant (Developed)	Properties that have redevelopment potential in residential, mixed-use, and commercial zones are determined by a pro forma feasibility analysis. This analysis is described in more detail below. Properties may also be manually added or removed from consideration by staff.

[2] Of the 247,262 current buildings in the urban service boundary (USB), 240,575 have square footage values (97 percent), as of July 24, 2023. BPS GIS staff undergo sporadic reviews of the building footprint data to ensure the footprints of the largest developments are complete with residential units, square footage, and number of floors.

Ignored Taxlots. Several taxlots are removed from consideration, regardless of being vacant or developed, unless the property is manually added to the inventory by staff. These include any taxlot:

- Occupied by a public agency, including schools, but not including property owned by the Port of Portland, Home Forward (Portland Housing Authority), and Prosper Portland (formerly Portland Development Commission);
- Owned by Portland General Electric (PGE), Pacific Power, and Northwest Natural Gas;
- Owned by a railroad, which is mostly Union Pacific or Burlington Northern Santa Fe (BNSF) railways;
- Considered a gas station, church, public building, or residential condominium (per the Assessor's property description);
- Considered a park, natural area, or cemetery (more than 33 percent of the taxlot must be covered by one of these polygons in Metro's ORCA data and City of Portland parks data to be considered); or
- Within the PDX security fence.

Further explanation about the evaluation of vacant and non-vacant parcels is as follow.

Vacant Properties

Using the Multnomah County property description field in the taxlot data, any parcel with the property description "vacant land" is identified as vacant (this does not apply to land within the EOA Industrial Geographies).

Land is also considered vacant if the building footprint used in Step 1 covers less than five percent of the lot area. A map of vacant residential land is included in the appendix.

Non-vacant Properties

The BLI model assesses the likelihood of redevelopment activity on non-vacant properties, or developed lots, through a development feasibility analysis. Campus institution (CI) zones have an FAR that was developed in an analysis conducted for the 2016 BLI model; lots zoned CI are automatically considered underutilized and net development capacity is calculated based on that FAR.

For all zones, recently developed lots are excluded from consideration. Using the City's permit database, properties are identified as recently developed if there is an addition, alteration, or new construction permit (using the work description field) that adds new residential units or building square feet and was finalized within the past 10 years (dating back to 2013). These properties are not expected to redevelop within the 2045 timeframe and are not included in the underutilized inventory.

Detailed information about the process to identify redevelopable and underutilized non-vacant lots is as follows.

Pro Forma Feasibility Analysis

Non-vacant properties in residential and mixed-use commercial zones are individually identified as underutilized if they meet a development feasibility threshold as determined by a development feasibility pro forma model.

A pro forma model simulates real estate investment decision-making tools by considering multiple market attributes such as revenue, construction costs, and land prices. Here, the financial pro forma model is used to calculate the residual land value (RLV)[3] for 17 residential prototypical developments, or prototypes. Each of the prototypes has varying scales of intensity and tenure and is loosely calibrated to different mixed-use and residential zones. The pro forma and related code were developed by ECONorthwest in 2021 and updated by BPS in early 2023. The list of the inputs and assumptions and the characteristics of the prototypes used in the analysis are in the appendix.

The 17 different housing prototypes evaluated in the pro forma model include:

- Detached single dwelling: regular and narrow lot,
- Middle housing (ownership): duplex, duplex in an R7 zone, triplex, fourplex in an R2.5 zone, and townhomes,
- Middle housing (rental): duplex, triplex, fourplex, townhomes, and
- Apartments (rental[4]): wood frame (x2)[5], podium (x2), and tower.

Using Multnomah County assessor data, underutilized or redevelopable sites are identified wherever a property's adjusted market value (AMV) per square foot is lower than the residual land value (RLV) per square foot for at least one of the housing types allowed in its zone. Any lot where the AMV exceeds the RLV is not considered an economically viable development site.

- AMV < RLV = Viable development site
- AMV > RLV = Not a viable development site

---

[3] Residual land value is a metric that shows the maximum price a developer could spend on land, after all costs of developing have been subtracted.

[4] Multi-dwelling prototypes are limited to rentals because of the lack of multi-dwelling condominium development since before the Great Recession. Condo construction activity has declined to near-zero levels because of the liability challenges; condo developers are liable for damages for up to 10 years after construction and the insurance premiums have become prohibitively expensive, rendering almost every condo project infeasible.

[5] The pro forma model includes a wood-frame inner and wood-frame outer prototype. The Wood frame Inner is excluded from the Outer market area and the Wood Frame Outer is excluded from the Central City and Inner market areas.

The AMV is an adjusted version of the Assessor's real market value (RMV), calculated by multiplying the RMV by an adjustment factor. This was deemed necessary to reflect property values more accurately after analyzing Multnomah County Assessor real market value data and recent residential sale data from RMLS (the median RMV was compared to the median sales price to determine how much the RMV should be adjusted). Adjustments vary spatially by market area, as shown in the table below.

Figure 11. Portland Market Areas

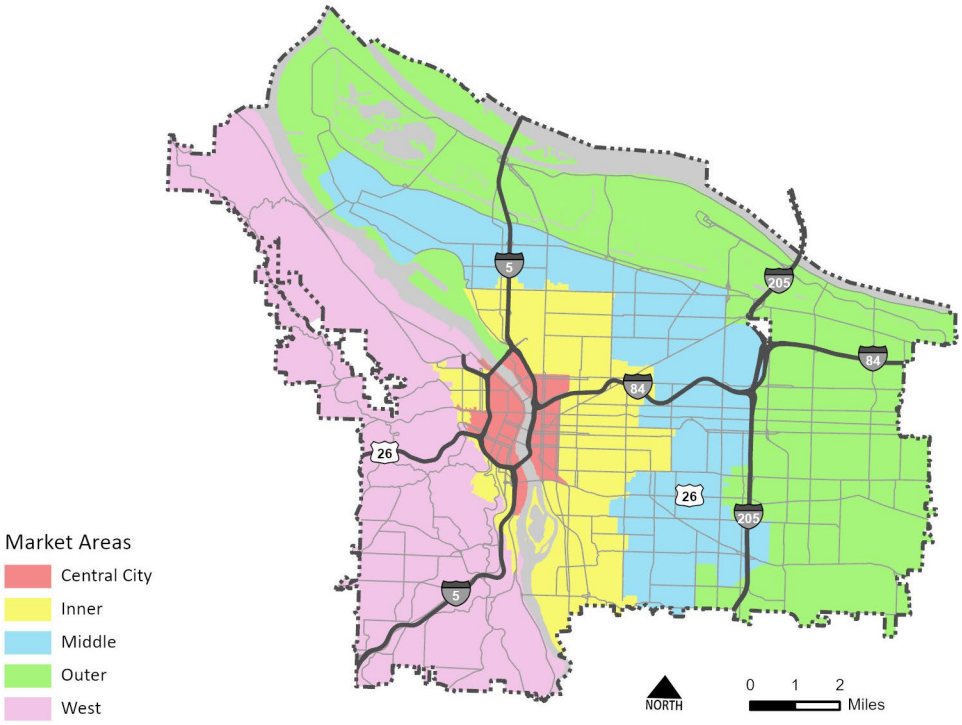


Table 2. Real Market Value (RMV) Adjustment Factors

Market Area	RMV Adj. Factor
Central City	1.20
Inner	1.20
Middle	1.22
Outer	1.40
West	1.25

RENT AND SALES PRICES

As revenue and land prices in Portland vary substantially compared to construction costs, the model uses revenue and land prices as spatial variables across Portland. Average predicted rents and sales prices for housing are generated for each of the City's 24 "Portland Plan Areas." The model populates

the revenue data in the pro forma for each site based on its Portland Plan Area. Rents and sales prices for each area are shown in the table below.

Rent Data Analysis. Rents were primarily estimated using Costar data in the Fall of 2022. This analysis excluded outlier observations that might indicate unreliable data. Rents were collected for middle housing developments and apartments.

To evaluate the possibility of different rent levels based on the building prototype and construction material, ECONorthwest ran model simulations to estimate the range of rents for different construction types. They found that high-rise buildings generated six percent (6%) higher rents than mid-rise buildings on average throughout the City. Low-rise buildings with fewer amenities were forecast to generate rents that are 20% lower than a podium-built prototype on average across Portland. These differences are applied as adjustment factors in the pro forma model.

The 'Middle Housing Rent' values in the table below populate the revenue assumptions for the duplex, triplex, fourplex, and townhome development types, while the 'Apartment Rent' values populate the wood frame, podium, and tower apartments.

Sales Price Data Analysis. Sales prices were calculated by analyzing five years of home sales (2018 to 2022) using the RMLS dataset. Staff implemented a trends-based analysis that determined the likely median sales price in 2023 for a single-dwelling home.

Where data was limited for a particular Portland Plan Area, resulting in smaller data sample sizes, the Area was combined with one or more adjacent Areas based on staff understanding of shared market conditions.

Table 3. Predicted Housing Revenue Data by Portland Plan Area

Portland Plan Area	Sale Price ($/sq.ft.)	Middle Housing Rent ($/sq.ft.)	Apartment Rent ($/sq.ft.)
122nd-Division	$303	$1.69	$2.19
Belmont-Hawthorne-Division	$385	$2.30	$2.79
Centennial-Glenfair-Wilkes	$307	$1.59	$2.04
Central City	$432	$2.07	$2.78
Forest Park-Northwest Hills	$337	$1.93	$2.41
Gateway	$291	$1.90	$2.42
Hayden Island-Bridgeton	$311	$1.92	$2.47
Hillsdale-Multnomah-Barbur	$357	$1.96	$2.68
Hollywood	$433	$2.23	$2.61
Interstate Corridor	$395	$2.07	$2.61
Lents-Foster	$321	$1.99	$2.48
MLK-Alberta	$398	$2.15	$2.61
Montavilla	$331	$1.98	$2.48
Northwest	$408	$2.69	$2.94
Parkrose-Argay	$288	$1.82	$2.21
Pleasant Valley	$315	$1.71	$2.21
Raleigh Hills	$343	$1.92	$2.63
Roseway-Cully	$315	$1.94	$2.42
Sellwood-Moreland-Brooklyn	$397	$2.32	$2.71
South Portland-Marquam Hill	$394	$2.06	$2.75
St. Johns	$298	$2.08	$2.38
Tryon Creek-Riverdale	$328	$1.94	$2.43
West Portland	$334	$1.94	$2.44
Woodstock	$410	$2.21	$2.48

Source: BPS analysis using RMLS sales data and Costar rental data.

Manual Edits

The initial outputs of the Buildable Lands Inventory GIS model were thoroughly reviewed by the BPS staff. Based on staff knowledge, parcels that were known to have high development or redevelopment potential and were not identified by the model as underutilized were "manually" flagged as underutilized and included in subsequent model outputs. These "likely" parcels are all mapped as underutilized regardless of the existing or allowed development capacity.

Parcels that were not identified as constrained in Step 2 of the model, but that are known to have a very low likelihood for development or redevelopment, were manually flagged as "unlikely" to develop, and therefore not included in the final map of underutilized parcels, nor considered for capacity in the following step.

Step 3. Calculate Gross Residential Capacity

After identifying the underutilized and vacant lots in Step 2, the next step is to calculate the gross capacity (before constraints) for residential units.

Residential unit capacity is calculated different for single-dwelling (R) zones and multi-dwelling, mixed-use, and other (RM/CM/Other) zones.

R Zones

For economically viable vacant and non-vacant sites in the single-dwelling zones, the housing type in the pro forma with the highest number of units (no more than four units) is used to calculate the residential capacity of the lot. For all vacant sites in the single-dwelling zones, gross capacity is also capped at four units per lot, in keeping with recent housing production trends. The Residential Infill Project one-year report[6] showed a developer preference for four-unit townhouse and fourplex developments in the single dwelling zones; 73 percent of units permitted were middle housing, and of these, 76 percent were fourplexes and four-unit townhouse developments.

Land Divisions. If lots are 10,000 square feet or greater, the model reduces the area by 25 percent to reflect the likely reduction in buildable area due to right-of-way dedications, then divides the remaining square feet by the minimum lot size in the base zone, with the following exceptions:

[6] https://www.portland.gov/bps/planning/rip/news/2023/7/5/new-study-shows-promising-housing-production-results-residential

- Lots in a "Constrained Sites" overlay zone[7] (shown on the zoning map with the "z" map symbol) are limited to two units per lot. The model will undergo the land division process on lots larger than 10,000 square feet, but the resulting lots will still be subject to the two-unit maximum.
- Lots larger than two acres in RF zones are limited to two units and are not subject to the land division process.

RM/CM/Other Zones

For vacant and economically viable non-vacant sites in the mixed-use commercial (CM) and multi-dwelling (RM) zones, residential capacity is applied using a 'Zoning Capacity' matrix that dictates the likely densities, residential splits, and unit sizes for each geographic market area and zone. Capacity is not calculated for non-vacant sites that are not viable per the pro forma. The fields and attributes in the matrix are listed and described in the table below. The matrix was populated after extensive analysis and market research using the City's new construction permit data, Costar, and RMLS. and The full 'Zoning Capacity' matrix is provided in the appendix.

Gross residential capacity is calculated using the following formula:

Lot Area	X	Max FAR * FAR utilization rate	X	Residential split percentage	/	Average gross unit size

For example, a quarter-acre (10,000 square foot) site in the Middle market area with CM2 zoning has a maximum allowable FAR of 4 to 1 (after bonuses). An FAR utilization rate of 0.64 means the average development is expected to utilize 64 percent of the development entitlement, equating to an FAR of 2.6. Residential uses are expected to account for 60 percent of the development square footage, and at an average gross residential unit size (i.e., inclusive non-leasable space) of 750 square feet, this would result in 20.5 residential units of capacity on that site.

10,000	X	4.0 * 0.64	X	60%	/	750 sf	=	20.5 units

[7] The Constrained Sites overlay zone reduces development potential to comply with protective measures adopted and acknowledged pursuant to statewide land use planning goals. This overlay zone reduces risk to life or property from certain natural hazards.

Table 4. 'Zoning Capacity' Matrix Fields, Descriptions, and Attributes

Field	Description	Attributes
Market Area	Five areas of the City that share similar market conditions	Central City, Inner, Middle, Outer, West
Zone / Comprehensive Plan Designation	All City of Portland zoning and comprehensive plan designations	CE, CI1, CI2, CM1, CM2, CM3, CX, EG1, EG2, EX, IG1, IG2, IH, IR, IS, OS, R10, R2.5, R20, R5, R7, RF, RX, RM1, RM2, RM3, RM4, RMP, IC, MD-C, MD-N, MDP, MD-U, ME, MU-C, MU-D, MU-N, MU-U, CR
FAR	Allowable floor area ratio under base zoning	NA; 0.5:1 to 4.0:1
FAR + IH Bonus FAR	Total allowable floor area ratio after inclusionary housing bonus (applies to sites larger than 9,500 square feet).	NA; 1.5:1 to 6:0:1
FAR Utilization	Average utilization rate of allowable FAR under base zoning.	0.00 to 1.00
FAR + IH Bonus FAR utilization	Average utilization rate of allowable FAR under base zoning.	0.00 to 1.00
Residential Split	Percentage of total development square footage expected to be residential, based on permit trends.	0.00 to 1.00
MFR Split	Percentage of development expected to be residential, based on permit trends.	0.00 to 1.00
Parking Split	Percentage of development expected to be structured parking, based on permit trends.	0.00 to 1.00
Commercial Split	Percentage of development expected to be commercial, based on permit trends.	0.00 to 1.00
Average Unit Size	Anticipated gross residential unit size, in square feet.	600 to 3,000 square feet

FLOOR AREA RATIOS (FAR) AND UTILIZATION

Base FAR and Bonus FAR Selection. Portland's zoning and development regulations include a base FAR and a bonus FAR. Bonus FARs are intended to incentivize developers to build more affordable housing and can therefore be achieved by providing affordable housing units as part of the development. The City's Inclusionary Housing requires that all residential buildings proposing 20 or

more new units provide a percentage of the new units at rents affordable to households at 80% of the median family income or below.

Base FAR and Bonus FAR Selection. The base FAR is used wherever inclusionary housing does not apply—i.e., in non-residential zones—and on lots that are smaller than 9,500 square feet. The maximum FAR including IH bonus is used for lots in residential and mixed-use zones that are greater than 9,500 square feet. A recent analysis of 2019 to 2021 permit data by BPS found that 81 percent of two to 19-unit multi-dwelling developments were built on lots smaller than 10,000 square feet, compared to just 10 percent of 20+ unit multi-dwelling developments. The model, therefore, reflects the high probability that residential development on lots above 9,500 square feet will include at least 20 units and trigger inclusionary housing (9,500 was used instead of 10,000 to ensure the model captured most of the City's 'double' lots).

FAR Utilization Rate. An 'FAR Utilization Rate' is then applied to the base and bonus FARs to reflect the probable development densities. This approach 'right-sizes' the allowable densities to market realities. To come up with these rates, staff analyzed permit data from 2008 through 2019 to calculate the average FAR for each zone and market area and compared it to the maximum allowable FAR.

Plan Districts. Wherever a Plan District exists, the 'FAR' and 'FAR + IH Bonus FAR' outlined in the plan district override the development FAR limits in the Zoning Capacity matrix. The same utilization rates of the underlying zone then apply to the base and bonus development limits outlined in the Plan District. The same logic regarding lot size is used for bonus FARs in Plan District, i.e., bonus FARs are used, if applicable, for lots larger than 9,500 square feet.

LAND USE SPLITS

Once the overall development square footage is determined by the FAR and FAR Utilization Rates, the development is split between residential, commercial (or employment), and parking space using land use splits or ratios. These splits are based on an analysis of development trends using City permit data from 2008 through 2019.

For the residential component, the Zoning Capacity matrix (see appendix) includes average residential unit sizes (gross square feet) that are used to calculate the number of units from the residential square footage.

Step 4. Apply Development Constraints

Steps one through three calculate *gross* development capacity based on market potential, which does not consider development constraints that reduce the development capacity of the land.

BPS identified 26 different constraints to apply to the BLI model. Constraints are applied using a series of 'rates,' which range from 0.0 (completely constrained) to 1.0 (unconstrained) depending on the likely impact the presence of a given constraint has on development potential for housing, commercial, and employment uses. Development constraint rates were identified in an analysis of development permits that included constrained lands. Constrained lands include sites that lack needed urban infrastructure (for example, sites without sewer service), and physical or regulatory barriers to development (such as environmentally sensitive areas, historic landmarks, flood hazards, etc.).

Multiple Constraints. If multiple constraints exist on a site, the model applies the lowest applicable constraint rate (i.e., the most impactful). Then, to reflect the challenges that a developer might face where multiple constraints exist, the constraint rate is further reduced by 0.1 or 0.2 if two or three or more constraints exist, respectively.

Partial Lot Constraints. Constraints are incorporated into the model as two separate GIS feature classes, one for constraints that apply to an entire parcel (i.e., slope, brownfields, historic resources), and one for partial lot constraints (i.e., environmental protection overlays, wetlands, flood hazards). If a partial lot constraint exists, the BLI model uses a lot coverage threshold of 33 percent to determine whether or not to apply the constraint to the lot. In other words, if a partial lot constraint is on 50 percent of the lot, the BLI model proceeds as though that constraint impacts the entirety of the site; if a partial lot constraint is on 20 percent of the lot, the BLI model proceeds as though that constraint does not exist on the site, reflecting the general likelihood that a prospective developer can build around the constraint to such an extent that it does not infringe on development potential.

Following is a list of each constraint used in the BLI model. A full matrix that includes the constraint rates for housing and Central City, commercial, and industrial employment uses is in the appendix. Maps of each constraint can be found online on the BLI project webpage at https://www.portland.gov/bps/planning/bli/2023-documents.

Table 5. Constraint Rates

Category	Field	Description
Brownfields	conECSI	DEQ, Environmental Cleanup Sites I (ECSI)
Brownfields	conLUST	DEQ, Underground Storage Tank Cleanup Sites (UST)
Cultural Resources	conHist	Historic and Conservation districts
Cultural Resources	conHistLdm	Historic and Conservation Landmarks
Cultural Resources	conNatAm	Parcels requiring archaeological scan or consultation with Native American tribal governments
Environmental Overlays	conCovrly	Environmental Conservation Zones
Environmental Overlays	conPovrly	Environmental Protection Zones
Flight Limitations	conAirHgt	Approach and departure cones
Flight Limitations	conHeliprt	Heliport Landing (impacts several buildings near Portland Heliport)
Flight Limitations	conNoise	Noise contours (areas above LDN 65 and 68 noise contours)
Greenway	conGW	All land with g/r/n overlays; land within I overlay where 10% or more of the parcel is within 125' of OHW
Hazards	conFld100	FEMA 100-Year Floodplain Map
Hazards	conFldway	FEMA Floodway Map
Hazards	conLSHA	Parcels within 50' of a mapped landslide hazard area
Hazards	conSlp25	Parcels where 25% or more of the parcel has a slope of more than 25%
Infrastructure	conSewer	Infrastructure Constrained Areas: Sewer
Infrastructure	conStorm	Stormwater System
Infrastructure	conWater	Water System
Natural Resources	conWetland	Wetlands
Public Ownership	conInstit	Institutional Campuses
Public Ownership	conPrvCom	Private Common Open Space
Public Ownership	conPubOwn	Publicly owned or controlled lots that do not provide for residential uses
Scenic Areas	conView	Views
Transportation	conTranCap	2008 Volume to Capacity Ratios
Transportation	conTranInt	ODOT Highway Interchanges
Transportation	conTranSub	Substandard and Unimproved Streets

Constrained Lands Analysis. The constraint rates for each of the above constraints were determined by an analysis of development permit data from 2012 to 2022 on constrained and unconstrained land. Steps in the analysis that calculated the constraint rates are outlined below. This analysis was implemented for all constraints. For constraints that had an insufficient number of developments in the permit data to analysis, the constraint rates match those used in the 2016 BLI.

1. Starting with the 2012 BLI taxlot data, identify which sites were considered developed, underutilized, and vacant. This analysis focuses on the development rates of sites considered underutilized and vacant as of 2012.
2. Join all constraints to the 2012 BLI taxlot data in GIS, then join the General EOA Geographies.

3. Join the permit data from the past decade (2012-2022), including only finaled permits for new construction and a permit description of either "Residential 1 & 2 Family" or "Commercial Building Permit."
4. Flag any site as "developed" if the FAR increased by at least 0.2. Sum the total of the square footage of new construction permits during the FAR calculations because some multi-building developments have separate permits for each building.
5. For each constraint, calculate the constrained and unconstrained development rate on vacant and underutilized BLI lots. Divide the newly developed building square footage on constrained land by the constrained acreage, then divide the newly developed building square footage on unconstrained land by the unconstrained acreage.
6. To get the constraint rate for each constraint, divide the latter (unconstrained development rate) by the former (constrained development rate). The constraint rate reflects the anticipated rate of development on constrained sites compared to unconstrained sites.

The following table demonstrates the calculations using real data for the brownfield (ECSI) constraint.

Table 6. Constraint Rate Calculations (Brownfield Example)

	2012 BLI Lot Acres	Recently Developed Bldg. Sq. Ft.	Development Sq. Ft. per BLI Lot Acre	Calc. Rate: Constrained / Unconstrained	Constraint Rate Used in Model
Unconstrained					
Central City	1,032	7,198,223	6,974		
Commercial	3,236	12,714,202	3,929		
Industrial	7,942	5,106,873	643	*N/A*	
Institutional	671	393,996	587		
Residential	31,418	15,961,661	508		
Constrained					
Central City	158	1,831,849	11,619	167%	0.95
Commercial	143	1,195,073	8,382	213%	0.95
Industrial	5,843	1,874,275	321	50%	0.5
Institutional	86	0	0	0%	0.05
Residential	130	113,934	874	172%	0.95

Source: BPS Analysis of Permit and Taxlot data

Step 5. Integrate Recent Permit Data

The BLI uses 2020 as a base year. However, development continues in the real world. The model integrates actual development data as 'realized' capacity on recently developed sites. The BLI, therefore, incorporates permit data (housing unit counts and building square footage) on any lot not already deemed underutilized and with a build year in the Multnomah County taxlot layer of 2020 to 2023. The model draws this information from issued, under inspection, and finaled permits in the City's permit database from 2015 to 2023 to ensure that no permit activity is missed for newly developed lots. Specifically, housing unit counts and building square footage overrides the modeled capacity of any developed site, in recognition that newly developed sites are unlikely to redevelop again through 2045.

The table below provides a summary of the permit data that is integrated into the BLI model as realized capacity. A total of 2,856 properties were developed between 2020 and 2023 (through June), delivering almost 20,000 residential units across 695 acres at an average density of 29 units per acre and seven units per lot.

Table 7. Residential Permit Data for Lots Developed from 2020 through June 2023

District	Number of Properties	Residential Units	Total Taxlot Acres
Central City	45	5,121	24
East	509	2,016	144
North	471	3,424	121
Northeast	574	2,713	159
Southeast	876	3,858	109
West	381	2,772	139
Total	**2,856**	**19,904**	**695**

Source: BPS

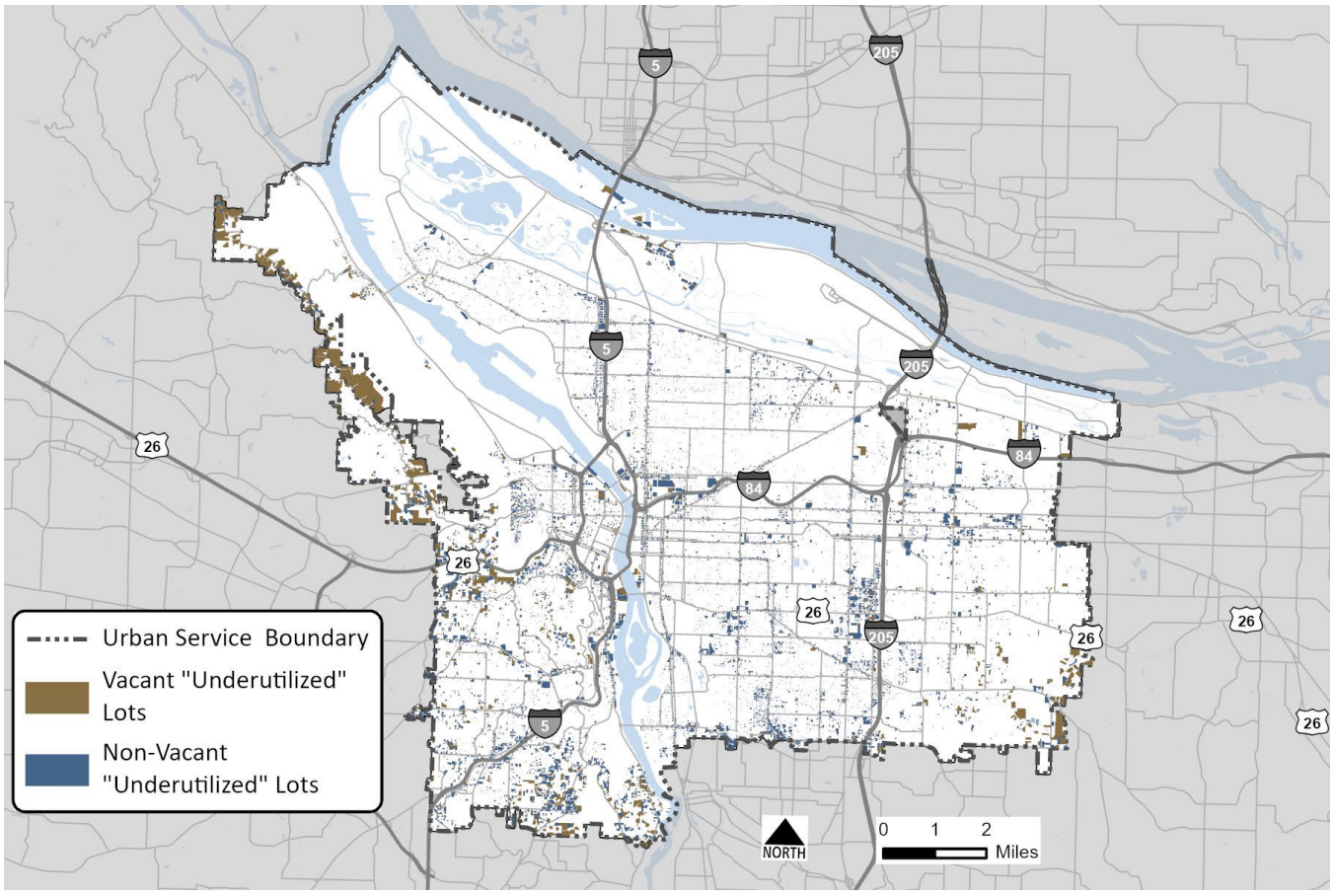
Residential Buildable Lands Inventory Results

This section describes the BLI model results, including vacant and underutilized land and capacity for new residential (units) development. For more detailed analysis, see the Housing Needs Analysis (HNA).

Vacant and Underutilized Residential Land

The map below shows vacant and non-vacant underutilized lots available for residential development and considered in the BLI model for residential unit capacity. Central City accounts for 4.6 percent of the vacant and non-vacant utilized lots, Inner Portland for 22.7 percent, Middle Portland for 31.0 percent, Outer Portland for 16.0 percent, and West Portland for 25.7 percent. These lots include both constrained and unconstrained land throughout Portland and do not necessarily correspond to potential unit capacity in each market area.

Figure 2. Vacant and Underutilized Residential Lots



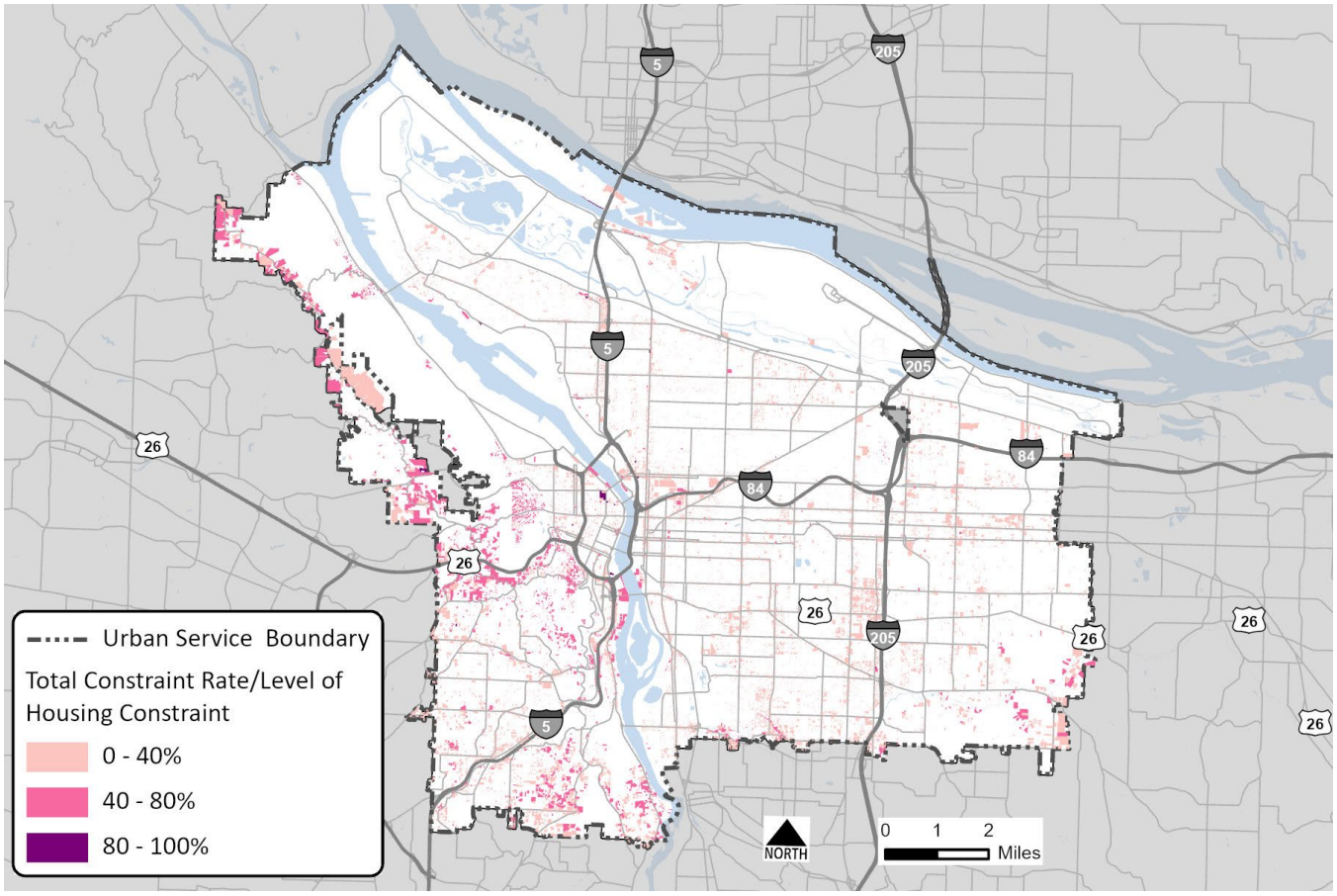
Source: BPS

Residential Constraints

The following map shows the total constraint rate used by the BLI model for residential development. The map shows three levels of housing constraints: 0-40 percent (unconstrained to mildly constrained), 40-80 percent (moderately to severely constrained), and 80-100 percent (severely to completely constrained).

About 83 percent of Portland's acreage is constrained by at least one of the 26 development constraints in the model. About 79 percent of Portland's underutilized residential land is constrained. West Portland, where steep slopes and environmentally sensitive areas are common, accounts for 58 percent of Portland's underutilized residential land acreage. East Portland accounts for 19 percent. Central City and Southeast, Northeast, and North Portland each account for less than 10 percent.

Figure 3. Level of Housing Constraint



Source: BPS

Net Residential Development Capacity

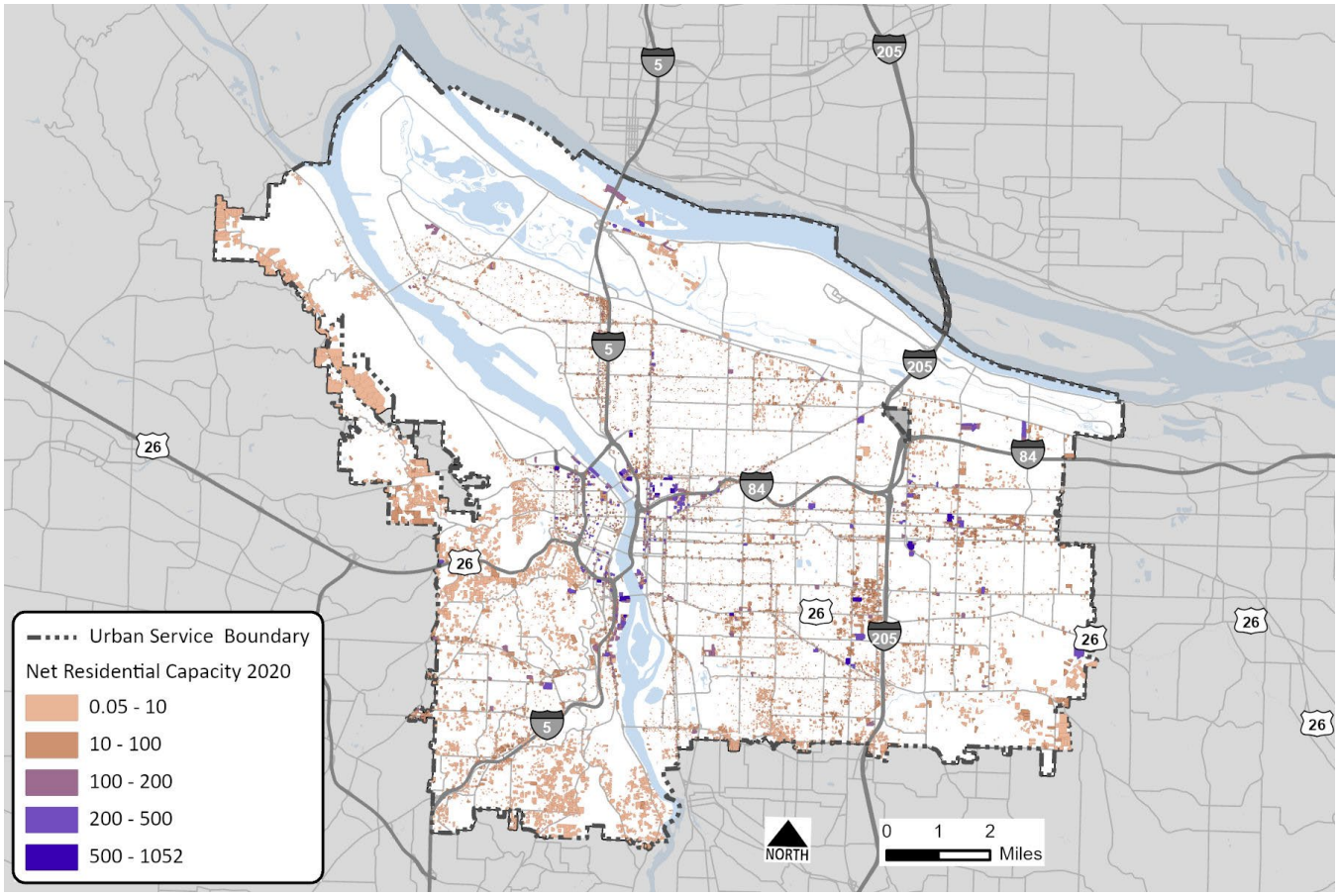
The results of the Buildable Lands Inventory show an estimated capacity for an additional 236,977 housing units in the City of Portland.

Table 8. Residential Capacity by District

District	Capacity (Dwelling Units)
Central City	67,052
East	38,527
North	22,621
Northeast	27,400
Southeast	47,785
West	33,593
Total	**236,977**

Source: BPS analysis

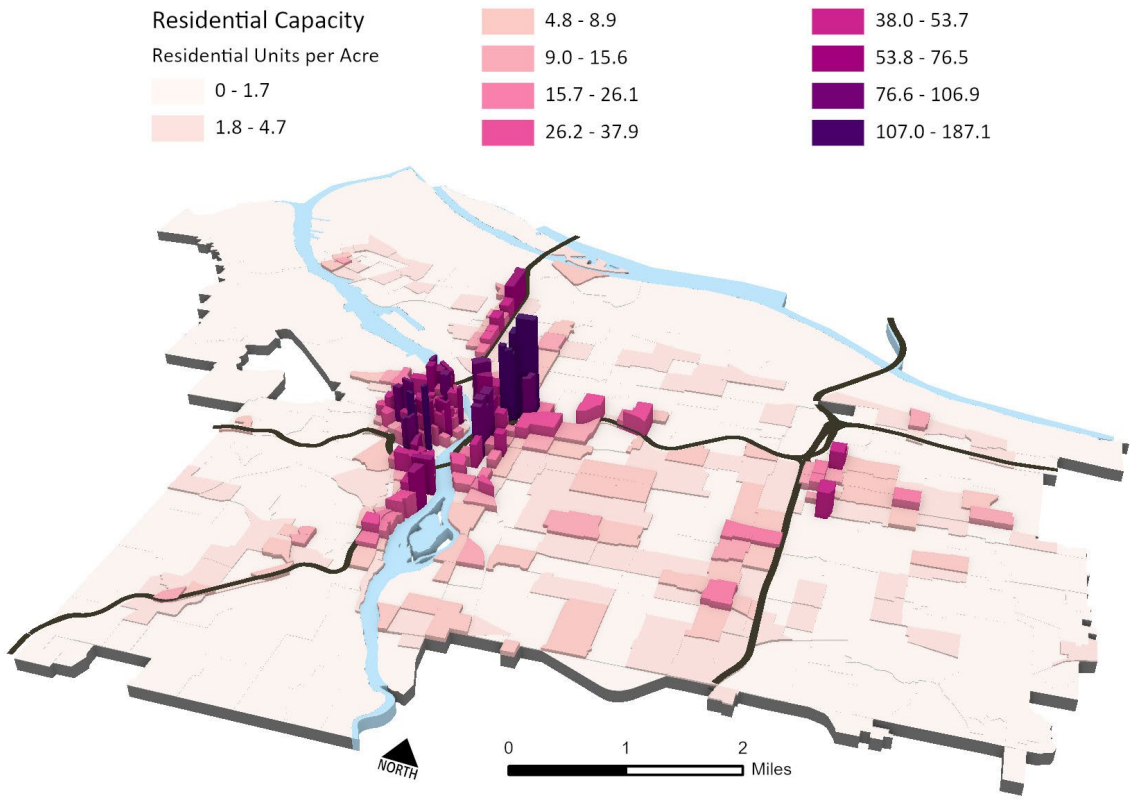
Figure 4. Housing Unit Capacity



Source: BPS

The Residential Capacity Map below illustrates residential capacity by Transportation Analysis Zone (TAZ), shown as housing units per acre (density). Areas of high-density residential capacity tend to be in Portland's centers and corridors where most of the City's mixed-use and multi-dwelling zoning currently exist. Central City accounts for 29 percent of new housing unit capacity citywide, but just five percent of Portland's vacant and underutilized lots, reflecting a concentration of high-density development capacity. At the opposite end of the spectrum, West Portland accounts for just seven percent of new housing unit capacity but 26 percent of Portland's vacant and underutilized lots, reflecting both the presence of development constraints and the concentration of lower-density zoning.

Figure 5. Residential Capacity, Units per Acre by TAZ



Source: BPS

Appendices

Appendix 1. Pro Forma Feasibility Analysis Model Inputs and Assumptions

- Sales price per square foot of residential
- Rent per square foot of residential
- Sales commission (percent of sales)
- Sales yield (spread on price)
- Vacancy rate
- Operating cost per square foot
- Rent return on cost required (rental apartments)
- Debt service coverage ratio (middle rental housing)
- Loan-to-cost (middle rental housing)
- Interest rate (middle rental housing)
- Lot size
- Number of units
- Number of surface and structured parking stalls
- Unit size
- Inclusionary housing policy set-aside (10 or 20 percent)
- Affordable rent per unit
- Hard cost per square foot ($)
- Parking cost per stall
- Soft cost
- Contingency (percent of hard and soft costs)
- Developer fee (percent of total costs)

Appendix 2. BLI Model Inputs: 'Zoning Capacity' Matrix

MARKET AREA	COMP_ZONE	GEN_ZONE	GEN_ZONE_CC	REG_ZONE	FAR	IH_FAR	FAR_UTIL	IH_FAR_UTIL	HEIGHT	ZONE_SIZE	RES SPLIT	MFR_SPLIT	PRKG_SPLIT	COMM_SPLIT	AVG_UNIT
CENTRAL CITY	CX	Commercial	Commercial	MUR10	4:1	6:1	1.00	1.00	75	0	0.41	1.00	0.19	0.40	750
CENTRAL CITY	EX	Central Employment	Mixed Employment	MUR10	3:1	5:1	1.00	1.00	65	0	0.61	1.00	0.18	0.21	750
CENTRAL CITY	RX	Multi-Family Residential	Residential	MUR10	4:1	6:1	1.00	1.00	100	0	0.81	1.00	0.17	0.02	750
CENTRAL CITY	IG1	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0.15	0.85	0
CENTRAL CITY	IH	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	0
CENTRAL CITY	RM1	Multi-Family Residential	Residential	MFR2	1:1	1.5:1	1.00	1.00	35	0	0.88	0.67	0.11	0.01	1,000
CENTRAL CITY	RM2	Multi-Family Residential	Residential	MFR6	1.5:1	2.25:1	1.00	1.00	45	0	0.88	0.67	0.11	0.01	850
CENTRAL CITY	RM3	Multi-Family Residential	Residential	MUR9	2:1	3:1	1.00	1.00	65	0	0.82	1.00	0.15	0.03	750
CENTRAL CITY	RM4	Multi-Family Residential	Residential	MUR9	4:1	6:1	1.00	1.00	100	0	0.81	1.00	0.17	0.02	750
CENTRAL CITY	OS	Open Space	Open Space	POS	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
INNER	CE	Commercial	Commercial	MUR9	2.5:1	3.5:1	0.68	0.80	45	0	0.45	1.00	0.04	0.51	800
INNER	CI1	Institutional	Institutional	MUR10	.5:1	NA	0.60	0.00	65	0	0.1	1.00	0.05	0.85	1,000
INNER	CI2	Institutional	Institutional	MUR10	3:1	4:1	0.67	0.80	65	0	0.1	1.00	0.25	0.65	1,000
INNER	CM1	Commercial	Commercial	MUR8	1.5:1	2.5:1	1.00	1.00	35	0	0.8	1.00	0.11	0.09	750
INNER	CM2	Commercial	Commercial	MUR9	2.5:1	4:1	1.00	1.00	45	0	0.78	1.00	0.12	0.10	750
INNER	CM3	Commercial	Commercial	MUR10	3:1	5:1	1.00	1.00	65	0	0.65	1.00	0.21	0.14	800
INNER	CX	Commercial	Commercial	MUR10	4:1	6:1	1.00	1.00	75	0	0.42	1.00	0.17	0.41	800
INNER	EG1	General Employment	Mixed Employment	IND/IL	3:1	NA	0.23	0.00	45	0	0	0.00	0	1.00	0
INNER	EG2	General Employment	Mixed Employment	IND/IL	3:1	NA	0.20	0.00	0	0	0	0.00	0	1.00	0
INNER	EX	Central Employment	Mixed Employment	MUR10	3:1	5:1	1.00	1.00	65	0	0.61	1.00	0.17	0.22	800
INNER	IG1	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0.11	0.89	850
INNER	IG2	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
INNER	IH	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
INNER	IR	Multi-Family Residential	Residential	MUR7	2:1	NA	1.00	0.00	100	0	0.05	1.00	0	0.95	850
INNER	IS	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
INNER	OS	Open Space	Open Space	POS	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
INNER	R10	Single-Family Residential	Residential	SFR3	NA	NA	0.00	0.00	30	10,000	1	0.00	0	0.00	2,500
INNER	R2.5	Single-Family Residential	Residential	SFR14	NA	NA	0.00	0.00	35	2,500	1	0.00	0	0.00	2,000
INNER	R20	Single-Family Residential	Residential	SFR2	NA	NA	0.00	0.00	30	20,000	1	0.00	0	0.00	2,500
INNER	R5	Single-Family Residential	Residential	SFR7	NA	NA	0.00	0.00	30	5,000	1	0.00	0	0.00	2,000
INNER	R7	Single-Family Residential	Residential	SFR5	NA	NA	0.00	0.00	30	7,000	1	0.00	0	0.00	2,000
INNER	RF	Single-Family Residential	Residential	SFR1	NA	NA	0.00	0.00	30	86,920	1	0.00	0	0.00	3,000
INNER	RX	Multi-Family Residential	Residential	MUR10	4:1	6:1	1.00	1.00	100	0	0.81	1.00	0.17	0.02	750
INNER	RM1	Multi-Family Residential	Residential	MFR2	1:1	1.5:1	0.90	0.90	35	0	0.88	0.67	0.11	0.01	1,100
INNER	RM2	Multi-Family Residential	Residential	MFR6	1.5:1	2.25:1	0.83	0.83	45	0	0.88	0.67	0.11	0.01	900
INNER	RM3	Multi-Family Residential	Residential	MUR9	2:1	3:1	0.90	0.90	65	0	0.82	1.00	0.15	0.03	750
INNER	RM4	Multi-Family Residential	Residential	MUR9	4:1	6:1	0.90	0.90	100	0	0.81	1.00	0.17	0.02	750
INNER	RMP	Multi-Family Residential	Residential	MFR2	NA	NA	0.00	0.00	35	1,500	1	0.00	0	0.00	850
MIDDLE	CE	Commercial	Commercial	MUR9	2.5:1	3.5:1	0.54	0.54	45	0	0.3	1.00	0.05	0.65	950
MIDDLE	CI1	Institutional	Institutional	MUR10	.5:1	NA	0.60	0.00	65	0	0.2	1.00	0.02	0.78	1,000
MIDDLE	CI2	Institutional	Institutional	MUR10	3:1	4:1	0.38	0.38	65	0	0.1	1.00	0	0.90	1,000
MIDDLE	CM1	Commercial	Commercial	MUR8	1.5:1	2.5:1	0.80	0.80	35	0	0.6	1.00	0	0.40	750
MIDDLE	CM2	Commercial	Commercial	MUR9	2.5:1	4:1	0.64	0.64	45	0	0.6	1.00	0.13	0.27	750
MIDDLE	CM3	Commercial	Commercial	MUR10	3:1	5:1	0.83	0.83	65	0	0.6	1.00	0.13	0.27	800
MIDDLE	CX	Commercial	Commercial	MUR10	4:1	6:1	1.00	1.00	75	0	0.4	1.00	0	0.60	800
MIDDLE	EG1	General Employment	Mixed Employment	IND/IL	3:1	NA	0.17	0.00	45	0	0	0.00	0	1.00	0
MIDDLE	EG2	General Employment	Mixed Employment	IND/IL	3:1	NA	0.13	0.00	0	0	0	0.00	0	1.00	0
MIDDLE	EX	Central Employment	Mixed Employment	MUR10	3:1	5:1	1.00	1.00	65	0	0.6	1.00	0	0.40	800
MIDDLE	IG1	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
MIDDLE	IG2	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
MIDDLE	IH	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
MIDDLE	IR	Multi-Family Residential	Residential	MUR7	2:1	NA	1.00	0.00	100	0	0.05	1.00	0	0.95	850
MIDDLE	IS	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
MIDDLE	OS	Open Space	Open Space	POS	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
MIDDLE	R10	Single-Family Residential	Residential	SFR3	NA	NA	0.00	0.00	30	10,000	1	0.00	0	0.00	2,500
MIDDLE	R2.5	Single-Family Residential	Residential	SFR14	NA	NA	0.00	0.00	35	2,500	1	0.00	0	0.00	2,000
MIDDLE	R20	Single-Family Residential	Residential	SFR2	NA	NA	0.00	0.00	30	20,000	1	0.00	0	0.00	2,500
MIDDLE	R5	Single-Family Residential	Residential	SFR7	NA	NA	0.00	0.00	30	5,000	1	0.00	0	0.00	2,000
MIDDLE	R7	Single-Family Residential	Residential	SFR5	NA	NA	0.00	0.00	30	7,000	1	0.00	0	0.00	2,250
MIDDLE	RF	Single-Family Residential	Residential	SFR1	NA	NA	0.00	0.00	30	86,920	1	0.00	0	0.00	3,000
MIDDLE	RX	Multi-Family Residential	Residential	MUR10	4:1	6:1	0.75	0.75	100	0	1	1.00	0	0.00	800
MIDDLE	RM1	Multi-Family Residential	Residential	MFR2	1:1	1.5:1	0.90	0.90	35	0	0.9	0.67	0.1	0.00	1,100
MIDDLE	RM2	Multi-Family Residential	Residential	MFR6	1.5:1	2.25:1	0.70	0.70	45	0	0.9	0.67	0.1	0.00	900
MIDDLE	RM3	Multi-Family Residential	Residential	MUR9	2:1	3:1	0.80	0.80	65	0	0.9	1.00	0.07	0.03	800
MIDDLE	RM4	Multi-Family Residential	Residential	MUR9	4:1	6:1	0.75	0.75	100	0	0.9	1.00	0.07	0.03	800
MIDDLE	RMP	Multi-Family Residential	Residential	MFR2	NA	NA	0.00	0.00	35	1,500	1	0.00	0	0.00	850

MARKET AREA	COMP_ZONE	GEN_ZONE	GEN_ZONE_CC	REG_ZONE	FAR	IH_FAR	FAR_UTIL	IH_FAR_UTIL	HEIGHT	ZONE_SIZE	RES SPLIT	MFR_SPLIT	PRKG_SPLIT	COMM_SPLIT	AVG_UNIT
OUTER	CE	Commercial	Commercial	MUR9	2.5:1	3.5:1	0.20	0.20	45	0	0.27	1.00	0.02	0.71	950
OUTER	CI1	Institutional	Institutional	MUR10	.5:1	NA	0.60	0.00	65	0	0.1	1.00	0	0.90	1,000
OUTER	CI2	Institutional	Institutional	MUR10	3:1	4:1	0.38	0.38	65	0	0.1	1.00	0	0.90	1,000
OUTER	CM1	Commercial	Commercial	MUR8	1.5:1	2.5:1	0.60	0.60	35	0	0.64	1.00	0.12	0.24	750
OUTER	CM2	Commercial	Commercial	MUR9	2.5:1	4:1	0.48	0.48	45	0	0.59	1.00	0.19	0.22	750
OUTER	CM3	Commercial	Commercial	MUR10	3:1	5:1	0.67	0.67	65	0	0.57	1.00	0.21	0.22	800
OUTER	CX	Commercial	Commercial	MUR10	4:1	6:1	0.50	0.50	75	0	0.66	1.00	0.1	0.24	850
OUTER	EG1	General Employment	Mixed Employment	IND/IL	3:1	NA	0.17	0.00	45	0	0	0.00	0	1.00	0
OUTER	EG2	General Employment	Mixed Employment	IND/IL	3:1	NA	0.13	0.00	0	0	0	0.00	0	1.00	0
OUTER	EX	Central Employment	Mixed Employment	MUR10	3:1	5:1	1.00	1.00	65	0	0.75	1.00	0	0.25	850
OUTER	IG1	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
OUTER	IG2	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
OUTER	IH	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
OUTER	IR	Multi-Family Residential	Residential	MUR7	2:1	NA	1.00	0.00	100	0	0.05	1.00	0	0.95	850
OUTER	IS	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
OUTER	OS	Open Space	Open Space	POS	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
OUTER	R10	Single-Family Residential	Residential	SFR3	NA	NA	0.00	0.00	30	10,000	1	0.00	0	0.00	2,500
OUTER	R2.5	Single-Family Residential	Residential	SFR14	NA	NA	0.00	0.00	35	2,500	1	0.00	0	0.00	2,000
OUTER	R20	Single-Family Residential	Residential	SFR2	NA	NA	0.00	0.00	30	20,000	1	0.00	0	0.00	2,500
OUTER	R5	Single-Family Residential	Residential	SFR7	NA	NA	0.00	0.00	30	5,000	1	0.00	0	0.00	2,000
OUTER	R7	Single-Family Residential	Residential	SFR5	NA	NA	0.00	0.00	30	7,000	1	0.00	0	0.00	2,250
OUTER	RF	Single-Family Residential	Residential	SFR1	NA	NA	0.00	0.00	30	86,920	1	0.00	0	0.00	3,000
OUTER	RX	Multi-Family Residential	Residential	MUR10	4:1	6:1	0.65	0.65	100	0	0.9	1.00	0.06	0.04	800
OUTER	RM1	Multi-Family Residential	Residential	MFR2	1:1	1.5:1	0.80	0.80	35	0	1	0.67	0	0.00	1,100
OUTER	RM2	Multi-Family Residential	Residential	MFR6	1.5:1	2.25:1	0.57	0.57	45	0	1	0.67	0	0.00	900
OUTER	RM3	Multi-Family Residential	Residential	MUR9	2:1	3:1	0.68	0.68	65	0	0.95	1.00	0.03	0.02	800
OUTER	RM4	Multi-Family Residential	Residential	MUR9	NA	6:1	0.00	0.00	100	0	0.95	1.00	0.03	0.02	800
OUTER	RMP	Multi-Family Residential	Residential	MFR2	NA	NA	0.00	0.00	35	1,500	1	0.00	0	0.00	850
WEST	CE	Commercial	Commercial	MUR9	2.5:1	3.5:1	0.24	0.24	45	0	0.27	1.00	0.02	0.71	950
WEST	CI1	Institutional	Institutional	MUR10	.5:1	NA	0.60	0.00	65	0	0.2	1.00	0	0.80	1,000
WEST	CI2	Institutional	Institutional	MUR10	3:1	4:1	0.38	0.38	65	0	0.1	1.00	0	0.90	1,000
WEST	CM1	Commercial	Commercial	MUR8	1.5:1	2.5:1	0.60	0.60	35	0	0.64	1.00	0.12	0.24	750
WEST	CM2	Commercial	Commercial	MUR9	2.5:1	4:1	0.52	0.52	45	0	0.59	1.00	0.19	0.22	750
WEST	CM3	Commercial	Commercial	MUR10	NA	5:1	0.00	0.00	65	0	0.57	1.00	0.2	0.23	800
WEST	CX	Commercial	Commercial	MUR10	NA	6:1	0.00	0.00	75	0	0.66	1.00	0.1	0.24	850
WEST	EG1	General Employment	Mixed Employment	IND/IL	3:1	NA	0.17	0.00	45	0	0	0.00	0	1.00	0
WEST	EG2	General Employment	Mixed Employment	IND/IL	3:1	NA	0.13	0.00	0	0	0	0.00	0	1.00	0
WEST	EX	Central Employment	Mixed Employment	MUR10	NA	5:1	0.00	0.00	65	0	0.6	1.00	0	0.40	850
WEST	IG1	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
WEST	IG2	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
WEST	IH	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
WEST	IR	Multi-Family Residential	Residential	MUR7	2:1	NA	1.00	0.00	100	0	0.05	1.00	0	0.95	850
WEST	IS	Industrial	Industrial	IL	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
WEST	OS	Open Space	Open Space	POS	NA	NA	0.00	0.00	0	0	0	0.00	0	1.00	850
WEST	R10	Single-Family Residential	Residential	SFR3	NA	NA	0.00	0.00	30	10,000	1	0.00	0	0.00	3,000
WEST	R2.5	Single-Family Residential	Residential	SFR14	NA	NA	0.00	0.00	35	2,500	1	0.00	0	0.00	2,000
WEST	R20	Single-Family Residential	Residential	SFR2	NA	NA	0.00	0.00	30	20,000	1	0.00	0	0.00	3,000
WEST	R5	Single-Family Residential	Residential	SFR7	NA	NA	0.00	0.00	30	5,000	1	0.00	0	0.00	2,500
WEST	R7	Single-Family Residential	Residential	SFR5	NA	NA	0.00	0.00	30	7,000	1	0.00	0	0.00	2,500
WEST	RF	Single-Family Residential	Residential	SFR1	NA	NA	0.00	0.00	30	86,920	1	0.00	0	0.00	3,500
WEST	RX	Multi-Family Residential	Residential	MUR10	NA	6:1	0.00	0.00	100	0	0.9	1.00	0.06	0.04	800
WEST	RM1	Multi-Family Residential	Residential	MFR2	1:1	1.5:1	0.80	0.80	35	0	1	0.67	0	0.00	1,100
WEST	RM2	Multi-Family Residential	Residential	MFR6	1.5:1	2.25:1	0.57	0.57	45	0	1	0.67	0	0.00	900
WEST	RM3	Multi-Family Residential	Residential	MUR9	NA	3:1	0.00	0.00	65	0	0.95	1.00	0.03	0.02	800
WEST	RM4	Multi-Family Residential	Residential	MUR9	NA	6:1	0.00	0.00	100	0	0.95	1.00	0.03	0.02	800
WEST	RMP	Multi-Family Residential	Residential	MFR2	NA	NA	0.00	0.00	35	1,500	1	0.00	0	0.00	850

Appendix 3. Summary of Prototypes in Pro Forma Analysis

Prototype Name	Lot Size (sf)	Total Stories	Total Units	Parking Ratio (per unit)	Avg. Gross Unit Size (sf)	Zone(s) Used to Calibrate Prototypes
Reg. SF detached	5,000	2	1	2	1850	R5
Narrow lot SF detached	2,500	2	1	2	1500	R2.5
MM: duplex own R7	7,000	2	2	2	1750	R7
MM: duplex own	5,000	3	2	2	1450	R5
MM: triplex own	5,000	3	3	2	1165	R5
MM: fourplex own	5,000	2	4	0.5	875	R5
MM: fourplex own R2.5	5,000	2	4	0.5	1000	R2.5
MM: townhomes own	5,000	3	5	1	1500	RM2, RM3, all mixed-use zones
MM: duplex rent	5,000	3	2	2	1250	R5
MM: triplex rent	5,000	3	3	2	1165	R5
MM: fourplex rent	5,000	2	4	0.5	875	R5
MM: townhomes rent	5,000	3	5	0	1000	RM2, RM3, all mixed-use zones
Wood frame SF - inner	5,000	3	15	0	637	RM2 and RM3
Wood frame SF - outer	20,000	3	40	0.63	767	RM1, RM2, RM3, CM1, CM2, CM3
Podium MF 4-over-1	40,000	5	135	0.41	716	RM3, RM4, CM2
Podium MF 5-over-1	40,000	6	165	0.33	716	CM3
Tower MF	40,000	10	245	0.61	732	RM4 and Gateway Plan District

Source: ECONorthwest, "Development Capacity Feasibility Analysis Methodology Technical Memo," 2021

Appendix 4. Constraint Maps

All constraint maps are online in the 2023 BLI Documents folder at the following link: https://www.portland.gov/bps/planning/bli/2023-documents. Maps exist for each of the following constraints.

- Environmental Overlays
- Flight Limitations
- Flood Hazards
- Greenway Constraint
- Historic and Cultural Resources
- Institutional Properties
- ODOT Highway Interchanges
- Potentially Contaminated Sites
- Privately Owned Common Space
- Publicly Owned Land
- Scenic Views
- Sewer System
- Slope Landslide Hazards
- Stormwater System
- Transportation Capacity
- Unimproved and Substandard Streets
- Water System
- Wetlands

Category	Field	Description	Partial Lots	Housing	Central City Emp.	Industrial Emp.	Commercial Emp.	Institution Emp.
Brownfields	conECSI	DEQ, Environmental Cleanup Sites I (ECSI)	No	0.95	0.95	0.50	0.95	0.05
Brownfields	conLUST	DEQ, Underground Storage Tank Cleanup Sites (UST)	No	0.95	0.95	0.75	0.90	0.20
Cultural Resources	conHist	Historic and Conservation districts	No	0.90	0.90	0.90	0.90	0.90
Cultural Resources	conHistLdm	Historic and Conservation Landmarks	No	0.55	0.55	0.55	0.55	0.55
Cultural Resources	conNatAm	Parcels requiring archaeological scan or consultation with Native American tribal governments	No	1.00	0.85	0.85	0.85	0.85
Environmental Overlay Zones	conCovrly	Environmental Conservation Zones	Yes	0.95	0.75	0.50	0.25	0.25
Environmental Overlay Zones	conPovrly	Environmental Protection Zones	Yes	0.00	0.00	0.00	0.00	0.00
Flight Limitations	conAirHgt	Approach and departure cones	No	0.95	1.00	1.00	1.00	1.00
Flight Limitations	conHeliprt	Heliport Landing (impacts several buildings near Portland Heliport)	No	0.95	1.00	1.00	1.00	1.00
Flight Limitations	conNoise	Noise contours (areas above LDN 65 and 68 noise contours)	No	0.95	1.00	1.00	1.00	1.00
Greenway	conGW	All land with g/r/n overlays; land within i overlay where 10% or more of the parcel is within 125' of OHW	No	0.60	0.65	0.50	0.60	0.50
Hazards	conFld100	FEMA 100-Year Floodplain Map	Yes	0.80	0.50	0.40	0.35	0.35
Hazards	conFldway	FEMA Floodway Map	Yes	0.00	0.00	0.00	0.00	0.00
Hazards	conLSHA	Parcels within 50' of a mapped landslide hazard area	No	0.80	1.00	1.00	1.00	1.00
Hazards	conSlp25	Parcels where 25% or more of the parcel has a slope of greater than 25%	No	0.75	0.50	0.35	0.35	0.35
Infrastructure	conSewer	Infrastructure Constrained Areas: Sewer	No	0.85	0.75	0.75	0.75	0.75
Infrastructure	conStorm	Stormwater System	No	0.85	0.75	0.75	0.75	0.75
Infrastructure	conWater	Water System	No	0.85	0.75	0.75	0.75	0.75
Natural Resources	conWetland	Wetlands	Yes	0.55	0.75	0.50	0.35	0.35
Public Ownership	conInstit	Institutional Campuses	No	0.00	1.00	1.00	1.00	1.00
Public Ownership	conPrvCom	Private Common Open Space	No	0.00	0.00	0.00	0.00	0.00
Public Ownership	conPubOwn	Publicly owned or controlled lots that do not provide for residential uses	No	0.20	1.00	1.00	1.00	1.00
Scenic Areas	conView	Views	No	1.00	0.90	1.00	1.00	1.00
Transporation	conTranCap	2008 Volume to Capacity Ratios	No	0.90	0.90	0.65	0.80	0.80
Transporation	conTranInt	ODOT Highway Interchanges	No	0.90	0.90	0.75	0.75	0.75
Transporation	conTranSub	Substandard and Unimproved Streets	No	0.85	0.85	0.75	0.75	0.75

Contact

SAM BROOKHAM
Economic Planner | Bureau of Planning and Sustainability
sam.brookham@portlandoregon.gov

About City of Portland Bureau of Planning and Sustainability
The Bureau of Planning and Sustainability (BPS) develops creative and practical solutions to enhance Portland's livability, preserve distinctive places, and plan for a resilient future.

THE BUREAU OF PLANNING & SUSTAINABILITY

http://portland.gov/bps
503-823-7700
bps@portlandoregon.gov