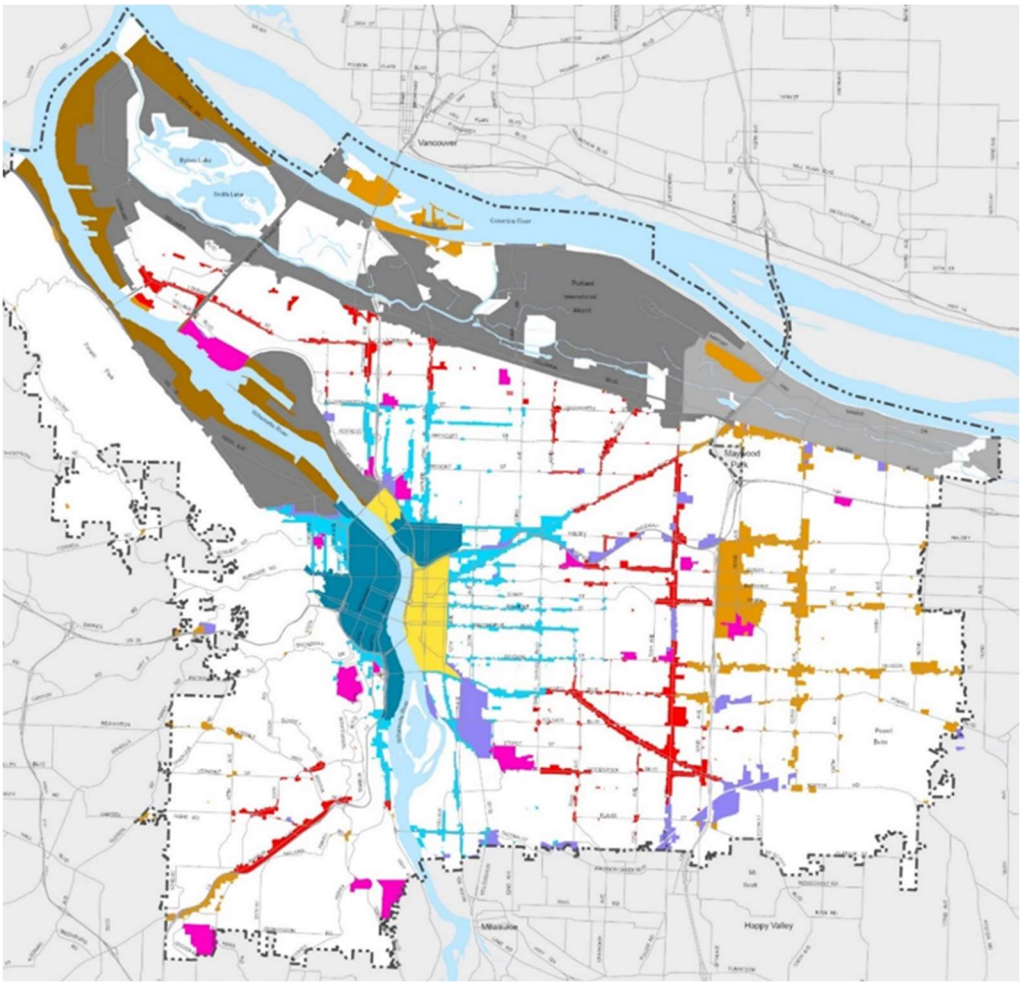

City of Portland Economic Opportunities Analysis

Volume 2. Employment Land Demand and Supply

Preliminary Draft, September 2023

Prepared by the Bureau of Planning and Sustainability, City of Portland

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Let us know what you think

This Draft Report is available for public comments that will be considered in revisions.

- Please send comments by November 30, 2023.
- Send comments to eoa@portlandoregon.gov.

How can you participate in the EOA Update?

Being a state and regional job center, Portland's economic community is diverse, and all are urged to weigh in on the EOA Update. Portland's working population in the regional labor market, its businesses, neighborhoods, community groups, property owners, the regional and statewide consumers and producers who rely on businesses in Portland, and others are all among the city's economic community. Moreover, historically underrepresented groups who tend to bear the brunt of economic hardships are a priority for outreach and participation in this project.

- Contact us at eoa@portlandoregon.gov to be included on the project mailing lists for periodic updates and to make comments about the project and draft reports.
- Stay tuned to the EOA Update website at https://www.portland.gov/bps/eoa for project materials, draft reports, and information about upcoming events and opportunities to participate.

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Executive Summary

Oregon's land use planning system requires that cities update their comprehensive plans periodically and provide for adequate 20-year growth capacity, based on an Economic Opportunity Analysis (EOA) and a housing needs analysis (HNA). The EOA analyzes and forecasts growth in Portland's industrial and other business districts, then designates an adequate 20-year supply of developable land for businesses and jobs. The City of Portland is updating the existing EOA, adopted in 2016, to align 2045 growth expectations with current market trends and community choices.

The EOA consists of three volumes:

- Volume 1 (2022) analyzes economic growth trends and market factors by business district type, considering Portland's national and regional context.
- **Volume 2 (this report)** compares the 20-year demand and current supply of developable land in each of Portland's employment geographies, identifying shortfalls for further analysis and planning.
- Volume 3 (future report) will identify community choices to meet employment land needs and economic development policies in relation to other city goals.

Takeaway findings on employment land demand and supply

- Recent employment projections for the nation, state, and region have slowed to roughly 50-60% of the growth in the previous 2008-2019 business cycle. Contributing factors include slower labor market projections and mixed pandemic recovery. Structural shifts by sector include faster industrial sector projections and slower projections in consumer services and education.
- The EOA baseline (mid-range) forecast estimates an addition of 110,400 new jobs in the 2019-2045 period. Approximately 32% of the 110,400 new citywide jobs are projected in the industrial areas, 25% are in the Central City, 20% are in neighborhood commercial areas, 17% are in residential areas, and 5% are in campus institutions.
- Shifting employment trends are supporting more inclusive prosperity. Middle-wage jobs that do not require a bachelor's degree comprise 36% of the projected 110,400 new city jobs in the baseline forecast, compared to relatively flat middle-wage growth trends in previous business cycles. Warehouse and distribution space accounts for 49% of that projected middle-wage job growth.
- The EOA includes four demand scenarios to inform community choices in how and how much the economy grows: low growth; baseline growth; 40% middle-wage growth; and high growth. The scenarios range from 101,000 to 126,800 new city jobs.
- Portland's industrial growth capacity is shrinking. The estimated Buildable Lands Inventory (BLI) development capacity of the Industrial geographies is 1,072 acres, down from an estimated 1,528 acres of estimated capacity in the adopted 2016 EOA. Most of the difference is the result of recent development.
- The Industrial geographies have an estimated unmet land demand of 438 acres in the baseline forecast, concentrated in demand for sites larger than 10 acres. In contrast, the Central City,

Commercial, and Institutional aggregate geographies each have over 50 years of growth capacity.

- The BLI results indicate sizable opportunities to meet growth capacity shortfalls in Industrial areas through development readiness initiatives, such as regulatory improvements, infrastructure investments, and brownfield reuse incentives.

Forecast background

Recent employment projections of the national, state, and regional economies have slowed substantially following the recent 2008-2019 business cycle, responding to slower labor market projections and mixed pandemic recovery trends. Employment growth rates by sector in the EOA forecast are based on the Oregon Employment Department (OED) 2030 employment forecast for the Portland Tri-County region. OED projects total regional payroll employment to grow at an average annual growth rate (AAGR) of 0.82% from 2019 to 2030, which compares to the 1.45% AAGR trend in the Tri-County region during the previous 2008-2019 business cycle and 1.52% AAGR in the City of Portland. The baseline forecast applies a city capture rate of 46% of the total Tri-County employment growth through 2045, which is slightly slower than the 49% city capture rate in the 2008-2019 business cycle. New building construction and land demand are modeled by building type and employment geography, based on Portland's recent employment and construction trends.

Baseline forecast results

The Baseline Forecast is a mid-range growth scenario of employment growth and employment land demand. The baseline results total 110,400 new jobs citywide, 37 million square feet (SF) of new building space, and 1,800 acres of associated land development from 2019 to 2045 (see Figure 1).

Figure 1. Summary of baseline demand forecast, 2019-2045

Geography	Added Jobs	% of total	New Building Square Feet	% of total	Development Acres	% of total
Central City	27,600	25%	7,799,000	21%	34	2%
Commercial	22,500	20%	5,781,000	16%	183	10%
Industrial	35,800	32%	20,677,000	56%	1,511	83%
Institutions	5,900	5%	2,763,000	7%	85	5%
Residential	18,600	17%				
Citywide Total	**110,400**	100%	**37,020,000**	100%	**1,813**	100%

Portland's Industrial employment geographies have the largest shares of the economy's projected growth, including 32% of citywide job growth to 2045, 56% of projected new employment building space, and 83% of resulting developable land demand. The Central City accounts for a 25% share of projected citywide job growth and the neighborhood commercial geographies have a 20% share.

Projected middle-wage job growth that does not require a bachelor's degree is concentrated in a few core sectors. The leading shares of middle-wage job growth in the baseline forecast are in

Transportation and Warehousing with 48%, Health Services with 23%, Construction with 8%, and Administrative Support with 5%.

Forecast scenarios

The analysis includes four different forecast scenarios that will inform community choices for policies and actions to be considered in EOA Volume 3.

1. The **baseline, mid-range growth scenario** estimates 110,400 new jobs from 2019 to 2045. This scenario is defined by a trend-supported 46% capture rate of Tri-County job growth, expanding at pace with the Tri-County region.
2. A **low-range growth scenario** is defined by Portland's minimum requirement to meet Metro's regional growth management allocation, adding 101,000 jobs overall.
3. A **40% Middle-Wage growth scenario** emphasizes equity objectives to support local income self-sufficiency and reduce racial income disparities. This scenario adds 118,600 new jobs overall with expanded growth in six industry sectors that account for 80% of the middle-wage jobs that do not require a bachelor's degree.
4. A **high-range growth scenario** results in 127,800 added jobs overall. This scenario is defined in part by matching the city's 0.93% average annual growth rate (AAGR) of the last two business cycles (2000-2019) and in part by including the baseline marine industrial and railroad growth projections.

Buildable Land Inventory

Portland's Buildable Land Inventory (BLI) identifies the vacant and redevelopable sites and assesses their likely development capacity under existing City plans, zoning, and market conditions. BLI results by aggregate employment geography are summarized in Figure 2. The development capacity of employment land is adjusted, based on estimated utilization rates at sites with mapped constraints, such as brownfields or physical conditions like steep slopes, and by netting out the employment (non-residential) share of new construction in the employment geographies.

Figure 2. Summary of Buildable Land Inventory

Aggregate Geographies	Base supply acres	After-constraints acres	Non-residential split	Adjusted net employment capacity, acres
Central City	589	316	37%	117
Commercial	1,522	931	49%	452
Industrial	2,831	1,072	100%	1,072
Institutions	781	200	98%	196
Total Employment Area	**5,723**	**2,520**	**73%**	**1,837**

Summary findings on BLI capacity:

- Portland's overall base supply of developable sites (before constraints are applied) totals 5,735 acres, 56% of which are vacant and 44% have estimated financial feasibility for redevelopment.
- Most of the base supply of BLI sites have regulatory, physical and/or infrastructure constraints that make them unlikely to develop, resulting in an average citywide utilization rate of 40%.
- All of Portland's commercial zones are also designated for residential use, and the estimated residential share is excluded from the employment BLI. For example, the estimated residential portion of likely development is 63% in the Central City and 66% in the Inner Commercial geography.
- The estimated BLI development capacity of the Industrial geographies is 1,072 acres, down from an estimated 1,528 acres of estimated capacity in the adopted 2016 EOA. Most of the difference is the result of recent development, and some is from overly optimistic utilization rates on constrained land in 2016 that exceeded recent development trends.

Employment land demand/supply reconciliation

Reconciliation of the baseline forecast to 2045 and existing BLI supply is shown in Figure 3. Unmet land demand by geography are identified by subtracting forecast land demand from the current adjusted capacity. This analysis responds to Oregon's Statewide Planning Goal 9 essential task of further planning for future growth capacity that exceeds existing supply.

Figure 3. Summary baseline forecast land demand/supply reconciliation

Aggregate Geographies	Added jobs	Land Demand	Land Supply	Surplus (Shortfall)	% Capacity
Central City	27,600	47	117	70	251%
Commercial	22,500	183	452	269	247%
Industrial	35,800	1,511	1,072	(438)	71%
Institutions	5,900	85	196	111	230%

Takeaway findings on land demand/supply reconciliation:

- **Surplus commercial growth capacity.** The Central City, Commercial, and Institutional aggregate geographies each have over 50 years of growth capacity.
- **Industrial land supply shortfall**. The existing capacity in Industrial geographies areas meets only 71% of forecast demand to 2045. The Industrial geographies have an estimated unmet land demand (per the BLI) of 438 acres in the baseline scenario, 348 acres in the Low-range growth scenario, 602 acres in the 40% middle-wage growth scenario, and 1,041 acres in the high-growth scenario.
- **Factors affecting industrial land shortfall.** Circumstances contributing to Portland's tightening industrial growth capacity include a relative lack of replacement supply as sites get developed, accelerating industrial growth and projections, and Portland's dominant regional share of the expanding Transportation & Warehouse sector that is generating most of the region's demand for industrial development.

Short-term land supply and parcel size assessment

Short-term land supply adequacy was assessed by comparing forecast demand to 2030 with existing capacity on sites estimated to be development ready within one year. This analysis summarizes development-ready land demand to support post-pandemic economic recovery and reinvestment to 2030. The results indicate that the industrial land shortfalls to 2045 are concentrated after 2030, except on larger sites and in the Harbor Access Lands geography. The aggregate Industrial and commercial geographies have surplus land capacity to 2030 in each of the forecast scenarios, providing some cushion of time to implement new directions that address the tightening long-term industrial land supply.

Adequate land supply by parcel size was also assessed, estimating the parcel size distribution of forecast demand from 2008-2019 new construction trends. The results indicate that Portland's industrial land shortfalls to 2045 are concentrated on medium-size and larger sites. The aggregate Industrial geographies have unmet baseline land demand of 121 acres for 10-20 acre sites and 428 acres for 20-50 acre sites. Thus, the combined Industrial capacity shortfall for sites larger than ten acres is 549 acres.

1. Introduction

Oregon's land use planning system requires that cities update their comprehensive plans periodically and provide for adequate 20-year growth capacity, based on an Economic Opportunity Analysis (EOA) and a housing needs analysis (HNA). The EOA analyzes and forecasts growth in Portland's industrial and other business districts, then designates an adequate 20-year supply of developable land for businesses and jobs. The City of Portland is updating the existing EOA, adopted in 2016, to align 2045 growth expectations with current market trends and community choices.

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Organization of this report

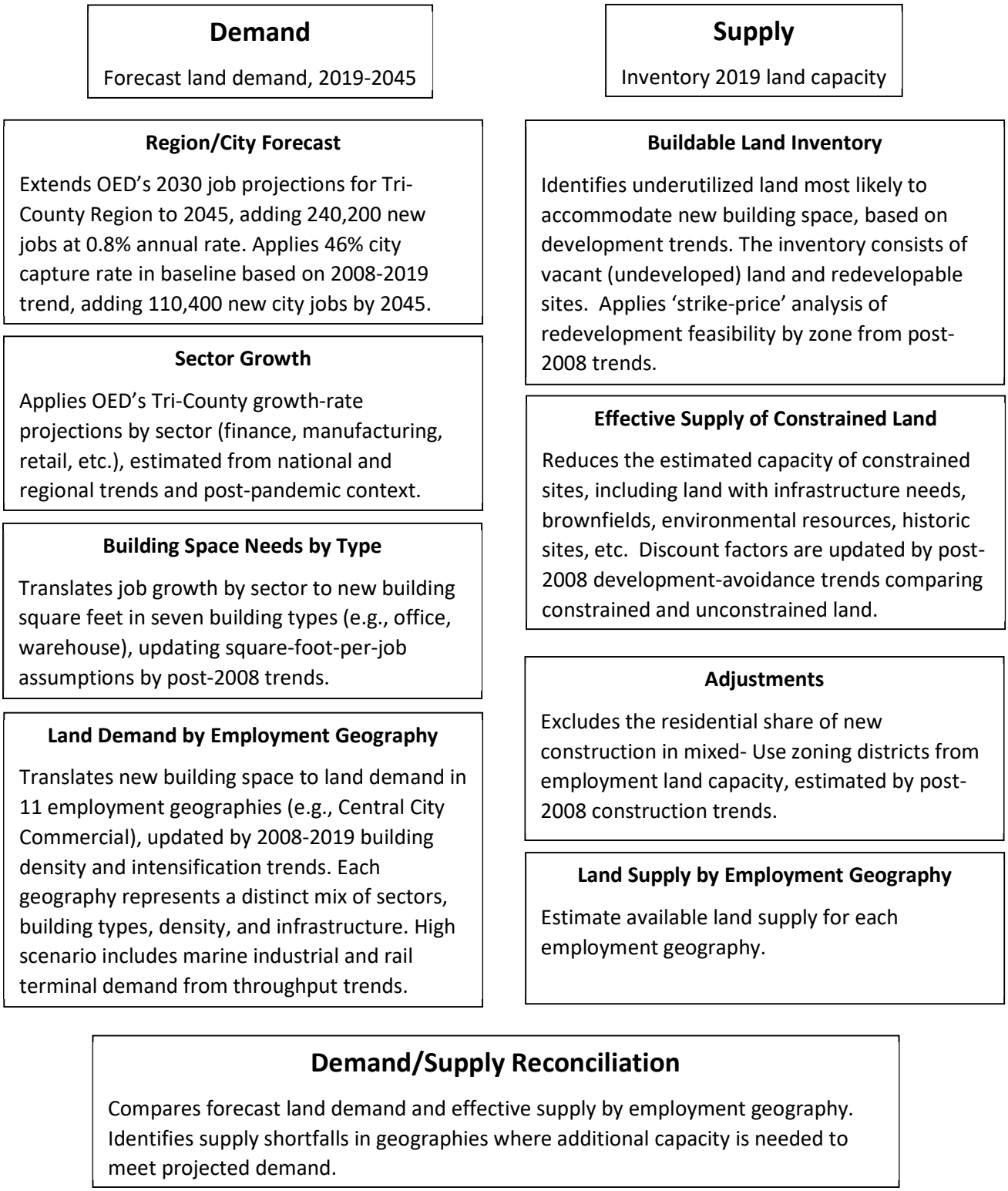
The forecast employment land demand and supply analysis of this report is organized to cover the following topics:

- Employment forecast and land demand analysis
- Buildable Land Inventory (BLI)
- Land demand and supply reconciliation
- Short-term land demand and site-size analysis

Land demand and supply methodology

The EOA methodology of evaluating the adequacy of current development capacity has two parallel steps for estimating land demand to 2045 and current supply available to meet it, as summarized in Figure 4. The first part determines the demand for developable land based primarily on a future employment forecast. The process of estimating demand has many steps to translate the regional employment forecast (jobs) by sector into city job growth, new building square feet by building type, and employment land demand in acres by employment geography. 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 identifies an inventory of vacant and underutilized, redevelopable land that is available for development, while adjusting the resulting growth capacity by various constraints on development (such as physical conditions like steep slopes, substandard infrastructure, natural resources, or brownfields) and excluding the residential share of new construction. The final step is a

Figure 4. EOA land demand and supply methodology



reconciliation or comparison between the demand for employment land and the available supply to identify any unmet land demand – the shortfalls or gaps. Implementation measures will be considered in EOA Volume 3 Community Choices to address these gaps and ensure an adequate supply of land to meet forecasted demand consistent with economic development and interrelated policies.

2. Employment forecast and land demand analysis

This section describes the methodology and results of the forecast employment growth and developable land demand within the City of Portland through 2045. The purpose and parameters of the forecast and the land supply analysis described in Section 3 are set in Oregon's Statewide Planning Goal 9 (Economy of the State) Administrative Rule to support growth-capacity planning for employment land. The Goal 9 Rules explain that the intent of preparing an Economic Opportunities Analysis is to "compare the demand for industrial and other employment uses to the existing supply of such land." The EOA forecast model correlates regional job-growth projections in 20 business sectors to new construction (square footage) projections across seven building types and developable land demand (acres) across 11 business district types. The forecast includes a baseline (mid-range) scenario and three alternative scenarios to consider in community choices for encouraging and guiding the economy's growth to meet different policy priorities.

Forecast background

Goal 9 parameters for EOA forecasts

Oregon's Goal 9 Administrative Rule sets a variety of requirements for EOA forecasts aimed to support long-range land use planning.

- **Forecast inputs.** Goal 9 calls for EOAs to review national, state, regional, and local trends as the primary basis for estimating future employment land demand. EOAs must also consider the city's comparative economic advantages and disadvantages. The forecast methodology draws on these inputs that are reviewed in the *EOA Volume 1 Trends and Market Conditions Report*.
- **Forecast outputs.** Goal 9 calls for cities to project future land demand by site type and size for compatible industrial and other employment land uses. The forecast estimates land demand by employment geographies that are distinct business district types and segments of demand.
- **20+ year forecast horizon.** Goal 9 requires adequate land supply for a 20-year planning period. This EOA forecast period is 2019 to 2045, starting in a business-cycle peak year to reflect relatively low vacancy and to match the full-employment end-year projection.
- **Short-term forecast.** Goal 9 requires adequate short-term land supply of sites expected to be development-ready within one year. The forecast estimates short-term demand to 2030.
- **Coordination encouraged.** Goal 9 strongly encourages coordinated estimates of land demand, including local capture rates of regional employment projections and local visioning to set community economic development objectives in coordination with state agencies. In response, the EOA forecast estimates a trend-based capture rate of state projections for the Tri-County area. The baseline forecast is consistent with the economic development policy framework of Portland's 2035 Comprehensive Plan, supporting continuing growth as a regional economic center, traded sector competitiveness, and equitable prosperity.

Market Conditions and Trends Report

Takeaway findings of *EOA Volume 1 Trends and Market Conditions* (March 2022):

- Portland and the region generated diverse job growth about 60% faster than the nation in the 2008-2019 business cycle.
- The growing economy has diverse land needs. The office, industrial, institutional, and neighborhood commercial sectors each provide about one-quarter of city jobs.
- Industrial land supply is tightening, due to robust growth of industrial building space, approaching buildout of vacant industrial space, and industrial displacement through redevelopment in commercial districts.
- Portland is Oregon's export gateway and a core location for a mix of growing target clusters that drive regional prosperity. Prosper Portland's target clusters include Green Cities, Athletic & Outdoor, Metals & Machinery, Food & Beverage, and Software & Media.
- Portland's marine industrial growth trends are mixed. Oregon's largest export gateway is substantially constrained by limited land availability and liability uncertainty of the Portland Harbor Superfund. ECONorthwest projected mid-range market potential for 370 acres of marine industrial development if these constraints are addressed.
- Portland is backsliding on economic equity goals, as wage-polarized job growth is increasing income inequality, racial income disparities, and the share of households with inadequate income self-sufficiency.

Recent national, state and regional forecasts

A summary of recent employment forecasts at the national, state, and regional levels are reviewed in Figure 5. The EOA forecast uses Oregon Employment Department 2030 projections for the Portland Tri-County Area (highlighted in blue in Figure 5) as regional employment projections by sector. Advantages of the OED projections for the EOA include its regional geography, an updated post-pandemic analysis, and a sector-trendline-based methodology with moderated influence of national workforce projections that could continue to be outpaced by regional in-migration. These factors are described further in the next sections below.

Figure 5. Comparison of recent employment forecasts by average annual growth rates

	U.S. (Global Insight)		Oregon (OEA, 5/2023)		MSA (Metro, 2018)		Ptd. Tri-County (OED)		Portland
	2008-2019	2019-2033	2008-2019	2019-2033	2008-2019	2018-2045	2019-2030	2019-2031	2008-2019
Total employment	**0.87%**	**0.45%**	**1.16%**	**0.63%**	**1.49%**	**0.89%**	**0.82%**	**0.68%**	**1.52%**
Production & distribution	0.2%	0.1%	0.6%	0.3%	1.0%	0.3%	0.8%	0.9%	0.7%
Office sectors	0.7%	0.8%	0.7%	0.8%	1.5%	1.2%	1.0%	0.7%	1.4%
Health & education	2.1%	0.9%	3.2%	0.9%	2.3%	1.4%	1.1%	0.8%	2.4%
Retail & Consumer Svcs.	1.0%	-0.2%	1.1%	0.4%	1.4%	0.6%	0.4%	0.3%	1.7%
% of 2008-2019 Trend		51%		54%		60%	57%	47%	

Takeaway findings from recent employment forecasts:

- **Slower labor market projections.** Recent projections for the overall economy have slowed to roughly 50-60% of the growth in the previous 2008-2019 business cycle (see Figure 5). Major factors include the nation's slower labor market projections (BLS, 2022) due to retiring boomers and lower birthrates and mixed pandemic recovery to date. Citywide employment grew by 1.52% AAGR (QCEW data) from 2008 to 2019, compared to 1.45% AAGR in the Tri-County Area (QCEW data) and 1.48% AAGR in the seven-county MSA (CES data).
- **Above-average Portland area growth.** The region grew jobs roughly 70% faster than the nation and 30% faster than the state in the most recent 2008-2019 business cycle, and Portland matched the region's pace at a 1.5% AAGR. Regional projections continue to outpace state and national projections, but at a somewhat lower margin—as shown in Figure 5.
- **Structural changes with the pandemic.** The sector mix of recent job losses and recovery projections has been different than in previous recessions (see Figure 60 in EOA Volume 1), indicating structural changes in the economy:
    - **Faster industrial growth.** Industrial (goods production and distribution) projections from 2019 have accelerated, shaped by moderated recession losses, e-commerce expansion, larger inventory preferences with global supply-chain disruptions, an uptick in manufacturing construction, and 2022 federal manufacturing incentives.[1]
    - **Slowing consumer market growth.** Retail, consumer services, and education projections have dropped relative to the previous business cycle, affected by less market demand from a slower-growing labor market and slower recoveries from major pandemic job losses. Health care projections are an exception, supported by the expanding demand of the aging population.

[1] See 'EOA Volume 1, Appendix 3. Pandemic recovery trends' for further explanation. For example, the region's robust industrial development trends during the 2008-2019 business cycle continued through the pandemic, including a rise in manufacturing space that exceeded 2008-2019 manufacturing expansion. This recent manufacturing investment upswing was reinforced in 2022 by major federal incentives added in the Inflation Reduction Act for clean energy production and Chips Act for semiconductor production

Long-term, land-use-oriented approach of EOA forecast

The long-term horizon and land-use-oriented purposes of the EOA forecast differ somewhat from the shorter-term employment forecasts reviewed in Figure 5 that are used for public budgeting and workforce development. The EOA adjusts the forecast methodology to address its different use.

- **Short-term fluctuations within business cycles.** The EOA applies a peak-to-peak forecast horizon to minimize the short-term fluctuations of the business cycle. In contrast, the BLS, OEA, and OED forecasts reviewed in Figure 5 are updated annually, are sensitive to the current economic outlook that year, and are framed by a 10-year forward and backward look from the current year's position in the business cycle. These 10-year outlooks have advantages for the EOA in accounting for the economy's sector-mix changes during the pandemic, but uncertainties in starting from a less-confident, mixed-recovery year in the business cycle.
- **Real estate development trends.** Occupied building space trends in the region and districts are less cyclical than employment trends (see comparison in EOA Section 1), and building-space growth rates by building type vary moderately from employment growth rates in associated sectors. The EOA projects future land demand primarily by sector projections in regional employment, but the EOA also applies adjustments that offset mismatches in real estate and employment trends (see discussion in the forecast methodology section regarding building space and land demand).

Sensitivity factors

Some notable factors could influence future city job growth upward or downward. The baseline forecast aims to apply a mid-range estimate of these factors.

- City capture rate – The baseline forecast estimates that the City will grow at pace with the Tri-County Area, applying a 46% capture rate of projected Tri-County job growth that matches Portland's 46% share of Tri-County jobs in 2019. The 46% capture rate is conservative relative to the last business-cycle trend and Portland's stronger market position in faster-growing sectors. Portland's capture rate was 49% of the Tri-County job growth (QCEW data) in the 2008-2019 business cycle. Post-pandemic employment projections also generally favor a higher overall city capture rate, since leading job-growth sectors with faster regional projections tend to be more concentrated in Portland, including Transportation and Warehousing, Professional Services, Management of Companies, and Health Care.
- How much change in sector mix? – The slower pandemic-recovery trends and current projections in consumer services and education are an abrupt change from their relatively fast growth in Portland during the previous business cycle. The long-term outlook for these sectors is also difficult to predict at this early recovery stage in the business cycle. The current outlook is also complicated by higher inflation rates during the pandemic and risks of a second recession. At this point, the EOA discussion draft's baseline forecast applies the Oregon Employment Department 2030 projections for the Portland Tri-County Area, instead of 2031 projections. The 2030 projections assume moderated structural shifts away from the faster commercial growth

trends of the previous business cycle, while the 2031 projections are less optimistic about long-term commercial growth. BPS will continue to monitor regional employment projections and city recovery trends in 2023 to consider updating the regional sector projections used in the EOA forecast.

- Residential and employment growth relationship – The EOA forecast measures economic growth potential by regional sector-expansion opportunities. The OED job projections are partly constrained by slowing national workforce projections, but not as a hard stop. Population growth is a major factor in local economic growth, as a source of workers and of consumer demand in sectors that mainly serve local markets. At the same time, job growth rates vary widely between regions and within regions, attracting regional in-migration and capital inputs to accommodate sector growth. Additionally, job growth rates in Portland are less constrained by local population growth because the city is an economic center, drawing workers from the regional labor market and largely serving traded sector markets beyond the region. The EOA forecast methodology is also aligned with the economic development outlook of Advance Portland and previous city economic development strategies, which recognize Portland's livability advantages for attracting workers but frame economic growth and prosperity prospects more by regional traded sectors with growth opportunities and high multiplier impacts.
- Remote work and office vacancy – Office-sector job recovery and projections following the 2020 recession have remained strong. However, remote work during the pandemic has sharply elevated vacancy rates in core office districts. CoStar data shows a 4 million square foot (SF) increase in vacant Central City office space between 2019 and May 2023, comparable to the region's rise in suburban office vacancy after the Great Recession which took a decade to recover. Prosper Portland's recent responses in Advance Portland for focused attention in Downtown and the Lloyd District (where office density is highest) are expected to help stimulate recovery there. Other supportive factors include the hybrid office work schedules widely introduced in 2023, rent adjustments and space improvements aimed to refill office space, district problem solving efforts (such as crime and homelessness initiatives), and projected office sector job growth. Drawing on these trends, the EOA forecast reduces the projected Central City office space demand resulting from related job growth by 24% below the 2019 average (see discussion of square-foot-per-employee estimates in the forecast methodology section).

Forecast methodology

The forecast uses the same demand model that was developed by E.D. Hovee & Company and used in Portland's 2016 EOA. The Bureau of Planning and Sustainability (BPS) updated the model assumptions to be consistent with recent growth trends and 2019 starting-year conditions. The key steps of the baseline forecast methodology are outlined in Figure 6. These steps of the model are further explained below. Background tables of forecast assumptions are included in Appendix A.

1. Regional employment forecast. The EOA employment forecast is based on the Oregon Employment Department (OED) employment projections for the Portland Tri-County Area. OED's sector-

Figure 6. Forecast methodology summary

Regional job forecast	OED job forecast for Tri-County Area by sector is projected to 2045. Estimated annual growth rate of total payroll jobs is 0.82%.
City job growth	Tri-County projections are allocated to city by the 2019 city shares in each sector and total employment. Estimated total city capture rate is 46%.
Jobs to building types	Projected job growth by sector is allocated to 7 building types, based on 2008-2019 trends by geography.
SF per job	SF-per-job assumptions for each building type and geography are updated from 2008-2019 trends and used to translate new jobs to SF of new buildings.
FAR	Floor-area-ratio assumptions for each building type and geography are updated from 2008-2019 trends and used to translate new building SF to land demand.
Projections by building type	Jobs, new building SF, and developable land demand are projected by building type and geography to 2030 and 2045.

based employment projections draw on sector trendlines within the region, and the sector totals add up to total payroll employment.[2] BPS calculated average annual growth rates (AAGR) from OED's 2019 and 2030 totals, representing a peak-to-peak period of the business cycle since the end-year projection assumes full employment conditions. These full business cycle growth rates are taken as long-term trajectories and extended to 2045 in the EOA forecast. The resulting growth rate of total payroll employment in the Tri-County region is 0.82% AAGR, adding 240,400 jobs in the Tri-County region from 2019 to 2045. BPS did not include the State of Washington employment projections for southwest Washington, because the combined geographies did not match the 7-County Metropolitan Statistical Area (MSA) in either state and the projection methodologies differ between states.

2. City job growth projections. BPS estimated a 46% city capture rate of total Tri-County payroll employment growth to 2045 in the baseline forecast, matching the 46% city share of total jobs in 2019 and approximating the 49% capture rate of the recent 2008-2019 business cycle. The City of Portland share of Tri-County jobs has been generally stable over the last two decades through 2021, increasing slightly from 45% to 46%. Thus, the baseline forecast projects citywide job growth at pace with the region, adding 110,400 jobs from 2019 to 2045.

BPS used citywide annual-average employment by sector identified in Quarterly Census of Employment and Wages (QCEW) data as the starting point of the forecast horizon.[3] The EOA forecast allocated total

[2] 'Payroll employment' excludes self-employment of proprietors who are not counted as wage and salary workers in the official statistics of the establishment.

[3] QCEW employment data is derived from quarterly tax reports submitted by all employers that are subject to Unemployment Insurance laws. QCEW data is a census so is not affected by sampling errors. QCEW uses location

payroll employment among 20 sectors that generally correspond to 2-digit classifications of the North American Industrial Classification System (NAICS). The main exception was that Hospitals were broken out as a separate portion of NAICS 62, to more accurately estimate job growth in the hospitals portion of the Institutions geography. OED's regional projections of Educational Services and Local Government Education were also combined to approximate the NAICS 61 Education sector in QCEW data of public and private establishments.

City job growth projections by sector are based on Portland's 2019 share of Tri-County jobs within that sector, holding that share constant through 2045. Thus, the forecast combines the regional market potential of the Oregon Employment Department regional growth rate projections in each sector with the city's 2019 regional market position (share of jobs) in that sector to forecast the city employment for each sector.

3. Allocation of Job Growth by Building Type. The forecast model translates jobs by sector to jobs by building type, as an interim step for estimating new building space construction from employment projections. Business sectors loosely correspond to building types, although they vary by business district type (employment geography). For example, professional services jobs are concentrated in Central City office buildings but are also located in neighborhood commercial retail buildings and home occupations of residential neighborhoods.

Portland's 2016 EOA forecast used six building types that correspond to real estate trends data (such as CoStar), including industrial building categories of warehouse & distribution, general industrial, and flex space/business park buildings and commercial categories of office, retail, and institutional buildings. This EOA added a mixed-use building type that combines residential and commercial space, given Portland's substantial mixed-use development trends of the last decade.

Projected job growth is assigned to seven building types, set by an updated crosswalk of assumptions to each sector's 2019 jobs by employment geography and adjusted by 2008-2019 growth rates of jobs and new construction (see Figure 33 of Appendix A). Geography shares of retail, mixed-use commercial, warehouse, and general industrial are estimated by new construction trends instead of jobs, as a data source for the mixed-use commercial share and to offset inconsistencies between job and construction trends.

An additional geographic-shift factor is applied to the employment forecast by geography within each building type, calculated by their relative employment growth and construction trends in the 2008-2019 business cycle. Thus, the forecast reflects both sector trends at the national and regional level and local geography trends at the business district level.

This geographic-shift step in allocating job projections by building type also includes an adjustment to account for displacement trends. The EOA Volume 1 Report identified the displacement of nearly 2 million square feet of industrial building space in the Central City and other commercial areas during the recent 2008-2019 business cycle, reflecting sites that redeveloped to the higher planned building

addresses of employers, so it is an effective annual measure of employment by private and public establishments citywide and in business-district geographies.

densities. These displacement trends are reflected in industrial sector job losses in the Central City. The forecast model reallocates those job losses to the nearby Harbor & Airport Districts geography as relocation demand within the model's geographic-shift analysis.

4. Building Space per Employee. Portland's 2016 EOA primarily used industry-standard and Metro estimates of square feet (SF) per employee by building type. These model assumptions were updated to more accurately reflect recent city trends, using a combination of city permit data (occupancy level) for new building construction (2008-2019) by building type and QCEW employment data on those sites. The forecast model applies a separate average SF-per-employee estimate for each employment geography within each building type, as shown in Figure 34 in Appendix A.

Remote work trends in office buildings have complicated SF-per-employee estimates, both as a long-term reduction and wide fluctuation during the pandemic. BPS reviewed recent national research on remote work trends, including Zippia (2023) and WFH Research (2023), and analyzed regional, city, and Central City averages of office sector jobs (QCEW and CES data) and office building SF(CoStar data). Early estimates of post-pandemic averages of office SF-per-employee diverge, including a substantially higher plateau of remote work and executive surveys citing larger space demand for expanded amenities and employee spacing expectations. Average SF/employee also varies widely among office sectors and by the sector mix of different office districts. The average office SF/employee in 2019 was 246 in the MSA, 336 in Portland and 371 in the Central City, generally reflecting more private office and amenity space in professional and financial offices. Projecting the 2008-2019 trend forward to 2030, the average office SF/employee would be 301 citywide and 334 in the Central City. The EOA forecast estimates an average of 280 office SF/employee to 2045 citywide, down from 350 SF/job in Portland's 2016 EOA.

5. Floor area ratios (FARs) – Employment land demand is estimated in the EOA by the combination of new construction projections and average FAR by building type. FAR is a measure of building square footage on a site divided by site area. Average FAR estimates were updated based on an analysis of city permit data for new construction (2008-2019) by building type and geography. The forecast model applies a separate average FAR estimate for each employment geography within each building type, as shown in Figure 35 in Appendix A.

The land demand analysis in this step also accounts for 'intensification trends'[4] that do not require additional land supply. An intensification factor was applied to each aggregate employment geography based on an analysis of permit data. The new building space by geography during the 2008-2019 business cycle was broken down into categories of new building construction and building expansion space. The building-expansion share was applied as an intensification factor, which came to 21% in the Central City, 38% in Commercial areas, 23% in Industrial areas, and 22% at Institutional campuses.

[4] 'Intensification' is a measure of employer growth at occupied sites that does not result from new building construction, so it does not necessarily require additional developable land. Typical examples of intensification include building additions and other investments that result in more employment at already-occupied sites.

Employment geographies

The EOA divides employment land citywide into 11 employment geographies that represent distinctive business district types. Employment geographies differ in their mix of business sectors, building types, development density, zoning, infrastructure, and other specialized characteristics. Each geography is defined by the combination business location preferences (agglomeration of firms that compete and trade with each other) and community location preferences (comprehensive plan map designations that guide zoning). Methodologically, each geography represents a different market segment of employment land demand and an existing supply of vacant and redevelopable land.

The employment geographies are identified in Figure 7 and mapped in Figure 8. The Harbor Access Lands and Harbor & Airport Districts geographies, along with their defining freight infrastructure are mapped in Figure 9. The employment geographies are further described in EOA Volume 1, including their sector specializations, job growth trends, and real estate development trends. The neighborhood commercial geographies that were defined in the 2016 EOA (Gateway Regional Center, Town Centers, and Neighborhood Corridors & Centers) were revised in this update to Inner Commercial, Middle Commercial, Outer Commercial, and West Portland Commercial that represent different market areas of commercial and residential land demand.

Figure 7. Summary of employment geographies and campus institutions

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	Inner Commercial
	Middle Commercial
	Outer Commercial
	West Portland Commercial
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
U of O Portland (former Concordia campus)	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	Adventist Medical Center
Multnomah University	
Western States Chiropractic College	

Institutions included in other employment geographies:

Portland State University (Central City)	OHSU at South Waterfront

The 11 employment geographies are summarized into four larger aggregate categories of employment land demand: Central City, Industrial, Commercial, and Institutions. The Residential geography is also identified in the employment projections, which also includes open spaces and technically means other areas outside of employment geographies. Types of employment in the residential geography include schools, home occupations, nursing homes, non-conforming uses, and recreation facilities (such as golf courses and park venues).

Figure 8. EOA Employment Geographies Map

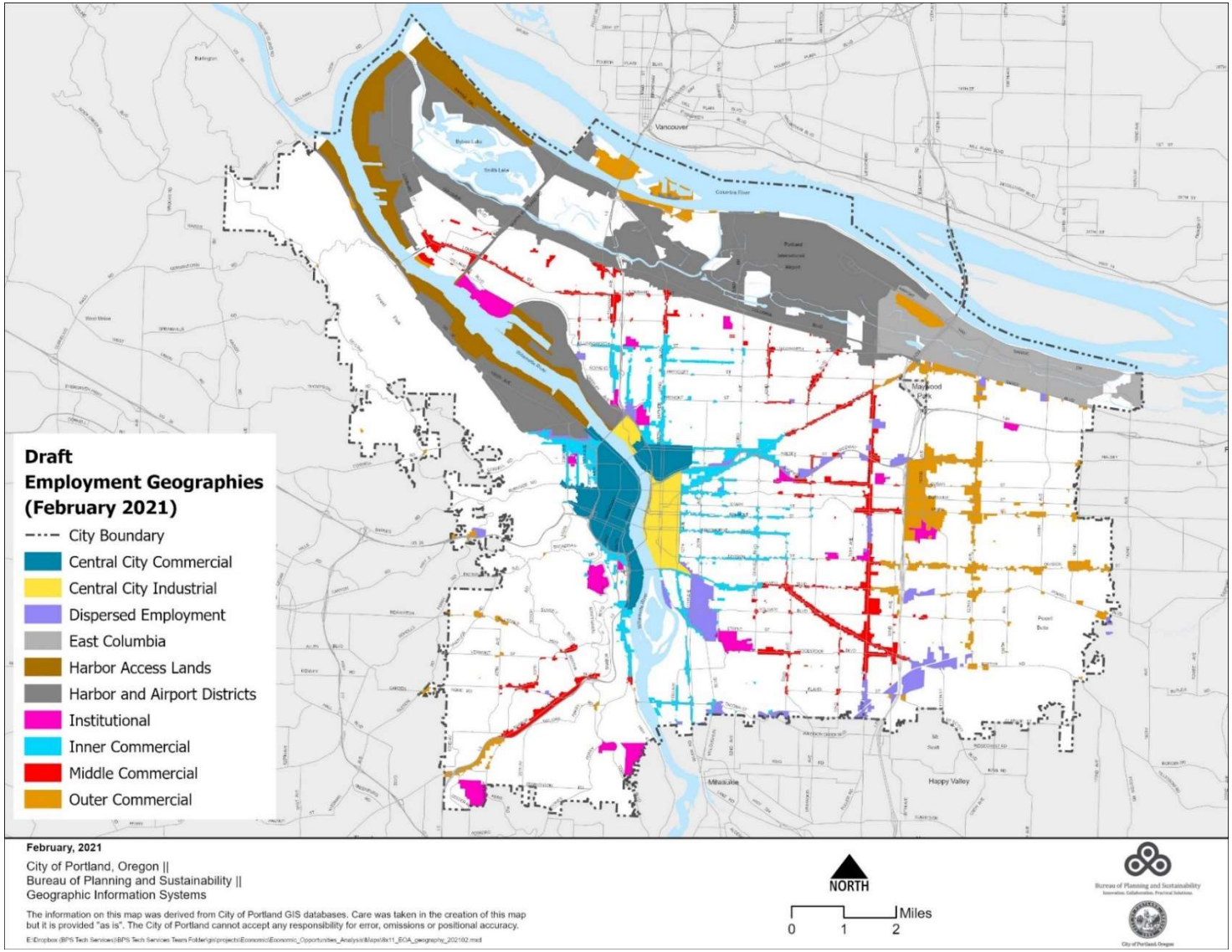
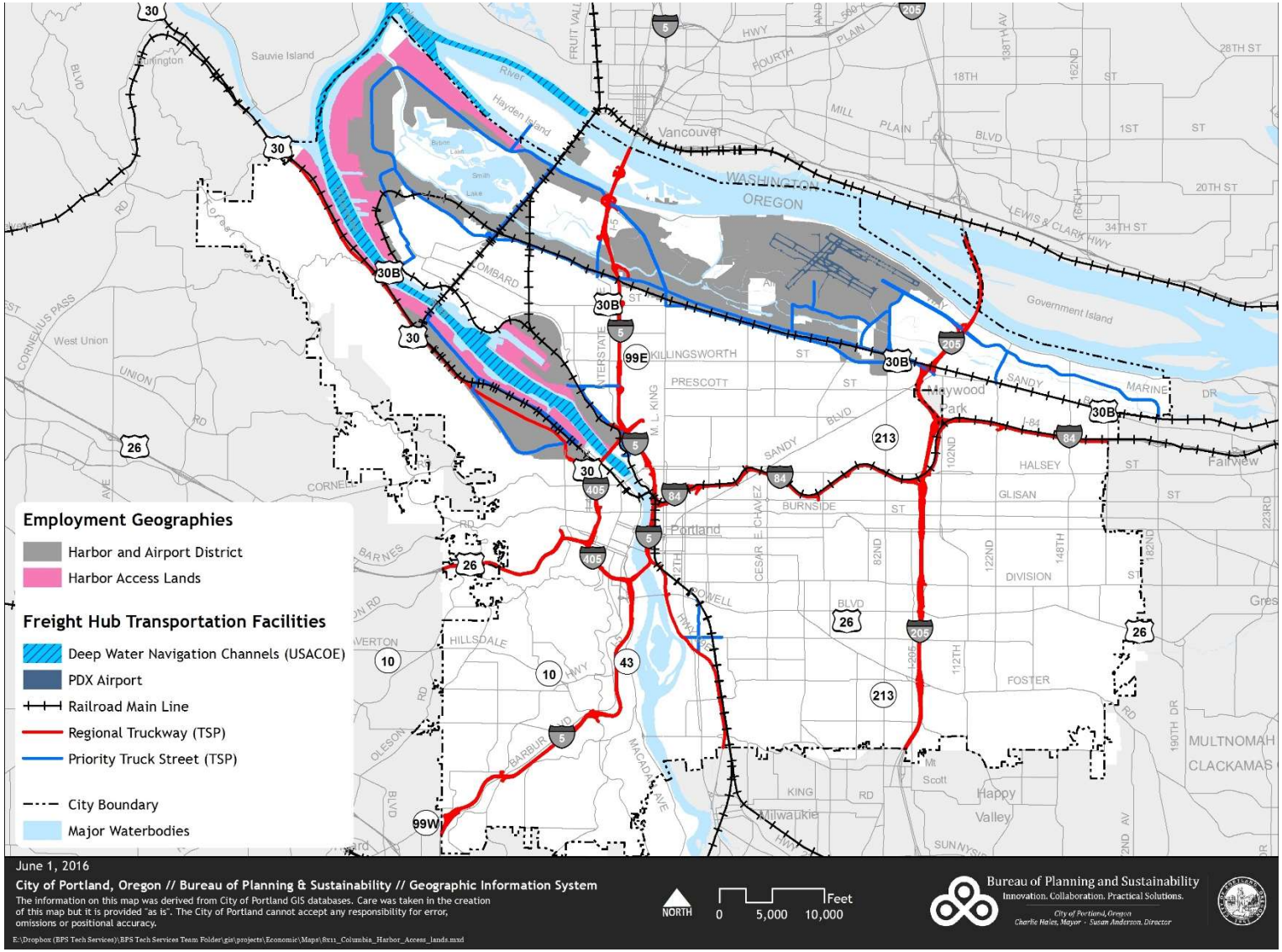


Figure 9. Harbor Access Lands and Harbor & Airport Districts map



Baseline employment forecast results

The baseline employment forecast estimates that the city will grow jobs generally at pace with the Tri-County region, adding 110,400 jobs from 2019 to 2045. The forecast estimates a 46% capture rate of projected Tri-County job growth, which is slightly below its 49% capture rate in the 2008-2019 business cycle. The city employment forecast is based on the regional market potential of the Oregon Employment Department's growth rate projections by sector for the Portland Tri-County region and the city's 2019 regional market position (share of jobs) in that sector. Figure 10 shows the distribution of the Portland employment forecast by sector.

Figure 10. City of Portland baseline employment forecast by sector

NAICS	Employment Sector	2019	2045	Change, 2019-2045	Avg. annual growth rate
11 & 21	Agriculture & Mining	1,240	1,400	180	0.5%
22	Utilities	2,360	2,500	200	0.3%
23	Construction	22,150	26,100	4,000	0.6%
31-33	Manufacturing	28,480	30,000	1,500	0.2%
42	Wholesale	21,340	24,500	3,200	0.5%
44-45	Retail	35,700	37,900	2,200	0.2%
48-49	Transp. & Warehousing	27,680	48,900	21,300	2.2%
51	Information	12,600	15,800	3,200	0.9%
52	Finance	17,420	18,700	1,300	0.3%
53	Real Estate	10,510	12,900	2,400	0.8%
54	Professional Services	41,410	58,700	17,300	1.4%
55	Management	18,870	26,000	7,200	1.2%
56	Admin, Waste	23,200	27,500	4,300	0.7%
61	Education Services	43,900	45,700	1,800	0.2%
622	Hospitals	17,280	19,500	2,200	0.5%
Other 62	Other Health & Social Asst.	48,940	75,700	26,700	1.7%
71	Arts, Entertain, Rec	9,230	11,300	2,100	0.8%
72	Accomm & Food Service	46,020	54,200	8,200	0.6%
81	Other Services	20,870	19,500	-1,400	-0.3%
92	Government	15,240	17,900	2,700	0.6%
Total Employment		**464,410**	**574,800**	**110,400**	**0.82%**
Land use sector groups					
Goods production & distribution		103,250	133,500	30,200	0.99%
Office sectors		139,240	177,500	38,200	0.94%
Health care & education		110,110	140,900	30,800	0.95%
Retail & consumer services		111,810	122,900	11,100	0.37%
Source: BPS, 2019 from QCEW. Projections combine public and private education.					

Takeaway findings on projected baseline job growth by sector:

- Moderate job growth of nearly 1% per year is projected in the industrial, office, and institutional sector groups, along with slower growth of about 0.4% per year in the retail-related sectors.
- The largest sources of projected city job growth are in Health Care and Social Assistance with 28,900 added jobs by 2045, Transportation and Warehousing with 21,300 added jobs, and professional services with 17,300 added jobs.
- Portland's Industrial employment geographies have the largest shares of the economy's projected growth, including 32% of citywide job growth to 2045, 56% of projected new employment building space, and 83% of resulting developable land demand. The Central City accounts for a 25% share of projected citywide job growth and the neighborhood commercial geographies have a 20% share.
- Middle-wage jobs that do not require a bachelor's degree comprise 36% of the projected 110,400 new city jobs in the baseline forecast (see Figure 37 in Appendix A), compared to relatively flat middle-wage growth trends in previous business cycles.
- Projected middle-wage job growth is concentrated in a few core sectors. The leading shares of middle-wage job growth in the baseline forecast are in Transportation and Warehousing with 48%, Health Services with 23%, Construction with 8%, and Administrative Support with 5% (see Figure 37 in Appendix A).
- Projected job growth has slowed abruptly in the institutional sectors to 0.2% per year in education and 0.5% per year in hospitals.

The baseline forecast of 110,400 additional jobs by 2045 is distributed to the employment geographies in Figures 11 and 12, based on their actual employment distribution in 2019 and a combination of their employment and new building construction trends in the recent 2008-2019 business cycle.

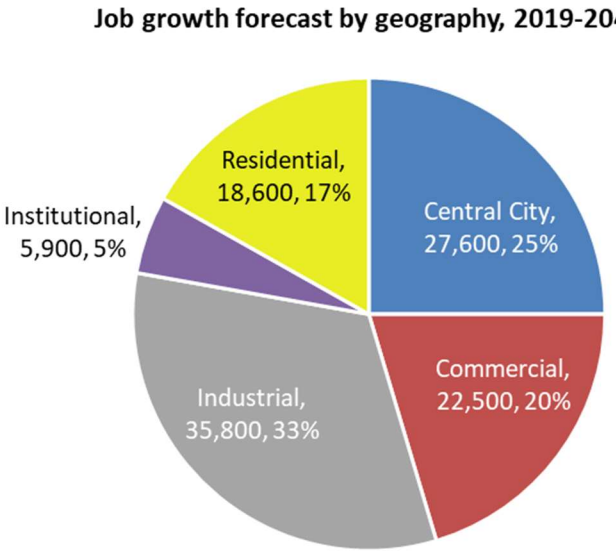
Takeaway findings on projected baseline job growth by geography:

- The industrial geographies have the highest projected job growth with 35,800 added jobs, followed by 27,600 new jobs in the Central City and 22,500 new jobs in the Commercial areas.
- A substantial 17% share of city job growth in the residential geography is in a mix of residential area land uses, including home occupations, nursing homes, schools, and outdoor recreation.

Figure 11. Baseline employment forecast by geography, 2019-2045

	2019 total (QCEW)		2019-2045 change		2045 total	
Employment geography	Jobs	Share	Jobs	Share	Jobs	Share
Central City Commercial	127,100	27%	22,900	21%	150,000	26%
Central City Industrial	25,160	5%	4,700	4%	29,900	5%
Dispersed Employment	16,230	3%	5,200	5%	21,500	4%
East Columbia	23,060	5%	10,900	10%	33,900	6%
Harbor Access	9,970	2%	1,900	2%	11,800	2%
Harbor & Airport Districts	53,990	12%	17,800	16%	71,800	12%
Inner Commercial	68,280	15%	15,200	14%	83,500	15%
Middle Commercial	19,430	4%	2,100	2%	21,600	4%
Outer Commercial	24,740	5%	4,600	4%	29,400	5%
W Portland Commercial	6,860	1%	600	1%	7,500	1%
Institutional	41,980	9%	5,900	5%	47,900	8%
Residential	47,620	10%	18,600	17%	66,200	12%
Total	**464,410**	**100%**	**110,400**	**100%**	**574,800**	**100%**
Aggregate employment geography						
Central City	152,260	33%	27,600	25%	179,800	31%
Commercial	119,310	26%	22,500	20%	141,800	25%
Industrial	103,250	22%	35,800	32%	139,000	24%
Institutional	41,980	9%	5,900	5%	47,900	8%

Figure 12. Baseline employment forecast distribution



Baseline forecast land demand

The forecast model translates employment projections by sector into new building square footage across seven building types and the resulting demand for developable land among employment geographies. The baseline forecast results are shown in Figure 13. The building space and land demand projections are based on new construction and employment trends by geography in the 2008-2019 business cycle. While residential and areas account for 17% of the baseline forecast job growth, the EOA does not estimate the associated residential or commercial construction (such as nursing homes) in those areas, because the statutory purpose of the EOA is focused on employment land planning.

Takeaway findings on projected baseline new construction and land demand by geography:

- Projected employment growth citywide is expected to generate real estate demand for nearly 38 million square feet of new building space and developable land demand of 1,825 acres.
- The industrial geographies account for 55% of the economy's forecast new building space, given the accelerated regional projections of industrial sector jobs, Portland's large share of the region's industry, and the larger size of industrial buildings.
- The growing economy has a mix of land use densities. Portland's higher-density Central City and Inner Commercial geographies are outliers with an average of 593 and 209 projected jobs per acre compared to the citywide average of 60. In comparison, the average projected jobs per acre is 69 jobs in Institutional Campuses, 56 in Outer Commercial areas, and 24 in Industrial areas.
- Average density statistics of projected growth also highlight the tradeoff of compact growth and economic equity objectives. Projected job growth in middle-wage occupations that don't require bachelor's degrees are mainly in lower-density land uses that average 31 jobs per acre.

Figure 13. Baseline land demand forecast and density, 2019-2045

Employment geography	Added jobs	Total Building SF	Total Acres	Average FAR	Jobs per Acre
Central City Commercial	22,900	6,700,000	23	6.58	980
Central City Industrial	4,700	1,809,000	23	1.79	203
Dispersed Employment	5,200	1,908,000	82	0.54	64
East Columbia	10,900	6,735,000	512	0.30	21
Harbor Access	1,900	917,000	68	0.31	28
Harbor & Airport Districts	17,800	11,117,000	849	0.30	21
Inner Commercial	15,200	3,755,000	73	1.18	209
Middle Commercial	2,100	598,000	20	0.68	105
Outer Commercial	4,600	1,256,000	82	0.35	56
W Portland Commercial	600	172,000	8	0.48	73
Institutional	5,900	2,763,000	85	0.74	69
Residential	18,600	NA	NA	NA	NA
Total	**110,400**	**37,730,000**	**1,825**	**0.47**	**60**
Aggregate employment geography					
Central City	27,600	8,509,000	47	4.20	593
Commercial	22,500	5,781,000	183	0.73	123
Industrial	35,800	20,677,000	1,511	0.31	24
Institutions	5,900	2,763,000	85	0.74	69
Middle-wage* facilities	36,800	18,761,000	1,183	0.4	31
* Middle-wage occupations with competitive education less than a bachelor's degree.					

Baseline forecast distribution by building type

Figures 14 and 15 disaggregate projected new construction and employment land demand by building type. Building types generally correspond to particular industrial or commercial sectors, varying by business district type. For example, while much of professional services employment is accommodated by office space, a portion of the demand is in street-level retail spaces.

The pie charts in Figure 14 show the building type distribution of the baseline forecast in terms of new building space, developable land demand, and middle-wage job growth (in occupations with competitive education less than bachelor's degrees). Figure 15 provides details about the types of projected job growth, building space, and land demand within each of Portland's employment geographies.

The building space and land demand projections in the EOA forecast are estimated from Portland's sector breakdown of building types, average square feet per job by building type, and average floor area ratio of building area to site area (FAR) by building type and geography. These estimates were updated in the forecast model based on average 2019 conditions and 2008-2019 business cycle trends of new construction and employment in Portland. Background tables are included in Appendix A.

Figure 14. Baseline forecast distribution by building type

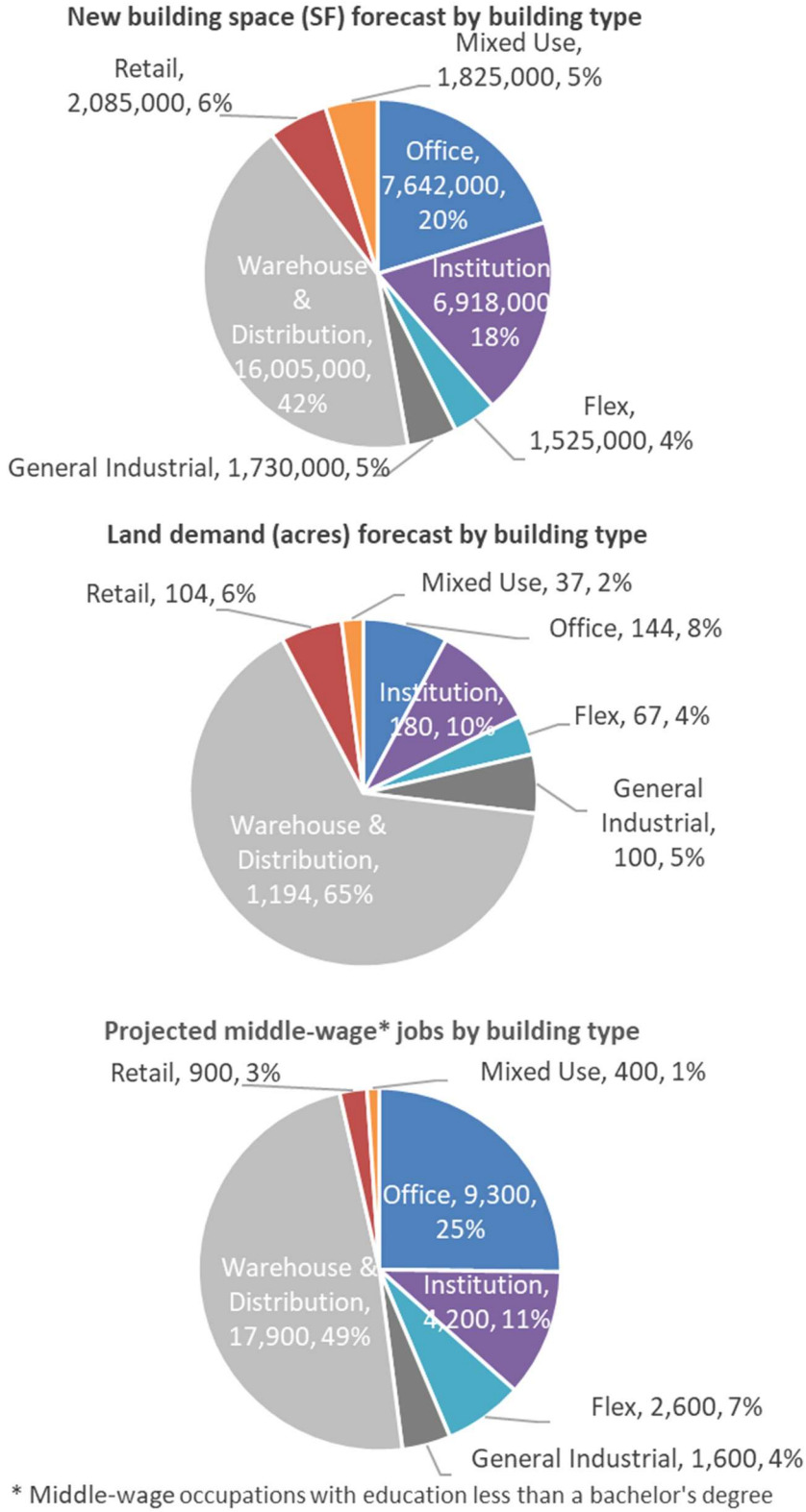


Figure 15. Baseline forecast details by geography and building type

	Industrial building types			Commercial building types			Combined building types		
Employment geographies	**Jobs**	**Building SF**	**Acres**	**Jobs**	**Building SF**	**Acres**	**Jobs**	**Building SF**	**Acres**
	Warehouse and Distribution			**Office**			**Mixed Use**		
Central City Commercial	-620	-136,000	-1	14,970	3,305,000	8	2,350	871,000	5
Central City Industrial	-1,210	-573,000	-12	3,880	857,000	5	550	206,000	6
Dispersed Employment	2,000	925,000	41	2,100	454,000	7	0	0	0
East Columbia	7,630	5,514,000	422	1,520	328,000	26	0	0	0
Harbor Access	600	434,000	33	770	166,000	13	0	0	0
Harbor & Airport Districts	12,550	9,064,000	694	2,620	565,000	45	0	0	0
Inner Commercial	0	0	0	7,770	1,346,000	19	2,040	592,000	16
Middle Commercial	0	0	0	760	132,000	2	360	106,000	6
Outer Commercial	180	68,000	3	1,900	329,000	14	120	36,000	3
W Portland Commercial	0	0	0	160	28,000	1	30	9,000	0
Institutional	0	0	0	610	132,000	5	20	6,000	0
Total	**21,130**	**15,296,000**	**1,181**	**37,060**	**7,642,000**	**144**	**5,470**	**1,826,000**	**37**
	General Industrial			**Institutional**			**Combined Industrial buildings**		
Central City Commercial	60	13,000	0	3,190	1,627,000	6	710	157,000	1
Central City Industrial	400	262,000	5	270	139,000	1	-420	-126,000	-5
Dispersed Employment	300	190,000	9	70	33,000	1	2,590	1,251,000	56
East Columbia	90	57,000	4	1,080	539,000	38	8,130	5,822,000	444
Harbor Access	480	307,000	22	30	15,000	1	1,080	739,000	55
Harbor & Airport Districts	1,290	825,000	58	220	108,000	8	14,420	10,240,000	776
Inner Commercial	120	63,000	3	3,140	1,256,000	19	1,090	231,000	10
Middle Commercial	0	0	0	490	195,000	3	130	50,000	3
Outer Commercial	30	13,000	1	820	327,000	20	520	197,000	10
W Portland Commercial	0	0	0	190	77,000	3	-50	-20,000	-1
Institutional	0	0	0	5,220	2,602,000	79	20	9,000	0
Total	**2,770**	**1,730,000**	**100**	**14,720**	**6,918,000**	**180**	**28,220**	**18,550,000**	**1,348**
	Flex			**Retail**			**Combined Commercial buildings**		
Central City Commercial	1,270	280,000	1	1,630	603,000	3	22,140	6,406,000	22
Central City Industrial	390	185,000	2	430	160,000	4	5,130	1,362,000	16
Dispersed Employment	290	136,000	6	470	171,000	17	2,640	658,000	26
East Columbia	410	251,000	18	130	46,000	5	2,730	913,000	68
Harbor Access	0	-2,000	0	-10	-3,000	0	790	178,000	14
Harbor & Airport Districts	580	351,000	25	560	204,000	20	3,400	877,000	73
Inner Commercial	970	168,000	7	1,130	329,000	9	14,080	3,523,000	63
Middle Commercial	130	50,000	3	400	115,000	6	2,010	548,000	17
Outer Commercial	310	116,000	6	1,260	367,000	34	4,100	1,059,000	72
W Portland Commercial	-50	-20,000	-1	270	79,000	4	650	193,000	9
Institutional	20	9,000	0	40	14,000	1	5,890	2,754,000	85
Total	**4,320**	**1,524,000**	**67**	**6,310**	**2,085,000**	**104**	**63,560**	**18,471,000**	**464**

Takeaway findings on baseline forecast distribution by building type:

- Warehouse & Distribution buildings have become a dominant portion of projected real estate development, driven by the accelerated employment forecast for Transportation & Warehouse sector jobs and the sector's regional concentration in Portland. This building type makes up 42% of projected new construction and 65% of employment land demand citywide.

- Warehouse & Distribution buildings also have the biggest economic equity benefit among building types, accounting for 49% of the projected middle-wage job growth, which provides upward income opportunities for workers without bachelor's degrees. Similarly, the expanding Transportation & Warehouse sector makes up 50% of the middle-wage job growth in the baseline forecast, which moderate the income-inequality and racial disparity trends of regional job growth in previous business cycles.
- Office and institutional (hospital or college) buildings are also major sources of forecast construction and land demand. Office buildings make up 20% of new employment building space in the baseline forecast, 8% of developable land demand, and 25% of middle-wage job growth.
- Mixed-use buildings (that include housing and employment) are a major source of housing growth in Portland but represent a small share of employment building growth. Mixed-use buildings account for 5% of new employment building space in the baseline forecast, 2% of developable land demand, and 1% of middle-wage job growth.

Forecast scenarios

In addition to the mid-range baseline forecast reviewed above, three other forecast scenarios were analyzed to consider in community choices for policies and actions to be addressed in EOA Volume 3. The scenarios consider different growth levels to meet different policy priorities. The other scenarios include a low-range scenario, a high-range scenario, and a 40% middle-wage scenario. The job growth differences of these scenarios are shown graphically in Figure 16 relative to trends of the last business cycle. The relatively narrow growth range among these scenarios suggests that they each reflect plausible market opportunities that could be influenced by local policy directions for growth capacity and investments. The projected job growth and land demand differences of the 4 scenarios are compared in Figure 17.

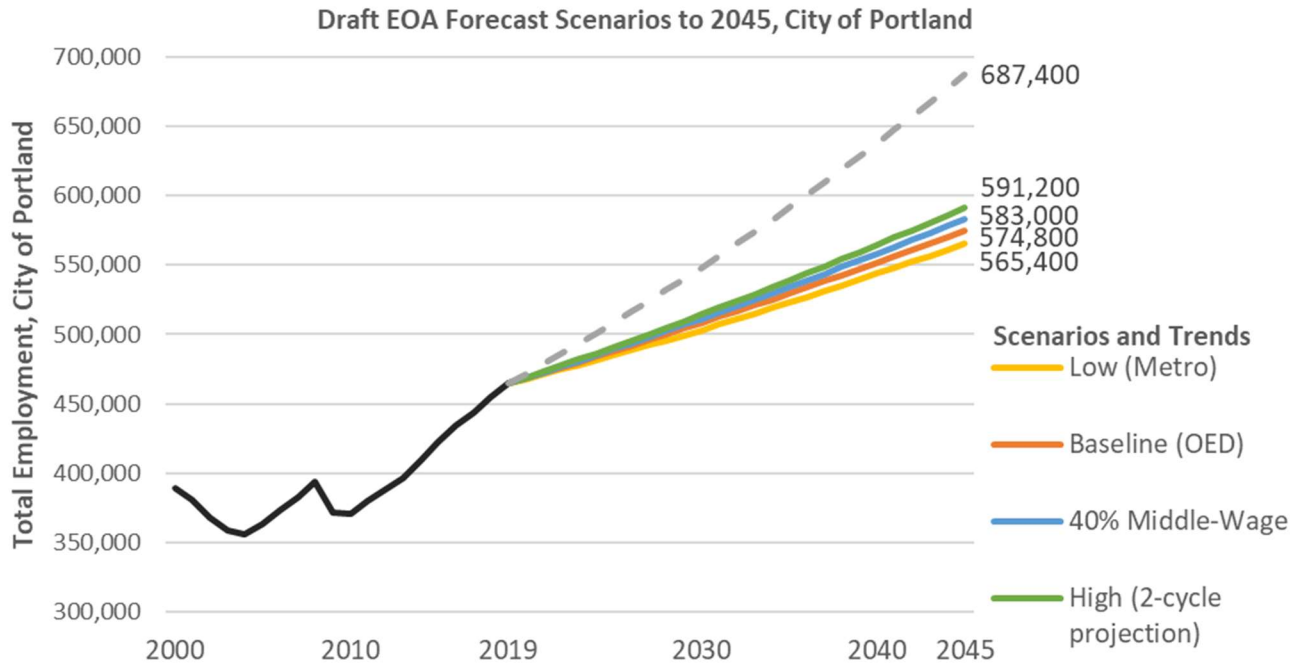
Baseline (mid-range) growth scenario

The baseline growth scenario is intended to be a mid-range trend-based growth scenario, adding 110,400 jobs from 2019 to 2045. The growth level in this scenario is determined by the trend-based assumption to grow at pace with the EOA's regional projections. Specifically, baseline job growth is calculated by a 46% capture rate of Oregon Employment Department's (OED) job-growth projections for the Portland Tri-County area, matching Portland's 46% share of 2019 jobs. The 46% capture rate is conservative relative to the 49% capture rate in the last business-cycle trend and Portland's stronger market position in sectors with faster-projected job growth. The baseline scenario results in an average annual growth rate (AAGR) of 0.82% in Portland, which represents a significantly slower rate (54% lower) than the last business cycle trend, but comparable to the other recent forecasts reviewed in Figure 5.

Low-range growth scenario

The low-range growth scenario is defined by Portland's minimum requirement to meet regional growth management goals, adding 101,000 jobs from 2019 to 2045. Job growth in this scenario is based on

Figure 16. Employment projections of forecast scenarios



Source: BPS; trend from QCEW data; baseline from OED Tri-County projections; low scenario from Metroscope 2021; high scenario from 2000-2019 trend (last 2 peak-to-peak business cycles); 1-cycle reference trend from 2008-2019 business cycle.

Figure 17. Summary projections of forecast scenarios, 2019-2045

	Baseline scenario		High-range scenario		Middle-wage scenario		Low-range scenario	
Employment geography	Jobs	Acres	Jobs	Acres	Jobs	Acres	Jobs	Acres
Central City Commercial	22,900	23	27,000	28	24,300	24	20,500	21
Central City Industrial	4,700	23	5,600	28	5,000	24	4,200	20
Dispersed Employment	5,200	82	6,000	95	5,700	90	4,800	74
East Columbia	10,900	512	11,900	559	12,100	574	10,300	485
Harbor Access	1,900	68	2,800	387	2,100	77	1,700	61
Harbor & Airport Districts	17,800	849	20,100	1,072	19,500	934	16,700	801
Inner Commercial	15,200	73	17,400	85	15,900	80	13,900	66
Middle Commercial	2,100	20	2,600	25	2,300	21	1,900	18
Outer Commercial	4,600	82	5,400	96	4,800	85	4,200	73
W Portland Commercial	600	8	800	11	700	9	500	7
Institutional	5,900	85	7,300	105	6,700	97	5,100	74
Residential	18,600	NA	21,000	NA	19,600	0	17,300	0
Total	**110,400**	**1,825**	**127,800**	**2,490**	**118,600**	**2,016**	**101,000**	**1,700**
Aggregate employment geography								
Central City	27,600	47	32,600	56	29,300	49	24,700	41
Commercial	22,500	183	26,100	216	23,600	195	20,500	164
Industrial	35,800	1,511	40,800	2,113	39,300	1,675	33,500	1,421
Institutions	5,900	85	7,300	105	6,700	97	5,100	74

Metro's distributed forecast allocation (adopted in 2021) of the regional forecast adopted from its 2018 Urban Growth Report. This scenario intends to accommodate our fair share of regional job growth to limit sprawl. Metro's growth allocation to the City of Portland estimates 565,382 total jobs in 2045, which comes to 100,969 added jobs from 2019. This scenario results in an average annual growth rate (AAGR) of 0.76% in Portland and a 42% capture rate of OED's Tri-County growth projection used in the EOA forecast.

40% middle-wage growth scenario

The 40% Middle-Wage scenario emphasizes equity objectives to expand local income self-sufficiency and reduce racial income disparities, adding 118,600 new jobs overall. This scenario responds to the region's inequitable job growth trends of recent decades reviewed in EOA Volume 1 (see Section 9). The 40% middle-wage measure parallels Oregon's 40-40-20 Rule for guiding higher education performance, providing for workforce-development growth capacity across the income distribution. This scenario also sets a bar for not increasing income inequality through how we grow, by maintaining at least the 39% middle-wage share of Tri-County jobs in 2019. 'Middle-wage' is analyzed in this scenario to mean jobs in middle-wage occupations with education requirements of less than a bachelor's degree (MWLB) (see EOA Volume 1, Section 9). BPS applied OED estimates in 2022 of the MWLB share of projected job growth in the Portland Tri-County area. This scenario increased job growth by 14% in each of six sectors that represent 80% of projected MWLB job growth. In comparison, the baseline forecast has a 36% MWLB share of total citywide job growth. This scenario results in an overall average annual growth rate (AAGR) of 0.88% in Portland and a 49% capture rate of projected Tri-County job growth.

High-range growth scenario

The high-range growth scenario is defined by two attributes, which together result in 127,800 added jobs citywide from 2019 to 2045. The first key attribute is an increase in projected job growth to match the city's 0.93% average annual growth rate (AAGR) of the last two business cycles (2000-2019). This moderated, longer-term growth rate combines the slow 0.13% AAGR of the 2000-2008 business cycle with the faster 1.52% AAGR of the recent 2008-2019 business cycle. One factor that could support this higher growth rate is the resumption of the above-average regional in-migration trend of previous decades within the national context of a slower-growing labor market. Another factor is the potential for proactive economic development efforts that reinforce Portland's higher regional market share in faster-growing sectors (including transportation & warehousing, healthcare, and professional services) as the region's economic center, as well as support for catalyst growth in target traded-sector clusters.

The second key attribute of the high scenario is the inclusion of the marine industrial and railroad growth. Marine and railroad facilities are a specialized segment of industrial land demand in Portland supported by its multi-modal freight hub infrastructure and distribution gateway role for the regional and state economy. This additional market demand includes the marine industrial employment and land demand projections developed by ECONorthwest in the EOA Volume 1 Report, along with unmet rail yard land demand identified in the 2016 EOA. The additional employment and land demand projections for marine industrial and rail yard facilities are summarized in Figure 18. This table also specifies the overlapping projections already included in the EOA demand model for General Industrial and Warehouse & Distribution building types and calculates the net addition to prevent double counting.

Figure 18. Additional marine industrial and rail yard projections

	Added jobs			Land demand (acres)		
	Marine, Railroad	Gen Indus, Distrib*	Net Addition	Marine, Railroad	Gen Indus, Distrib*	Net Addition
Industrial land type						
Marine industrial - baseline	1,900	1,300	600	370	65	305
Railroad yard expansion	400	-	400	200	738	200
Industrial geography						
Harbor Access Lands	1,900	1,300	600	370	65	305
Harbor & Airport Districts	400	-	400	200	738	200
* Overlapping projections already included for General Industrial and Warehouse & Distribution building types.						

Marine industrial land demand projections and factors analyzed in EOA Volume 1:

- Freight hub importance to traded sector economy – Freight terminals and distribution facilities are prominent land uses in Portland's industrial districts as Oregon's freight distribution hub. These specialized facilities 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 harbor- and rail-dependent manufacturing businesses to the region.
- Mixed business outlook for growth – Users in the harbor are generally optimistic about their business outlook. Marine cargo tonnage handled at Lower Columbia ports expanded by 44% from 2000 to 2018. Portland maintains a competitive advantage relative to other Lower Columbia industrial areas for their facilities, including: transportation linkages, workforce characteristics, and a well-established industrial cluster. Downside factors include land availability, regulatory environment, and prolonged uncertainty in the Portland Harbor Superfund Cleanup. Uncertainty caused by the Superfund cleanup is considered the most significant impediment to new investment in the harbor. This condition is expected to continue until mechanisms to mitigate liability risk are available.
- Marine industrial land demand depends on issue resolution – ECONorthwest estimated marine growth opportunities (baseline scenario) at 110 acres of land development by 2040 for new marine terminals and 260 acres for marine production and marine services development, which would conservatively support 1,900 new on-site jobs plus an additional 3,000 regional jobs. This scenario reflects a reconciliation of factors negatively impacting the harbor's competitiveness: proactive investments and policies that protect and maximize the utilization of industrial land; manufacturing expansion consistent with regional forecasts; improvement in Superfund Cleanup liability issues within 5 years; and improved marketability of brownfields in the latter half of the planning period. Scenario results: 10 to 15 percent increase in marine industrial land demand.

Additional land demand for rail yard expansion was identified in the 2016 EOA and has not yet been met. 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 expansion because rail transportation employment is not included in the QCEW data used for the EOA forecast. Rail yard expansion in the early 2000s included the Port of Portland's Ramsey Yard and South Rivergate Yard, providing approximately 25 acres of new yard space. Railroad representatives that ECONorthwest interviewed in 2020 regarding marine industrial growth did not identify any near-term plans for rail yard expansion. 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.

Short-term employment forecast and land demand

In addition to 20-year land demand, the Goal 9 Administrative Rule of Oregon's land use system also requires cities to provide an adequate short-term land supply "to respond to economic development opportunities as they arise." To address this requirement, land demand through 2030 is compared with the existing short-term land supply by employment geography. This analysis estimates the development-ready land needed to support post-pandemic economic recovery within the current business cycle. The employment and land demand projections for the 2019-2030 period are shown in Figure 19. In contrast to the 2010 trough-year starting point of the 2016 EOA which projected faster growth in the initial decade of the forecast, the current EOA projections start from the 2019 peak of the business cycle and anticipate an even growth trajectory to 2030 and 2045 in each forecast scenario, as shown in Figure 16.

Figure 19. Short-term projections of forecast scenarios, 2019-2030

	Baseline scenario		High-range scenario		Middle-wage scenario		Low-range scenario	
Employment geography	Jobs	Acres	Jobs	Acres	Jobs	Acres	Jobs	Acres
Central City Commercial	8,500	10	9,200	11	8,700	10	8,100	10
Central City Industrial	2,300	11	2,500	13	2,300	11	2,200	11
Dispersed Employment	2,200	33	2,300	35	2,200	34	2,100	32
East Columbia	4,400	204	4,600	212	4,600	215	4,300	200
Harbor Access	700	26	800	29	700	27	700	25
Harbor & Airport Districts	7,100	338	7,500	352	7,400	350	7,000	330
Inner Commercial	7,100	37	7,500	39	7,200	39	6,800	35
Middle Commercial	900	9	900	10	900	9	800	8
Outer Commercial	2,100	39	2,200	42	2,100	39	2,000	37
W Portland Commercial	100	2	100	3	100	2	100	2
Institutional	1,500	25	1,800	28	1,700	27	1,400	22
Residential	9,300	0	9,700	-	9,400	-	9,000	0
Total	**46,000**	**734**	**48,900**	**772**	**47,300**	**764**	**44,400**	**712**
Aggregate employment geography								
Central City	10,800	22	11,700	23	11,000	22	10,300	21
Commercial	10,100	86	10,700	93	10,200	89	9,700	83
Industrial	14,400	602	15,100	628	14,900	626	14,000	586
Institutions	1,500	25	1,800	28	1,700	27	1,400	22

Parcel size demand assessment

The baseline land demand is broken down by parcel size in Figures 20 and 21, to assess the need for a different mix of parcel sizes in the Buildable Land Inventory. These parcel size projections were based on permit data showing the distribution of new building space constructed in the recent 2008-2019 business cycle by parcel size, building type, and employment geography. These projections include some smoothing (or interpolation) of demand to in-between sizes with no demonstrated construction from 2008 to 2019.

Takeaway findings on the parcel-size distribution of land demand:

- Diverse demand – The growing economy has substantial land demand in all size categories up to 50 acres with no major concentration in any size, as shown in the citywide distribution in Figure 20.
- Close-in commercial – Most land demand in the Central City and Inner and Middle Commercial geographies is less than one acre, situated to their small-block grid system, mixed with some demand up to 5 acres.
- Industrial districts – The aggregate Industrial geographies have baseline demand for 647 acres in large sites exceeding 20 acres, accounting for 43% of their total demand. Industrial district growth also relies on a diverse range of site sizes concentrated above 10 acres.

Figure 20. Share of employment land demand by parcel size

	Adjusted capacity by parcel size (acres)						
Employment Geography	<1ac	1-3ac	3-5ac	5-10ac	10-20ac	20-50ac	>50ac
Total Citywide	**9%**	**16%**	**7%**	**12%**	**21%**	**33%**	**3%**
Close-in commercial: Most demand for small-block sites (<1 acre)							
Central City Commercial	62%	22%	15%	0%	0%	0%	0%
Middle Commercial	79%	21%	0%	0%	0%	0%	0%
Inner Commercial	63%	24%	13%	0%	0%	0%	0%
Central City Industrial	39%	9%	0%	1%	0%	0%	0%
Dispersed districts: Concentrated demand for 1-3 acre sites and mixed sizes up to 20 acres							
W Portland Commercial	25%	37%	36%	0%	2%	0%	0%
Outer Commercial	20%	30%	10%	13%	26%	0%	0%
Institutional	2%	72%	7%	6%	12%	0%	0%
Dispersed Employment	21%	45%	12%	22%	0%	0%	0%
Industrial districts: Diverse site sizes concentrated above 10 acres							
East Columbia	0%	2%	6%	17%	42%	33%	0%
Harbor Access	0%	7%	7%	17%	40%	29%	1%
Harbor & Airport Districts	5%	13%	6%	10%	12%	48%	6%
Aggregate employment geographies							
Central City	51%	16%	8%	0%	0%	0%	0%
Commercial	44%	27%	11%	6%	12%	0%	0%
Institutional	2%	72%	7%	6%	12%	0%	0%
Industrial	4%	11%	6%	13%	23%	40%	3%

- Dispersed business districts – Land demand in the outer commercial areas, campus institutions, and dispersed employment areas is concentrated in 1-3 acre parcels and mixed with other sizes up to 20 acres.

Figure 21. Baseline land demand by parcel size (acres)

Employment Geography	**Total**	<1ac	1-3ac	3-5ac	5-10ac	10-20ac	20-50ac	>50ac
Central City Commercial	**23**	15	5	3	0	0	0	0
Central City Industrial	**23**	9	2	0	0	0	0	0
Dispersed Employment	**82**	17	37	10	18	0	0	0
East Columbia	**512**	0	10	30	85	216	171	0
Harbor Access	**68**	0	5	5	12	27	20	0
Harbor & Airport Districts	**849**	45	114	48	81	106	407	50
Inner Commercial	**73**	46	18	9	0	0	0	0
Middle Commercial	**20**	16	4	0	0	0	0	0
Outer Commercial	**82**	16	24	8	11	21	0	0
W Portland Commercial	**8**	2	3	3	0	0	0	0
Institutional	**85**	2	62	6	5	10	0	0
Total	**1,825**	**167**	**284**	**123**	**212**	**380**	**597**	**50**
Aggregate employment geography								
Central City	**47**	24	7	3	0	0	0	0
Commercial	**183**	80	49	21	11	21	0	0
Industrial	**1,511**	62	165	93	196	348	597	50
Institutional	**85**	2	62	6	5	10	0	0

3. Employment land supply: Buildable Land Inventory

This section quantifies the city's current growth capacity by business district type, as estimated in the Buildable Lands Inventory (BLI). The purpose of the BLI is to estimate Portland's developable land capacity in 2020 to compare with the 2019-2045 land demand forecast. The BLI documents vacant and redevelopable sites in 2023 and assesses their likely development capacity under existing City plans, zoning, and market conditions.

The BLI is based on a Geographic Information System (GIS) model developed by the Bureau of Planning and Sustainability (BPS). The BLI is used in both the Housing Needs Analysis (HNA) and the EOA to assess whether there is an adequate supply of land to meet future housing and employment needs through the year 2045. A full description of the BLI with supporting maps can be found in the Buildable Land Inventory background report.

Methodology

The BLI model applies a market-feasible development capacity analysis, which identifies capacity where development is financially feasible. The BLI model consists of five steps:

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 building square footage and number of residential units.
5. Integrate permit data for new housing units and building square footage built since 2020 as 'realized' capacity.

Base Land Supply – Vacant and Redevelopable Land

The developable employment land supply consists of vacant and redevelopable sites. The approaches used to identify those sites in the BLI vary among commercial, industrial, and institutional properties as described below. A map of vacant commercial and residential properties is included in the appendix.

Vacant properties:

- Residential and Commercial 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.
- Industrial Properties – In the EOA Industrial Geographies, the model reads from a 2020 vacant lands layer created in March 2021. This map layer serves as the basis for the vacant employment

lands layer in the BLI, with recently developed land (using City permit data) removed from the layer.

Redevelopable (non-vacant) properties:

The BLI model assesses the likelihood of redevelopment activity on non-vacant properties, or developed lots, through a development feasibility analysis.

- Residential and Commercial – 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) – or the price a developer could pay for land and still have an economically viable project – for 17 residential prototypical developments, or prototypes. Land with a value that is less than the RLV for at least one prototype (if allowed by zone) is deemed potentially redevelopable.
- Industrial and Employment – Redevelopment is less financially feasible in lower-density geographies, such as industrial districts. There are examples of redevelopment for new industrial (mainly warehouse) buildings in the last decade, primarily on larger sites. BPS analyzed the site size, assessor values, and other factors to identify patterns of redevelopment site characteristics, which indicated a likely redevelopment strike price of $15 per square foot of site area. Non-vacant parcels in industrial and employment zones (EG, IG, and IH) are, therefore, identified as "underutilized" if the adjusted market value (AMV) of the site is less than $15 per square foot of lot area. Sites in Portland's industrial areas often are comprised of multiple taxlots, necessitating an approach that considers the value of the entire site. Industrial sites zoned heavy industrial (IH) or general industrial (IG) smaller than three acres are excluded from the redevelopment inventory to reflect the lower likelihood of such sites attracting broad investment activity; there is no site size threshold for sites in the general employment (EG) zones.
- Institutions – 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.

Recent Development:

The BLI is based on real-time (2023) data and information but uses 2020 as a base year. Development built between the 2020 base year and the current day is incorporated into the model as 'realized' capacity. For any lot with a build year in the Multnomah County taxlot layer of 2020 to 2023, the BLI reads the building square footage data from the City's permit database. This data overrides the modeled capacity of any developed site, in recognition that newly developed sites are unlikely to redevelop again through 2045.

Development Constraints

After identifying the base land supply of vacant and redevelopable parcels, the estimated development capacity on those sites is adjusted by their level of development constraints. BPS identified 26 different constraints to apply in 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 the 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.). A summary of BLI constraint factors is included in Figure 22. A full matrix that includes the constraint rates for housing and Central City, commercial, and industrial employment uses is in Appendix B.

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, three, or more constraints exist, respectively.

Figure 22. Summary of BLI development constraint factors

Constraint	Capacity utilization rate	Constraint	Capacity utilization rate
Environmental (c-zone)		**Brownfield (ECSI)**	
Central City	75%	Central City	95%
Commercial	25%	Commercial	95%
Industrial	50%	Industrial	50%
Greenway		Harbor Access Lands	10%
Central City	65%	**Infrastructure**	
Commercial	60%	Central City	75%
Industrial	50%	Commercial	75%
100-year floodplain		Industrial	75%
Central City	50%	**Historic landmarks**	
Commercial	35%	Central City	55%
Industrial	40%	Commercial	55%
		Industrial	55%

Commercial/residential split

The adjusted development capacity of employment land excludes both land with development constraints that make it unlikely to develop and land likely to develop as housing. The residential share includes both residential buildings and the residential share of mixed-use buildings. The average commercial-to-residential split by employment geography is estimated by permit data of new construction in the recent 2008-2019 business cycle.

Employment land supply

The vacant and redevelopable land supply and adjusted development capacity of Portland's employment geographies are shown in Figure 23.

Takeaway findings on employment land supply:

- Substantial redevelopable land supply – The city's overall base supply of developable sites totals 5,723 acres, among which 57% are vacant and 43% have estimated financial feasibility for redevelopment. Even the lower-density industrial areas where redevelopment is more financially constrained are starting to see more of it, and an estimated 27% of the industrial land supply is estimated to be redevelopable.
- Adjusted capacity – Most of the base supply of BLI sites citywide have regulatory, physical and/or infrastructure constraints that make them unlikely to develop, resulting in an average 44% utilization rate. All of Portland's commercial zones are also designated for residential use, and the estimated residential portion of likely development is 63% in the Central City and 66% in the Inner Commercial geography.

Figure 23. Buildable Land Inventory by Employment Geography

	Base supply acres (before constraints)			Adjusted capacity			
				After constraints		Non-residential split	
EOA Geographies	Vacant	Redevel-opable	Total	Utilization	Acres	Utilization	Acres
Central City Commercial	258	213	471	52%	247	38%	94
Central City Industrial	75	43	118	59%	70	33%	23
Dispersed Employment	156	134	289	53%	155	100%	155
East Columbia	307	153	459	52%	239	100%	239
Harbor Access	361	0	361	5%	19	100%	19
Harbor & Airport Districts	1,255	467	1,722	38%	660	100%	660
Inner Commercial	132	316	448	53%	239	34%	81
Middle Commercial	95	275	371	86%	317	32%	101
Outer Commercial	352	224	576	53%	307	74%	227
W Portland Commercial	31	96	127	54%	68	62%	42
Institutional	220	561	781	26%	200	98%	196
Total Employment Area	**3,241**	**2,482**	**5,723**	**44%**	**2,520**	**73%**	**1,837**
Aggregate employment geography							
Central City	333	256	589	54%	316	37%	117
Commercial	610	911	1,522	61%	931	49%	452
Industrial	2,078	753	2,831	38%	1,072	100%	1,072
Institutions	220	561	781	26%	200	98%	196

- Declining industrial land supply – The estimated BLI development capacity of the Industrial geographies is 1,072 acres, down from an estimated 1,528 acres of estimated capacity in the adopted 2016 EOA. Most of the difference is the result of recent development, and some of the difference is from overly optimistic utilization rates on constrained land in 2016, such as

brownfields in Harbor Access Lands. For example, the BLI sites in Harbor Access Lands are now estimated to have an after-constraints utilization rate of 5%.

- Potential capacity expansion at constrained industrial sites – An estimated 1,759 acres of vacant and redevelopable sites in the industrial geographies have regulatory and infrastructure constraints that make them unlikely to redevelop under current conditions. In turn, regulatory improvements and infrastructure investments have the potential to substantially expand Portland's industrial land supply.

Short-term employment land supply

The Goal 9 Administrative Rule of Oregon's land use system requires cities to assess the short-term land demand and supply. Short-term land supply is defined in the Goal 9 Rule as sites that will be development-ready within one year. As further clarified 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 typically dependent on major public infrastructure investments. The major short-term constraint that can result in prolonged, uncertain costs will be brownfields, especially within the Portland Harbor Superfund area. The short-term employment land supply in the current BLI excludes brownfields and excludes any site that is more than 25% constrained. The short-term land supply removes 26% of the adjusted BLI capacity overall and removes 40% of the adjusted capacity in the aggregate Industrial geography. The short-term land supply of the employment geographies is summarized in Figure 24.

Figure 24. Short-term employment land supply

	Base supply acres (before constraints)			Adjusted capacity			
				After constraints*		Non-residential split	
EOA Geographies	Vacant	Redevel-opable	Total	Utilization	Acres	Utilization	Acres
Central City Commercial	118	123	241	78%	187	38%	71
Central City Industrial	43	32	75	76%	57	33%	19
Dispersed Employment	40	74	114	95%	109	100%	109
East Columbia	106	77	183	89%	162	100%	162
Harbor Access	0	0	0	0%	0	100%	0
Harbor & Airport Districts	320	119	440	84%	370	100%	370
Inner Commercial	96	226	322	70%	224	34%	76
Middle Commercial	85	226	311	95%	296	32%	95
Outer Commercial	199	144	342	79%	271	74%	200
W Portland Commercial	14	74	88	67%	59	62%	37
Institutional	29	134	163	80%	131	98%	128
Total Employment Area	**1,051**	**1,228**	**2,278**	**82%**	**1,865**	**68%**	**1,267**
Aggregate employment geography							
Central City	161	155	316	77%	244	37%	90
Commercial	394	669	1,063	80%	849	48%	408
Industrial	467	270	737	87%	641	100%	641
Institutions	29	134	163	80%	131	98%	128
* BLI Short-term Capacity removes brownfields and removes any site that is more than 25% constrained.							

Parcel size assessment of the BLI

The parcel size distribution of the BLI's adjusted capacity is shown in Figure 25. The parcel size assessment distributes the employment development capacity across the same range of size categories in the demand assessment. The industrial geographies only include parcels greater than 0.5 acres. Overall, the parcel-size distribution of the land supply by geography approximates their demand, and differences are highlighted in the demand/supply reconciliation section below. In terms of large sites, there is only one 50+ acre site and seven 20-50 acre sites.

Figure 25. Employment land supply by parcel size (acres)

	Adjusted capacity by parcel size (acres)							
Employment Geography	**Total**	<1ac	1-3ac	3-5ac	5-10ac	10-20ac	20-50ac	>50ac
Central City Commercial	**94**	45	24	9	5	2	8	0
Central City Industrial	**23**	19	4	0	0	0	0	0
Dispersed Employment	**155**	19	23	0	13	45	0	54
East Columbia	**239**	13	42	43	66	51	24	0
Harbor Access	**19**	1	3	0	5	10	0	0
Harbor & Airport Districts	**660**	43	108	98	145	122	145	0
Inner Commercial	**81**	62	13	6	0	0	0	0
Middle Commercial	**101**	70	14	9	9	0	0	0
Outer Commercial	**227**	79	39	27	56	26	0	0
W Portland Commercial	**42**	29	10	3	0	0	0	0
Institutional	**196**	40	58	6	32	60	0	0
Total less residential	**1,837**	**420**	**339**	**201**	**331**	**316**	**178**	**54**
Aggregate employment geography								
Central City	**117**	64	28	9	5	2	8	0
Commercial	**452**	240	77	45	65	26	0	0
Industrial	**1,072**	76	176	141	228	228	169	54
Institutional	**196**	40	58	6	32	60	0	0

4. Demand and supply reconciliation

This section compares forecast employment land demand and existing supply by geography, highlighting the unmet demand in some geographies. The purpose of this analysis reflects Oregon's Statewide Planning Goal 9 essential task of further planning for future growth capacity that exceeds existing supply. Unmet land demand by geography are identified by subtracting forecast land demand to 2045 from the current BLI capacity.

2045 forecast and land demand

Reconciliation of the baseline forecast with the BLI land supply (adjusted capacity) by geography is shown in Figure 26, and reconciliation of the four forecast scenarios with the BLI land supply is shown in Figure 27. In cases where there is adequate BLI capacity, a land surplus is indicated; where the inventory is not adequate, a resulting shortfall is calculated. A comparison of existing land supply with projected land demand among the four forecast scenarios is shown in Figure 28.

Figure 26. Reconciliation of baseline forecast with BLI land supply

	Forecast Demand, 2019-2045			Supply, 2019		Reconciliation (Acres)	
	Added	Total New	Total	Total New	Total	Surplus	Capacity %
EOA Geographies	jobs	Building SF	Acres	Building SF	Acres	(Shortfall)	of demand
Central City Commercial	22,900	6,700,000	23	32,186,000	94	70	402%
Central City Industrial	4,700	1,809,000	23	4,880,000	23	(0)	99%
Dispersed Employment	5,200	1,908,000	82	3,170,000	155	73	189%
East Columbia	10,900	6,735,000	512	2,906,000	239	(273)	47%
Harbor Access	1,900	917,000	68	250,000	19	(50)	27%
Harbor & Airport Districts	17,800	11,117,000	849	8,365,000	660	(189)	78%
Inner Commercial	15,200	3,755,000	73	5,287,000	81	8	112%
Middle Commercial	2,100	598,000	20	8,712,000	101	81	505%
Outer Commercial	4,600	1,256,000	82	5,670,000	227	145	278%
W Portland Commercial	600	172,000	8	823,000	42	34	512%
Institutional	5,900	2,763,000	85	6,234,000	196	111	230%
Residential	18,600	NA	NA	NA	NA		
Total	**110,400**	**37,730,000**	**1,825**	**78,483,000**	**1,837**	12	**101%**
Aggregate employment geography							
Central City	27,600	8,509,000	47	37,066,000	117	70	251%
Commercial	22,500	5,781,000	183	20,492,000	452	269	247%
Industrial	35,800	20,677,000	1,511	14,691,000	1,072	(438)	71%
Institutions	5,900	2,763,000	85	6,234,000	196	111	230%

Figure 27. Reconciliation of forecast scenarios with BLI land supply

	BLI	Baseline scenario		High-range scenario		Middle-wage scenario		Low-range scenario	
	Short-term	2019-2030	Surplus/	2019-2030	Surplus/	2019-2030	Surplus/	2019-2030	Surplus/
Employment geography	Capacity	Demand	(shortfall)	Demand	(shortfall)	Demand	(shortfall)	Demand	(shortfall)
Central City Commercial	94	23	70	28	66	24	69	21	73
Central City Industrial	23	23	(0)	28	(5)	24	(1)	20	3
Dispersed Employment	155	82	73	95	60	90	65	74	81
East Columbia	239	512	(273)	559	(320)	574	(335)	485	(246)
Harbor Access	19	68	(50)	387	(368)	77	(58)	61	(42)
Harbor & Airport Districts	660	849	(189)	1072	(412)	934	(274)	801	(141)
Inner Commercial	81	73	8	85	(3)	80	1	66	15
Middle Commercial	101	20	81	25	77	21	80	18	84
Outer Commercial	227	82	145	96	131	85	142	73	154
W Portland Commercial	42	8	34	11	32	9	33	7	35
Institutional	196	85	111	105	91	97	99	74	122
Total Employment Area	**1,837**	**1825**	**12**	**2490**	**(653)**	**2016**	**(178)**	**1700**	**137**
Aggregate employment geography									
Central City	117	47	70	56	61	49	68	41	76
Commercial	452	183	269	216	236	195	257	164	288
Industrial	1072	1511	(438)	2113	(1041)	1675	(602)	1421	(348)
Institutions	196	85	111	105	91	97	99	74	122

Takeaway findings on land demand/supply reconciliation:

- Surplus growth capacity – The Central City, Commercial, and Institutional aggregate geographies each have over 50 years of growth capacity.
- Industrial land supply shortfalls – The capacity in Industrial geographies meets only 71% of forecast demand to 2045. The Industrial geographies have estimated unmet land demand of 438 acres in the baseline scenario, 348 acres in the Low-range growth scenario, 602 acres in the 40% middle-wage growth scenario, and 1,041 acres in the high-growth scenario which includes marine industrial and railroad land demand.
- Factors affecting industrial land shortfall – Circumstances contributing to Portland's tightening industrial growth capacity include a lack of replacement supply as sites get developed, accelerating industrial growth, and Portland's dominant regional share of the Transportation & Warehouse sector that is generating most industrial development in the region.
- Development-readiness opportunities to meet industrial shortfalls - The BLI identifies 1,759 acres of vacant and redevelopable sites in the Industrial geographies with regulatory and infrastructure constraints that make them unlikely to develop under current conditions. Thus, Portland has sizable opportunities to meet existing capacity shortfalls through development readiness initiatives, such as regulatory improvements, infrastructure investments, and brownfield reuse incentives.
- Tighter capacity in close-in commercial geographies – The Central City Industrial and Inner Commercial geographies have adequate but tighter growth capacity than other commercial geographies, meeting 99% and 112% respectively of the baseline forecast. Moreover, the large capacity surpluses in the aggregate Central City and Commercial geographies, along with the currently extensive office vacancy in Downtown and Lloyd, provide ample land supply to meet close-in commercial demand in relatively nearby locations.

Short-term forecast and land demand

This analysis estimates the development-ready land needed to support post-pandemic economic recovery and reinvestment to 2030. A comparison of existing development-ready supply with projected land demand to 2030 among the four forecast scenarios is shown in Figure 28.

Takeaway findings on short-term land demand/supply reconciliation:

- Industrial land shortfalls are concentrated after 2030 – The aggregate Industrial geographies have surplus land capacity to 2030 in each of the forecast scenarios, providing some cushion of time to implement new policies and programs that address the tightening long-term industrial land supply. However, most of this surplus capacity is in the small-site Dispersed Employment areas, so short-term industrial demand for sites larger than 10 acres warrants a closer look.
- Columbia East and Harbor Access shortfalls – These industrial district geographies have short-term capacity shortfalls in each of the forecast scenarios. The diverse surplus capacity in the adjacent Harbor & Airport Districts geography can potentially absorb these shortfalls in the baseline and low-growth scenarios, but not in the 40% middle-wage and high-growth scenarios. Additional near-term efforts are warranted to address the specialized short-term industrial demand in the Harbor Access geography.

Figure 28. Reconciliation of 2019-2030 forecast scenarios with short-term land supply

	BLI	Baseline scenario		High-range scenario		Middle-wage scenario		Low-range scenario	
	Short-term	2019-2030	Surplus/	2019-2030	Surplus/	2019-2030	Surplus/	2019-2030	Surplus/
Employment geography	Capacity	Demand	(shortfall)	Demand	(shortfall)	Demand	(shortfall)	Demand	(shortfall)
Central City Commercial	71	10	61	11	60	10	61	10	61
Central City Industrial	19	11	7	13	6	11	7	11	8
Dispersed Employment	109	33	76	35	74	34	75	32	78
East Columbia	162	204	(42)	212	(50)	215	(53)	200	(37)
Harbor Access	0	26	(26)	29	(29)	27	(27)	25	(25)
Harbor & Airport Districts	370	338	32	352	18	350	20	330	39
Inner Commercial	76	37	40	39	37	39	37	35	41
Middle Commercial	95	9	86	10	85	9	86	8	86
Outer Commercial	200	39	161	42	158	39	161	37	163
W Portland Commercial	37	2	34	3	34	2	34	2	35
Institutional	128	25	103	28	100	27	101	22	106
Total Employment Area	**1,267**	**734**	**532**	**772**	**494**	**764**	**503**	**712**	**555**
Aggregate employment geography									
Central City	90	22	68	23	66	22	68	21	69
Commercial	408	86	321	93	315	89	318	83	325
Industrial	641	602	40	628	13	626	15	586	55
Institutions	128	25	103	28	100	27	101	22	106

- Surplus short-term commercial capacity – The Central City, Commercial, and Institutional geographies have a surplus land capacity through 2030 in each of the forecast scenarios.

Employment land demand by parcel size

The reconciliation of employment land supply by parcel size varies widely, as shown in Figure 29. The parcel-size assessment of forecast demand is based on 2008-2019 construction trends.

Figure 29. Parcel size reconciliation of baseline land demand and supply

	Employment capacity surplus (or shortfall) by parcel size							
Employment Geography	**Total**	<1ac	1-3ac	3-5ac	5-10ac	10-20ac	20-50ac	>50ac
Central City Commercial	**70**	30	19	6	5	2	8	0
Central City Industrial	**(0)**	10	2	0	(0)	0	0	0
Dispersed Employment	**73**	3	(13)	(10)	(5)	45	0	54
East Columbia	**(273)**	12	32	13	(19)	(165)	(147)	0
Harbor Access	**(50)**	1	(2)	(5)	(7)	(17)	(20)	(0)
Harbor & Airport Districts	**(189)**	(2)	(6)	50	64	16	(262)	(50)
Inner Commercial	**8**	16	(4)	(4)	0	0	0	0
Middle Commercial	**81**	54	10	9	9	0	0	0
Outer Commercial	**145**	63	15	18	45	5	(0)	(0)
W Portland Commercial	**34**	27	7	0	0	(0)	0	0
Institutional	**111**	38	(4)	(0)	27	50	(0)	0
Total	**12**	253	55	78	118	(64)	(420)	4
Aggregate employment geography								
Central City	**70**	40	21	6	5	2	8	0
Commercial	**269**	160	28	24	54	5	(0)	(0)
Industrial	**(438)**	14	11	48	32	(121)	(428)	4
Institutional	**111**	38	(4)	(0)	27	50	(0)	0

Takeaway findings on land demand/supply reconciliation:

- Shortfall of larger Industrial sites – The aggregate Industrial geographies have unmet baseline land demand of 121 acres for 10-20 acre sites and 428 acres for 20-50 acre sites. Thus, the combined Industrial capacity shortfall for sites larger than ten acres is 549 acres. This accounting assumes that the 99 acres of surplus capacity at sites larger than 20 acres in Dispersed Employment Areas will be available to construct larger industrial buildings. If not, then the industrial-capacity shortfall is nearly 644 acres for sites larger than ten acres in the industrial districts.
- Flexibility of surplus larger-site capacity in commercial areas and institutions – While the Central City, Commercial, and Institutions have shortfalls in some size categories, especially for 1-3 acre sites, surplus capacity in larger sites is available to absorb this demand, either through land divisions or multiple buildings on larger sites.

- Inner Commercial – This geography has a small capacity shortfall of eight acres in the 1-5-acre site sizes to meet the baseline forecast. However, the large capacity surpluses in the aggregate Central City and Commercial geographies could absorb this shortfall in relatively nearby locations.

Appendix A. Employment land forecast details

The tables in this appendix provide details about the forecast methodology elements:

- Regional employment projections, the basis of the Portland forecast;
- Projected city shares of regional employment and city projections;
- The allocation of jobs to building types (consistent across scenarios)
- Square foot per employee assumptions (consistent across scenarios)
- Floor Area Ratios (consistent across scenarios)

Figure 30. Portland Tri-County Region employment projections by sector

		Total Tri-County jobs		2019-2030	Jobs in	2019-2045 Change	
NAICS	Employment sector	2019*	2030*	AAGR	2045	Jobs	AAGR
11 & 21	Agriculture & Mining	10,200	10,900	0.59%	11,900	1,700	0.59%
22	Utilities**	2,400	2,500	0.37%	2,600	200	0.37%
23	Construction	57,000	61,800	0.72%	68,600	11,600	0.72%
31-33	Manufacturing	105,900	109,400	0.27%	113,700	7,800	0.27%
42	Wholesale	48,100	51,600	0.61%	56,400	8,300	0.61%
44-45	Retail	93,600	97,100	0.31%	101,500	7,900	0.31%
48-49	Transportation & Warehousing	38,000	48,900	2.30%	68,600	30,600	2.30%
51	Information	22,400	24,900	0.94%	28,600	6,200	0.94%
52	Finance	36,000	37,500	0.35%	39,400	3,400	0.35%
53	Real Estate	26,500	29,200	0.86%	33,100	6,600	0.86%
54	Professional Services	67,300	78,900	1.43%	97,400	30,100	1.43%
55	Management	38,900	45,100	1.33%	54,800	15,900	1.33%
56	Admin, Waste	57,400	62,400	0.74%	69,500	12,100	0.74%
61	Education	72,300	74,400	0.24%	76,900	4,600	0.24%
622	Hospitals	25,400	27,000	0.54%	29,200	3,800	0.54%
Other 62	Other Health & Social Assistance	96,800	118,000	1.77%	152,800	56,000	1.77%
71	Arts, Entertainment & Recreation	15,500	17,100	0.87%	19,400	3,900	0.87%
72	Accommodation & Food Service	88,500	95,900	0.71%	106,400	17,900	0.71%
81	Other Services	40,500	39,800	-0.18%	38,600	(1,900)	-0.18%
92	Government	67,400	73,000	0.70%	80,900	13,500	0.70%
	Total Payroll Employment	**1,010,062**	**1,105,400**	**0.82%**	**1,250,300**	**240,238**	**0.82%**
Source: 2019 estimate and 2030 projection from Oregon Employment Department. 2045 projection by BPS at OED's 2019-2030 average annual growth rates (AAGR).							
**Tri-County total adjusted to City total							

Figure 31. Projected Portland shares of Tri-County employment by sector

NAICS	Employment sector	2019	2030	2045	2019-2045 Change
11 & 21	Agriculture & Mining	12%	12%	12%	10%
22	Utilities**	100%	100%	98%	93%
23	Construction	39%	39%	38%	34%
31-33	Manufacturing	27%	27%	26%	19%
42	Wholesale	44%	44%	43%	38%
44-45	Retail	38%	38%	37%	28%
48-49	Transportation & Warehousing	73%	73%	71%	70%
51	Information	56%	56%	55%	51%
52	Finance	48%	48%	47%	37%
53	Real Estate	40%	40%	39%	36%
54	Professional Services	62%	61%	60%	57%
55	Management	49%	48%	48%	45%
56	Admin, Waste	40%	40%	40%	36%
61	Education	61%	60%	59%	40%
622	Hospitals	68%	68%	67%	57%
Other 62	Other Health & Social Assistance	51%	50%	50%	48%
71	Arts, Entertainment & Recreation	60%	59%	58%	54%
72	Accommodation & Food Service	52%	52%	51%	46%
81	Other Services	52%	51%	50%	73%
92	Government	23%	23%	22%	20%
	Total Payroll Employment	**45.98%**	**46%**	**45.97%**	**45.94%**

Figure 32. Portland employment projections by sector

		Total Jobs within City of Portland			2019-2045 Change	
NAICS	Employment sector	2019	2030	2045	Jobs	AAGR
11 & 21	Agriculture & Mining	1,240	1,300	1,400	200	0.5%
22	Utilities**	2,362	2,500	2,500	200	0.3%
23	Construction	22,146	23,900	26,100	4,000	0.6%
31-33	Manufacturing	28,482	29,300	30,000	1,500	0.2%
42	Wholesale	21,344	22,800	24,500	3,200	0.5%
44-45	Retail	35,695	36,900	37,900	2,200	0.2%
48-49	Transportation & Warehousing	27,676	35,500	48,900	21,300	2.2%
51	Information	12,595	13,900	15,800	3,200	0.9%
52	Finance	17,423	18,100	18,700	1,300	0.3%
53	Real Estate	10,514	11,500	12,900	2,400	0.8%
54	Professional Services	41,406	48,300	58,700	17,300	1.4%
55	Management	18,871	21,800	26,000	7,200	1.2%
56	Admin, Waste	23,196	25,100	27,500	4,300	0.7%
61	Education	43,897	45,000	45,700	1,800	0.2%
622	Hospitals	17,282	18,300	19,500	2,200	0.5%
Other 62	Other Health & Social Assistance	48,935	59,400	75,700	26,700	1.7%
71	Arts, Entertainment & Recreation	9,229	10,100	11,300	2,100	0.8%
72	Accommodation & Food Service	46,017	49,700	54,200	8,200	0.6%
81	Other Services	20,865	20,400	19,500	(1,400)	-0.3%
92	Government	15,238	16,400	17,900	2,700	0.6%
	Total Payroll Employment	**464,413**	**510,300**	**574,800**	**110,400**	**0.82%**

Figure 33. Employment to building types

		Building type share of sector employment							
	Sectors	Office	Institution	Flex/ BP	General Industrial	Warehouse/ Distribution	Retail	Mixed Use	Employment bldgs. total*
11 & 21	Agriculture & Mining	73%	-	3%	16%	-	4%	-	*96%*
22	Utilities**	68%	-	-	32%	-	-	-	*100%*
23	Construction	30%	0%	24%	33%	-	-	-	*88%*
31-33	Manufacturing	2%	0%	23%	72%	-	-	-	*97%*
42	Wholesale	5%	0%	11%	-	78%	-	-	*95%*
44-45	Retail	-	0%	-	-	-	58%	41%	*100%*
48-49	Transportation & Warehousing	7%	-	2%	-	88%	-	-	*97%*
51	Information	68%	0%	20%	-	-	-	-	*88%*
52	Finance	89%	0%	2%	-	-	7%	-	*97%*
53	Real Estate	62%	0%	18%	-	-	9%	-	*89%*
54	Professional Services	86%	1%	-	-	-	5%	-	*91%*
55	Management	99%	0%	-	-	-	-	-	*99%*
56	Admin, Waste	52%	0%	37%	-	-	-	-	*89%*
61	Education	-	100%	-	-	-	-	-	*100%*
622	Hospitals	22%	78%	-	-	-	-	-	*100%*
Other 62	Other Health & Social Assistance	43%	51%	6%	-	-	-	-	*100%*
71	Arts, Entertainment & Recreation	-	0%	-	-	-	74%	-	*74%*
72	Accommodation & Food Service	-	1%	-	-	-	42%	57%	*100%*
81	Other Services	37%	1%	22%	-	-	13%	-	*74%*
92	Government	72%	-	0%	16%	0%	12%	0%	*100%*

* The remainder share consists of jobs in residential buildings and open spaces.

Figure 34. Building square feet per employee

	Office	Institution	Flex/ Business Park	General Industrial	Warehouse/ Distribution	Retail	Mixed Use
Central City Commercial	280	647	280	280	280	470	289
Central City Industrial	280	647	599	831	599	470	289
Dispersed Employment	280	647	599	831	599	470	-
East Columbia	280	647	788	831	937	470	-
Harbor Access	280	647	788	831	937	470	-
Harbor & Airport Districts	280	647	788	831	937	470	-
Inner Commercial	280	647	280	831	599	470	289
Middle Commercial	280	647	599	831	599	470	289
Outer Commercial	280	647	599	831	599	470	289
W Portland Commercial	280	647	599	831	599	470	289
Institutional	*280*	*647*	*599*	*280*	*280*	*470*	289

Figure 35. Floor area ratios (FARs)

Employment geography	Office	Institution	Flex/ Business Park	General Industrial	Warehouse/ Distribution	Retail	Mixed Use
Central City Commercial	7.72	5.80	5.25	5.25	5.25	4.05	0.27
Central City Industrial	3.23	3.23	2.10	1.05	1.05	0.78	0.27
Dispersed Employment	1.32	0.51	0.51	0.51	0.51	0.23	0.27
East Columbia	0.27	0.33	0.33	0.33	0.30	0.23	0.27
Harbor Access	0.27	0.33	0.33	0.33	0.30	0.23	0.27
Harbor & Airport Districts	0.27	0.33	0.33	0.33	0.30	0.23	0.27
Inner Commercial	1.43	1.43	0.53	0.53	0.53	0.78	0.27
Middle Commercial	1.43	1.43	0.32	0.32	0.26	0.40	0.27
Outer Commercial	0.48	0.35	0.42	0.42	0.42	0.23	0.27
W Portland Commercial	0.48	0.48	0.53	0.53	0.53	0.40	0.27
Institutional	0.48	0.70	0.53	0.53	0.53	0.40	0.27

Figure 36. 2030 Employment projections by land-use sector group, Portland Tri-County Area

	Employment Change, 2019-2030				MWLB* Change, 2019-2030		
Land use sector groups	2019	2030	Change	AAGR	Change	MWLB%	Sector %
Total Employment	1,068,000	1,169,900	101,900	0.83%	33,200	33%	100%
Industrial sectors	261,500	285,100	23,600	0.8%	16,700	71%	50%
Agriculture & Mining	10,200	10,900	700	0.6%	100	20%	0%
Construction	57,000	61,800	4,800	0.7%	3,800	80%	12%
Manufacturing	105,900	109,400	3,500	0.3%	1,300	36%	4%
Wholesale Trade	48,100	51,600	3,500	0.6%	1,600	45%	5%
Transp. & Warehousing	38,000	48,900	10,900	2.3%	9,700	89%	29%
Utilities	2,300	2,500	200	0.8%	100	0%	0%
Office sectors	315,900	351,000	35,100	1.0%	6,400	18%	19%
Information	22,400	24,900	2,500	1.0%	-100	-2%	0%
Financial	62,500	66,700	4,200	0.6%	1,000	23%	3%
Professional Services	67,300	78,900	11,600	1.5%	900	8%	3%
Management	38,900	45,100	6,200	1.4%	700	11%	2%
Administrative Support	57,400	62,400	5,000	0.8%	2,100	42%	6%
Government, exc. Educ.	67,400	73,000	5,600	0.7%	1,900	33%	6%
Institutional sectors	194,500	219,400	24,900	1.1%	6,300	25%	22%
Education	72,300	74,400	2,100	0.3%	300	14%	1%
Healthcare & Social Asst.	96,800	118,000	21,200	1.8%	5,900	28%	20%
Retail & Consumer Services	238,100	249,900	11,800	0.4%	1,200	10%	4%
Retail	93,600	97,100	3,500	0.3%	900	25%	3%
Arts & Entertainment	15,500	17,100	1,600	0.9%	300	18%	1%
Accommodation & Food	88,500	95,900	7,400	0.7%	200	3%	1%
Other Services	40,500	39,800	-700	-0.2%	-200	24%	0%
Self-employment	58,100	64,500	6,400	1.0%	2,600	41%	8%
* MWLB represents 'middle-wage occupations' with competitive education less than a bachelor's degree. Middle-wage is defined by major occupations with median wages in the $34,000-55,000 range in the 7-County MSA in 2019.							
Source: BPS from OED projections data							

Figure 37. Projected middle-wage job growth by core sectors, Portland, 2019-2045

	Middle-wage jobs that require less than a bachelor's degree (MWLB)						
	Baseline Scenario			40% MWLB Scenario			City %
		MWLB %	Sector %		MWLB %	Sector %	of Total
	MWLB	of sector	of MWLB	MWLB	of sector	of MWLB	Tri-County
Employment sectors	change	growth	growth	change	growth	growth	Jobs, 2019
All Sectors	**39,400**	**36%**	**100%**	**44,100**	**40%**	**100%**	**46%**
Core MWLB Sectors	**34,800**	**57%**	**89%**	**39,600**	**65%**	**90%**	**37%**
Transp. & Warehousing	19,000	89%	48%	21,600	89%	49%	73%
Healthcare, exc Hospitals	8,900	33%	23%	10,100	33%	23%	51%
Construction	3,200	80%	8%	3,600	80%	8%	39%
Admin Support	1,800	42%	5%	2,100	42%	5%	40%
Wholesale	1,400	45%	4%	1,600	45%	4%	44%
Manufacturing	500	36%	1%	600	36%	1%	27%
All other sectors	4,500	9%	11%	4,500	9%	10%	49%

Figure 38. Baseline forecast of middle-wage jobs by building type, Portland, 2019-2045

	Projected middle-wage jobs that require less than a bachelor's degree (MWLB)						
Building types	MWLB jobs	% of Total	MWLB SF	% of Total	MWLB Acres	FAR	Jobs/Acre
Office	9,300	25%	1,560,000	8%	29	1.2	315
Institution	4,200	11%	1,669,000	9%	43	0.9	97
Flex/BP	2,600	7%	655,000	3%	29	0.5	89
Gen Industrial	1,600	4%	971,000	5%	56	0.4	29
Warehouse	17,900	49%	13,547,000	72%	1,010	0.3	18
Retail	900	2%	244,000	1%	12	0.5	73
Mixed Use	400	1%	116,000	1%	2	1.1	153
All employment buildings	**36,800**	**100%**	**18,762,000**	**100%**	**1,183**	**0.4**	**31**
Residential buildings	1,400						
Citywide Total	38,200						

Appendix B. Buildable land inventory details

Figure 39. BLI utilization rates on development constraints by geography

Category	Field	EOA_Category	Description	Partial_Lots	Model_Update	Rate_Housing	Rate_Employ_CC	Rate_Employ_Ind	Rate_Employ_Com	Rate_Employ_Inst
Brownfields	conECSI	Brownfields	DEQ, Environmental Cleanup Sites I (ECSI)	No	Yes	0.95	0.95	0.50	0.95	0.05
Brownfields	conLUST	Brownfields	DEQ, Underground Storage Tank Cleanup Sites (UST)	No	Yes	0.95	0.95	0.75	0.90	0.20
Cultural Resources	conHist	Low	Historic and Conservation districts	No	No	0.90	0.90	0.90	0.90	0.90
Cultural Resources	conHistLdm	Historic	Historic and Conservation Landmarks	No	Yes	0.55	0.55	0.55	0.55	0.55
Cultural Resources	conNatAm	Low	Parcels requiring archaeological scan or consultation with Native American tri	No	No	1.00	0.85	0.85	0.85	0.85
Environmental Overlay	conCovrly	Environmental	Environmental Conservation Zones	Yes	Yes	0.95	0.75	0.50	0.25	0.25
Environmental Overlay	conPovrly	Full	Environmental Protection Zones	Yes	Yes	0.00	0.00	0.00	0.00	0.00
Flight Limitations	conAirHgt	None	Approach and departure cones	No	No	0.95	1.00	1.00	1.00	1.00
Flight Limitations	conHeliprt	None	Heliport Landing (impacts several buildings near Portland Heliport)	No	No	0.95	1.00	1.00	1.00	1.00
Flight Limitations	conNoise	None	Noise contours (areas above LDN 65 and 68 noise contours)	No	No	0.95	1.00	1.00	1.00	1.00
Greenway	conGW	Greenway	All land with g/r/n overlays; land within i overlay where 10% or more of the par	No	No	0.60	0.65	0.50	0.60	0.50
Hazards	conFld100	Environmental	FEMA 100-Year Floodplain Map	Yes	Yes	0.80	0.50	0.40	0.35	0.35
Hazards	conFldway	Full	FEMA Floodway Map	Yes	Yes	0.00	0.00	0.00	0.00	0.00
Hazards	conLSHA	None	Parcels within 50' of a mapped landslide hazard area	No	No	0.80	1.00	1.00	1.00	1.00
Hazards	conSlp25	Environmental	Parcels where 25% or more of the parcel has a slope of greater than 25%	No	No	0.75	0.50	0.35	0.35	0.35
Infrastructure	conSewer	Infrastructure	Infrastructure Constrained Areas: Sewer	No	No	0.85	0.75	0.75	0.75	0.75
Infrastructure	conStorm	Infrastructure	Stormwater System	No	No	0.85	0.75	0.75	0.75	0.75
Infrastructure	conWater	Infrastructure	Water System	No	No	0.85	0.75	0.75	0.75	0.75
Natural Resources	conWetland	Environmental	Wetlands	Yes	Yes	0.55	0.75	0.50	0.35	0.35
Public Ownership	conInstit	None	Institutional Campuses	No	No	0.00	1.00	1.00	1.00	1.00
Public Ownership	conPrvCom	Full	Private Common Open Space	No	No	0.00	0.00	0.00	0.00	0.00
Public Ownership	conPubOwn	None	Publicly owned or controlled lots that do not provide for residential uses	No	Yes	0.20	1.00	1.00	1.00	1.00
Scenic Areas	conView	Low	Views	No	No	1.00	0.90	1.00	1.00	1.00
Transporation	conTranCap	Infrastructure	2008 Volume to Capacity Ratios	No	No	0.90	0.90	0.65	0.80	0.80
Transporation	conTranInt	Infrastructure	ODOT Highway Interchanges	No	No	0.90	0.90	0.75	0.75	0.75
Transporation	conTranSub	Infrastructure	Substandard and Unimproved Streets	No	No	0.85	0.85	0.75	0.75	0.75

Notes: This table estimates the average capacity utilitization of land with the development constraints listed and described here. The capacity utilization rates are highlighted in green, yellow, and orange by aggregate employment geography. The 'CC' abbreviation means Central City; 'Ind' means Industrial geographies; 'Com' means Commercial geographies; and 'Inst' means campus institutions.

Figure 40. Employment land BLI capacity map by constraint level

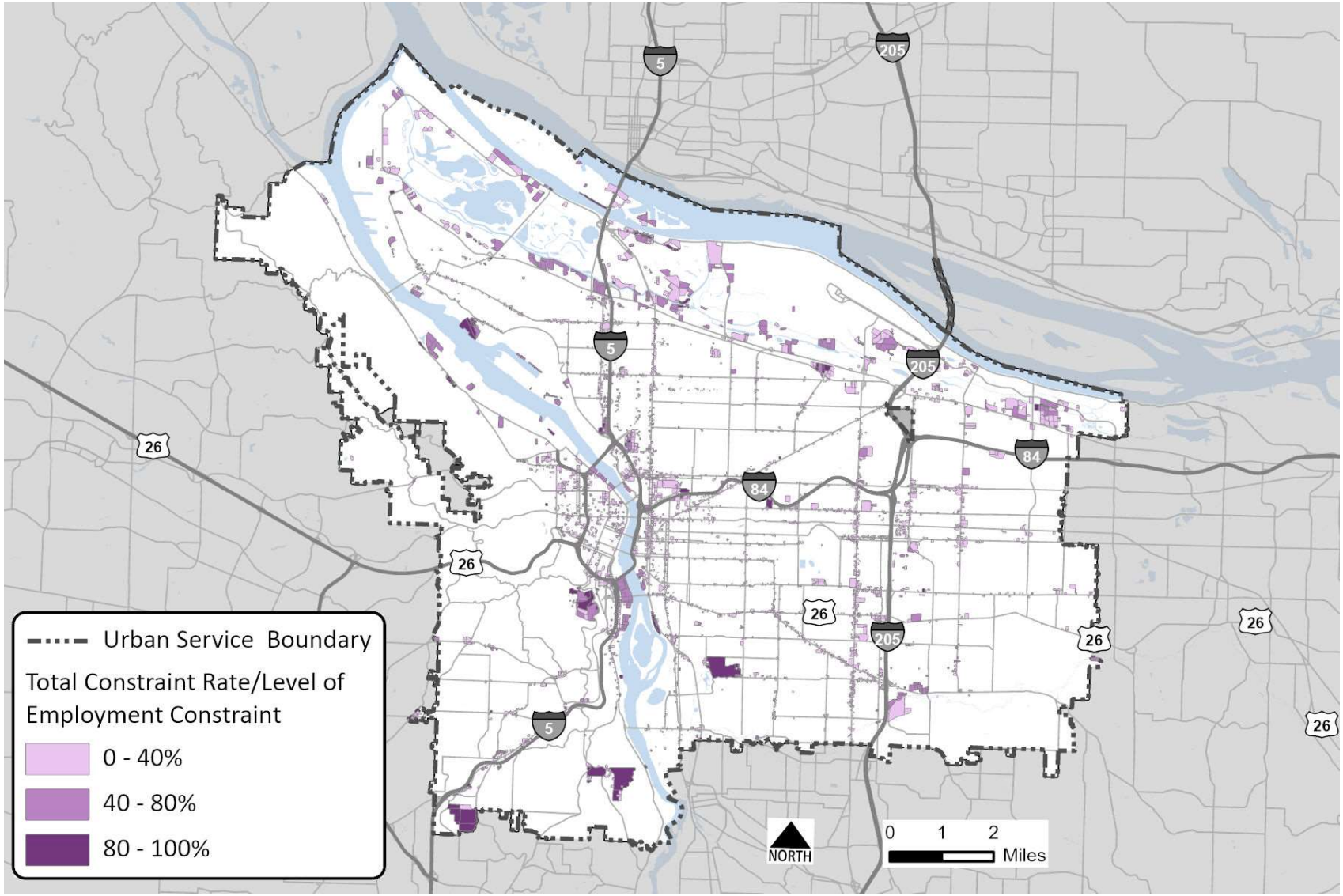


Figure 41. Vacant and redevelopable sites with BLI capacity

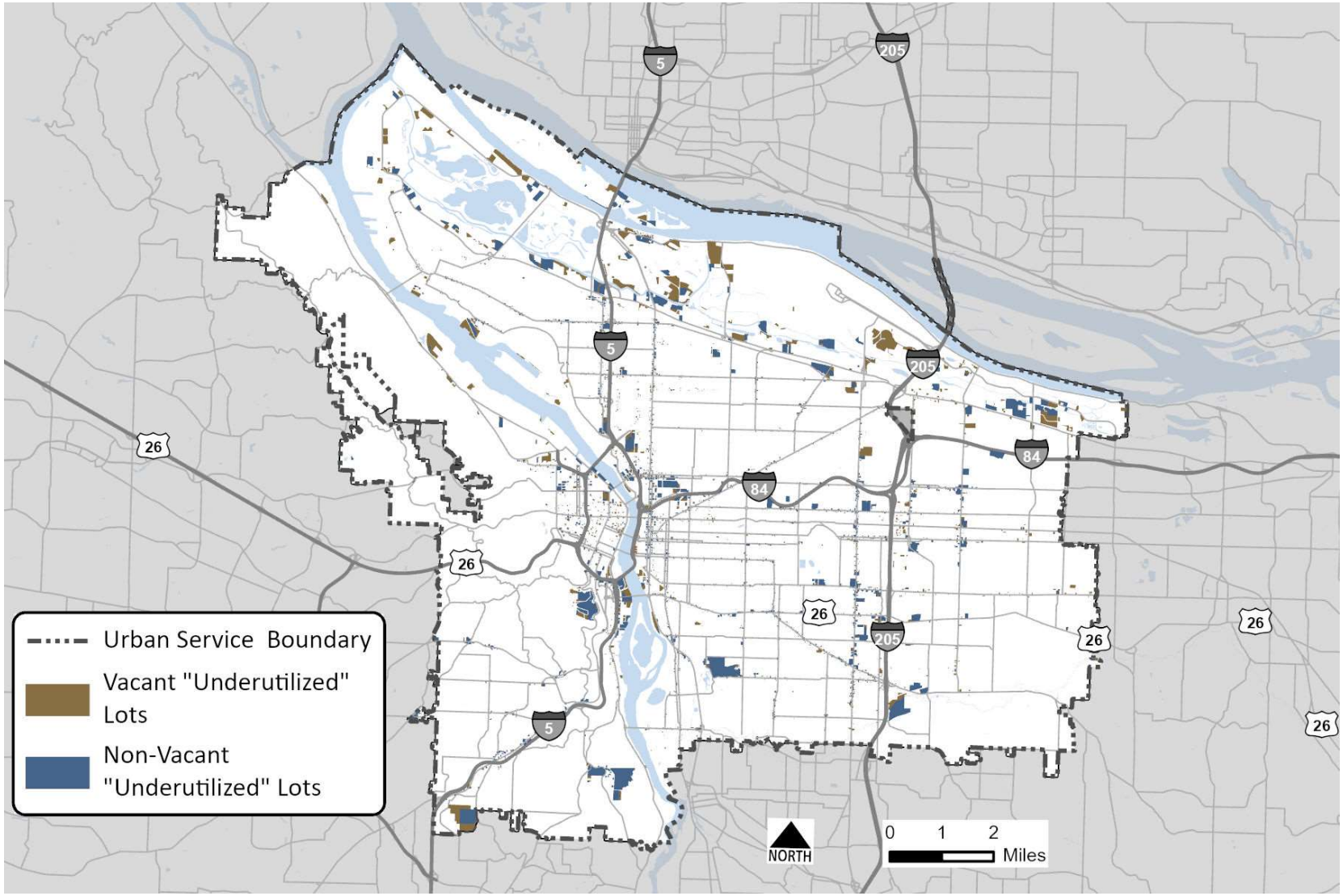


Figure 42. Industrial geographies BLI base supply by capacity utilization

Note: Lots with a capacity utilization rate above 35% are included as BLI capacity.