BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF ACCEPTING THE DRAFT URBAN GROWTH REPORT AS SUPPORT FOR DETERMINATION OF CAPACITY OF THE URBAN GROWTH BOUNDARY	)))))))	RESOLUTION NO. 14-4582 Introduced by Chief Operating Officer Martha Bennett with the Concurrence of Council President Tom Hughes

WHEREAS, state law requires Metro to determine the capacity of the urban growth boundary (UGB) to accommodate the next 20 years' worth of population and employment growth by the end of December 2014; and

WHEREAS, regarding housing, ORS 197.296(3) requires Metro to inventory the supply of buildable lands within the UGB, determine the housing capacity of the buildable lands, and analyze housing need by type and density range in order to determine the number of dwelling units and amount of land needed for each housing type for the next 20 years; and

WHEREAS, regarding employment land, Goal 14 and its implementing rules require Metro to inventory existing vacant and developed employment lands within the UGB and to provide an adequate supply of land to accommodate demonstrated need for employment opportunities; and

WHEREAS, Metro convened a peer review panel consisting of economists and demographers to review the assumptions and results of its population and employment forecasts; and

WHEREAS, from February 2013 to September 2013 Metro convened a technical working group consisting of public and private sector experts to develop a methodology for identifying the region's buildable land inventory; and

WHEREAS, from October 2013 to December 2013 Metro made available to all local jurisdictions in the region its preliminary buildable land inventory; and

WHEREAS, Metro incorporated local jurisdiction input on the buildable land inventory; and

WHEREAS, in March and April of 2014 Metro convened public and private sector experts to discuss methods for determining how much of the region's buildable land inventory may be market-feasible by the year 2035; and

WHEREAS, in April 2014 Metro convened public and private sector experts to review assumptions about space usage by different employment sectors; and

WHEREAS, on July 15, 2014 Metro published a Draft 2014 Urban Growth Report that incorporates the regional forecast and buildable land inventory and assesses the capacity of the existing UGB to accommodate the range of new dwelling units and jobs included in the forecast; and

WHEREAS, state law requires Metro to provide capacity to encourage the availability of dwelling units at price ranges and rent levels, and of transportation choices, that are commensurate with the financial capabilities of households expected over the planning period; and

WHEREAS, as part of the 2014 Draft Urban Growth Report, Metro published a draft Housing Needs Analysis that showed the effects on housing affordability and household transportation costs of forecast growth under existing policies and investment levels; and

WHEREAS, Metro sought and received comments on the draft analyses of housing and employment capacity from its Metro Policy Advisory Committee (MPAC), its Metro Technical Advisory Committee (MTAC), its Transportation Policy Alternatives Committee (TPAC), local governments in the region, public, private and non-profit organizations; and

WHEREAS, the Metro Council intends to continue a discussion in 2015 regarding several policy considerations reflected in the Draft Urban Growth Report including, but not limited to: land readiness for job creation and community development; the market feasibility of the region's buildable land inventory; the possible outcomes of implementing existing plans and policies, including implications for the region's housing mix; actions needed to provide family-friendly housing and workforce housing; and city plans for urban reserves; and

WHEREAS, the Metro Council held a public hearing on the draft analysis on December 4, 2014; now, therefore,

BE IT RESOLVED that:

1. The Council accepts the 2014 Draft Urban Growth Report dated September 2014, attached and incorporated into this resolution as Exhibit A, as a draft analysis of need for capacity in the UGB to accommodate growth to the year 2035 and for actions the Council may take to add housing and employment capacity by ordinance in 2015, pursuant to ORS 197.296(6) and statewide planning goals 14 and 10.

2. Acceptance of Exhibit A by the Council meets Metro's responsibility under state law to analyze the capacity of the UGB in order to accommodate growth to the year 2035 as a preliminary step toward providing sufficient capacity to accommodate that growth. The Council will formally adopt the Urban Growth Report by ordinance in 2015, along with any actions the Council may take to add housing and employment capacity.

ADOPTED by the Metro Council this 4th day of December 2014

Tom Hughes, Council President

Approved as to form:

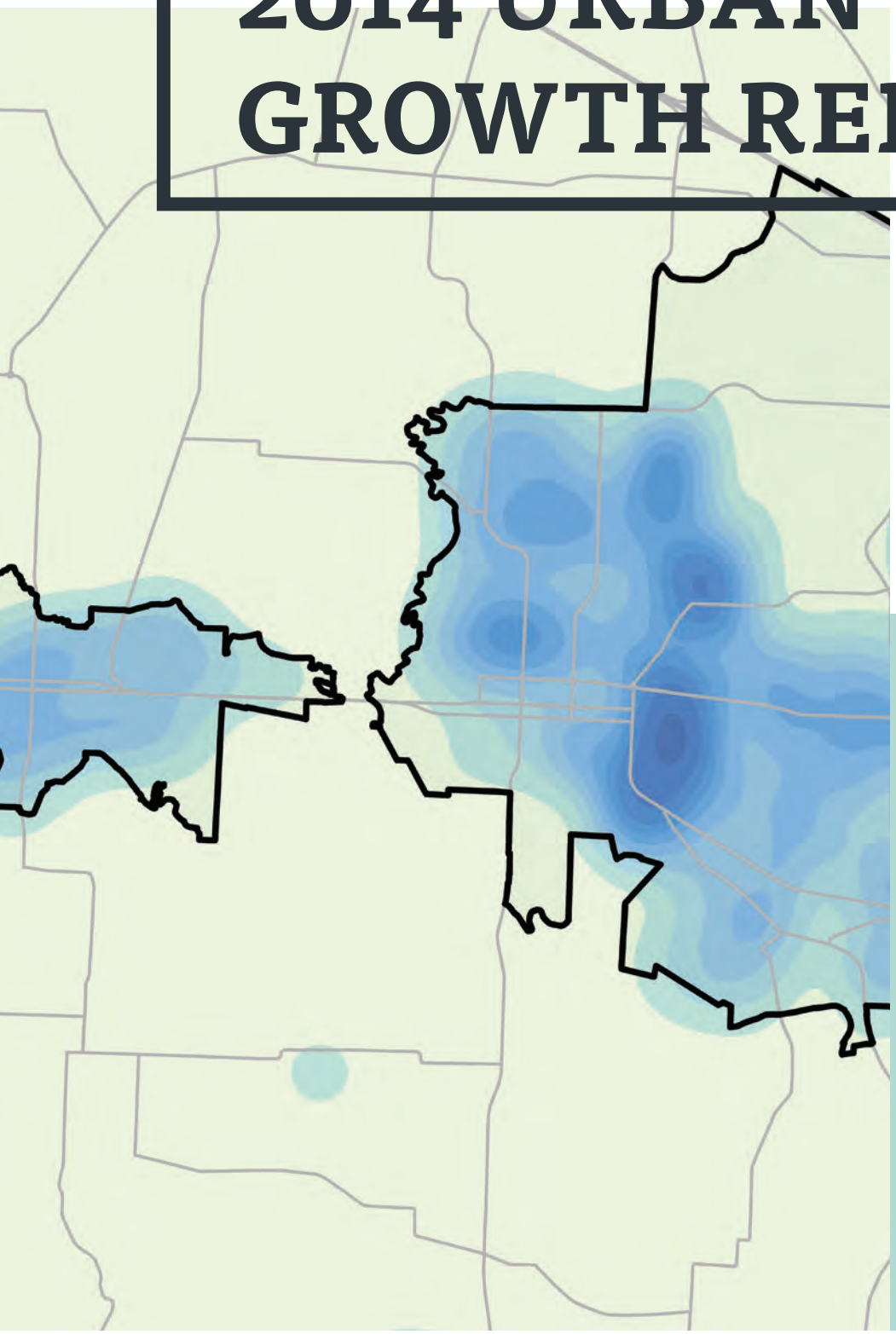
Alison R. Kean, Metro Attorney

Exhibit A to Resolution No. 14-4582

September / 2014

2014 URBAN GROWTH REPORT

Revised Draft



Investing in our communities

2015 – 2035

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If you picnic at Blue Lake or take your kids to the Oregon Zoo, enjoy symphonies at the Schnitz or auto shows at the convention center, put out your trash or drive your car – we've already crossed paths.

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Tom Hughes

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Revised Draft

2014 URBAN GROWTH REPORT

Investing in our communities

2015 – 2035

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Introduction

As the Portland metropolitan region grows, our shared values guide policy and investment choices to accommodate growth and change, while ensuring our unique quality of life is maintained for generations to come.

Metro, local jurisdictions and many other partners work together to guide development in the region. This means striking a balance between preservation of the farms and forests that surround the Portland region, supporting the revitalization of existing downtowns, main streets and employment areas, and ensuring there's land available for new development on the edge of the region when needed.

Oregon law requires that every five years, the Metro Council evaluate the capacity of the region's urban growth boundary to accommodate a 20-year forecast of housing needs and employment growth. The results of that evaluation are provided in the urban growth report.

While complying with the requirements of state law, the urban growth report serves as more than just an accounting of available acres inside the urban growth boundary. It plays a vital role in the implementation of the region's 50-year plan that calls for the efficient use of land, redevelopment before expansion, and the preservation of the region's resources for future generations.

ACHIEVING DESIRED OUTCOMES

To guide its decision-making, the Metro Council, on the advice of the Metro Policy Advisory Committee (MPAC), adopted six desired outcomes, characteristics of a successful region:

- People live, work and play in vibrant communities where their everyday needs are easily accessible.
- Current and future residents benefit from the region's sustained economic competitiveness and prosperity.
- People have safe and reliable transportation choices that enhance their quality of life.
- The region is a leader in minimizing contributions to global warming.
- Current and future generations enjoy clean air, clean water and healthy ecosystems.
- The benefits and burdens of growth and change are distributed equitably.

WORKING TOGETHER

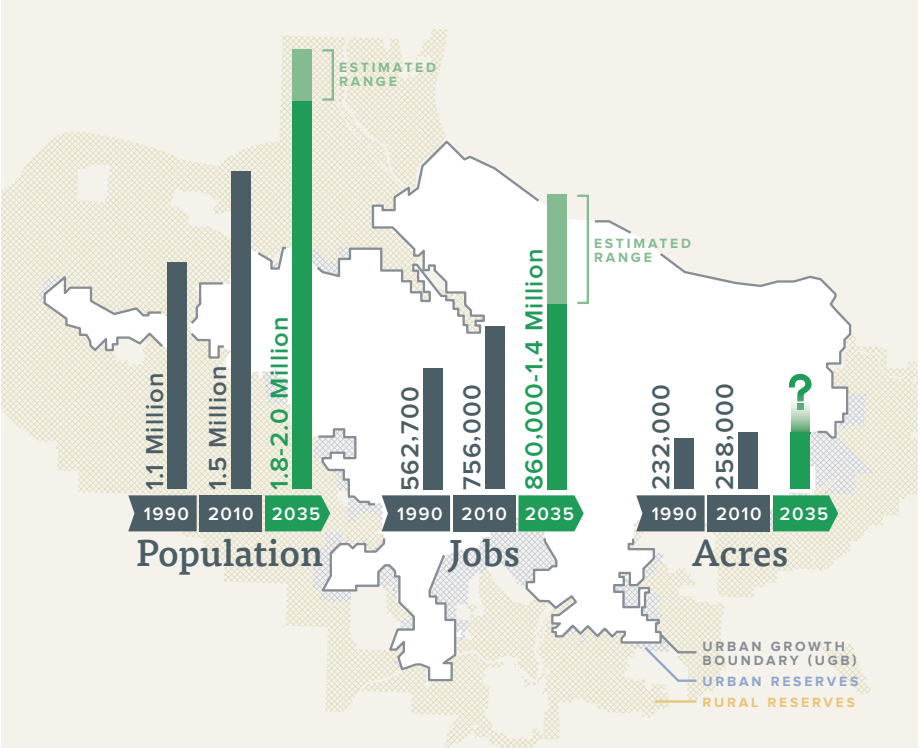
The population and employment range forecasts in the urban growth report help inform Metro, local jurisdictions, and other public and private sector partners as they consider new policies, investments, and actions to maintain the region's quality of life and promote prosperity.

The urban growth report, once accepted in its final form by the Metro Council in December 2014, will serve as the basis for the council's urban growth management decision, which will be made by the end of 2015.

But the work does not end with the council's decision. Implementation will require coordination of local, regional and state policy and investment actions. In its role as convener for regional decision-making, Metro is committed to building and maintaining partnerships and alignments among the different levels of government and between the public and private sectors.

Past growth-future forecast

Population and job growth within the Metro urban growth boundary
1990-2035



SUCCESSES AND CHALLENGES

The region's longstanding commitment to protecting farms and forests, investing in existing communities, and supporting businesses that export goods and services is paying off in economic growth. From 2001 to 2012, the Portland region ranked third among all U.S. metropolitan areas for productivity growth, outpacing the Research Triangle in North Carolina, the Silicon Valley in California, and several energy producing regions in Texas.[i] Likewise, the region's walkable downtowns, natural landscapes, and renowned restaurants, breweries, and vineyards are well known around the world. In 2013, visitors to Clackamas, Multnomah and Washington counties spent $4.3 billion dollars, supporting 30,100 jobs in the region.[ii] These successes are no accident – they demonstrate that prosperity, livability and intentional urban growth management are compatible.

However, Metro and its partners also have challenges to face when it comes to planning for additional population and employment growth. These include making sure that workforce housing is available in locations with access to opportunities, providing more family-friendly housing choices close to downtowns and main streets, delivering high quality transportation options that help people get where they need to go, ensuring freight mobility, and protecting and enhancing the environment.

Outcomes-based approach to growth management

A core purpose of the urban growth report is to determine whether the current urban growth boundary (UGB) has enough space for future housing and employment growth. Considerable care and technical engagement have gone into the assessment of recent development trends, growth capacity, and the population and employment forecasts provided in this report. However, this kind of analysis is necessarily part art and part science. State laws direct the region to determine what share of growth can "reasonably" be accommodated inside the existing UGB before expanding it but ultimately, how the region defines "reasonable" will be a reflection of regional and community values.

HOW WE ACCOMMODATE GROWTH

URBAN AND RURAL RESERVES Areas outside the current UGB designated by Metro and the three counties through a collaborative process. Urban reserves are the best places for future growth if urban growth expansions are needed over the next 50 years. Rural reserves are lands that won't be urbanized for the next 50 years.

INFILL Development on a tax lot where the original structure has been left intact and the lot is considered developed.

REDEVELOPMENT Development on a tax lot where the original structure has been demolished and there is a net increase in housing units.

VACANT LAND Land inside the UGB that's not developed.

RESIDENTIAL BUILDABLE LAND INVENTORY

If the region's historic annual housing production records (high and low from 1960 to 2012) are any indication, how long might the residential buildable land inventory last?

SINGLE FAMILY 10 to 52 years

MULTIFAMILY 28 to 354 years

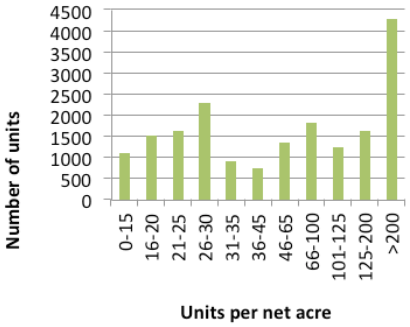


FIGURE 1 Net new multifamily units by density inside UGB *(built 2007-2012)*

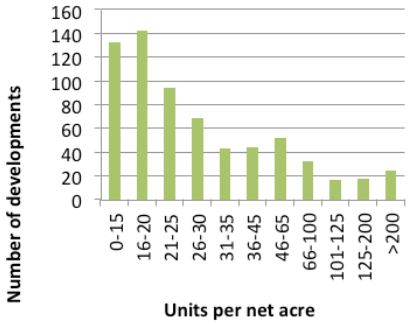
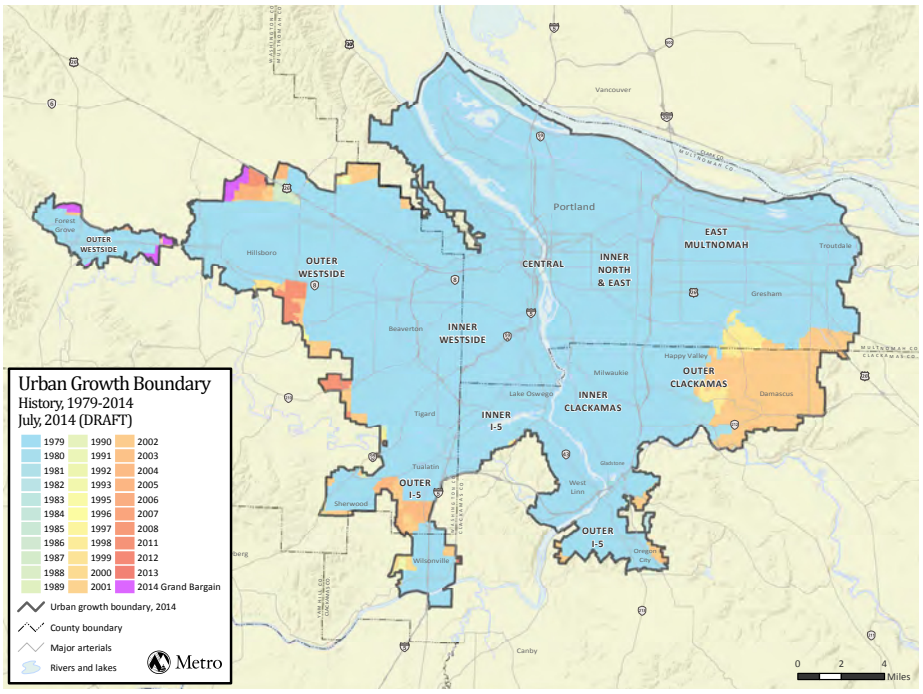


FIGURE 2 Net new multifamily developments by density inside UGB *(built 2007-2012)*



MAP 1 Metro UGB expansions over time *(1979 - 2014)*

How has the region been growing?

The Portland region's original urban growth boundary was adopted in 1979. As depicted in Map 1, the UGB has been expanded by about 31,400 acres. During the same time period, the population inside the UGB has increased by over half a million people. This represents a 61 percent increase in population inside an urban growth boundary that has expanded by 14 percent.

RESIDENTIAL DEVELOPMENT TRENDS

From 1998 to 2012, 94 percent of the new residential units were built inside the original 1979 boundary. During these 14 years, post-1979 UGB expansion areas produced about 6,500 housing units compared to the approximately 105,000 units produced in the original 1979 UGB. With a couple of notable exceptions, UGB expansion areas have been slow to develop because of challenges with governance, planning, voter-approved annexation, infrastructure financing, service provision, and land assembly. Development of Wilsonville's Villebois and Hillsboro's Witch Hazel communities demonstrates that new urban areas can be successful with the right combination of factors such as governance, infrastructure finance, willing property owners, and market demand. There are also challenges in our existing urban areas. Infill and redevelopment have been focused in a few communities while many downtowns and main streets have been slow to develop.

The 2040 Growth Concept, the Portland region's 50-year plan for growth, calls for focusing growth in existing urban centers and transportation corridors, and making targeted additions to the urban growth boundary when needed. To achieve this regional vision, redevelopment and infill are necessary. During the six years from 2007 through 2012, which included the Great Recession, the region saw levels of redevelopment and infill that exceeded past rates.

During this time period, 58 percent of the net new residential units built inside the UGB were through redevelopment (46 percent) or infill (12 percent) and 42 percent were on vacant land. There are a variety of views on whether the recession explains this uptick in redevelopment and infill or whether this is an indication of people wanting to live in existing urban areas with easy access to services and amenities. What is clear is that development challenges exist in both urban areas and past expansion areas. In some cases, however, market demand in existing urban areas appears to have overcome those challenges.

During this same six years, new residential development was evenly split between multifamily and single-family units with a total of 12,398 single-family and 12,133 multifamily residences built. The average density of new single-family development was 7.6 units per acre (5,766 square foot average lot size) and multifamily development was 41.8 units per acre. The highest density multifamily developments also tended to be the largest, so while there were many smaller developments, the statistics are dominated by the large high-density developments. This pattern is clear in Figures 1 and 2 (p. 8), which depict the number of units and developments built per net acre, indicating levels of density.

EMPLOYMENT TRENDS

As in most regions, many people in the Portland region lost their jobs in the Great Recession. With the ensuing recovery, total employment in the region was essentially unchanged when comparing 2006 and 2012. However, the recession did lead to some major changes across industries. Private education recorded the highest growth rate at 25.4 percent from 2006 to 2012, while health and social assistance employers saw the largest net gain in employment with the addition of just over 14,000 jobs during the same period. Construction saw the largest decline, with a loss of around 9,600 jobs, or 20.2 percent of total jobs, in the industry as of 2006. The loss of construction jobs reflects the housing crash that brought residential construction nearly to a halt for several years. Appendix 8 describes the region's employment trends in greater detail.

Aggregating to the sector level, industrial and retail employment declined from 2006 to 2012 while service and government employment increased (Table 1).

Sector	2006 Employment	2012 Employment	Net Change	Percent Change	Avg. Annual Growth Rate
Industrial	244,951	218,311	-26,640	-10.9%	-1.9%
Retail	86,921	84,475	-2,446	-2.8%	-0.5%
Service	396,470	419,516	23,046	5.8%	0.9%
Government	103,736	108,582	4,846	4.7%	0.8%

Table 1 Employment in the three-county area by aggregated sector 2006-2012 *(Clackamas, Multnomah, Washington)* | **Source** *Quarterly Census of Employment and Wages*

Policy considerations

HEALTHY DEBATE AND INFORMED DECISION-MAKING

Though this report strives for completeness, balance, and accuracy, there is always room for debate. At the end of 2014, the Metro Council will be asked to decide if the report provides a reasonable basis for moving forward and making a growth management decision in 2015. Throughout this document, policy questions and topics that have been raised by Metro Council and involved stakeholders are called out for further discussion by policymakers and members of the community.

LAND READINESS OR LAND SUPPLY?

For better or worse, our state land use planning system asks Metro to focus on counting acres of land to determine the region's 20-year growth capacity. Over the years, it's become clear that land supply alone isn't the cause or the solution for all of the region's challenges. Working together, we must make the most of the land we already have inside the urban growth boundary to ensure that those lands are available to maintain, improve, and create the kinds of communities that we all want – today and for generations to come.

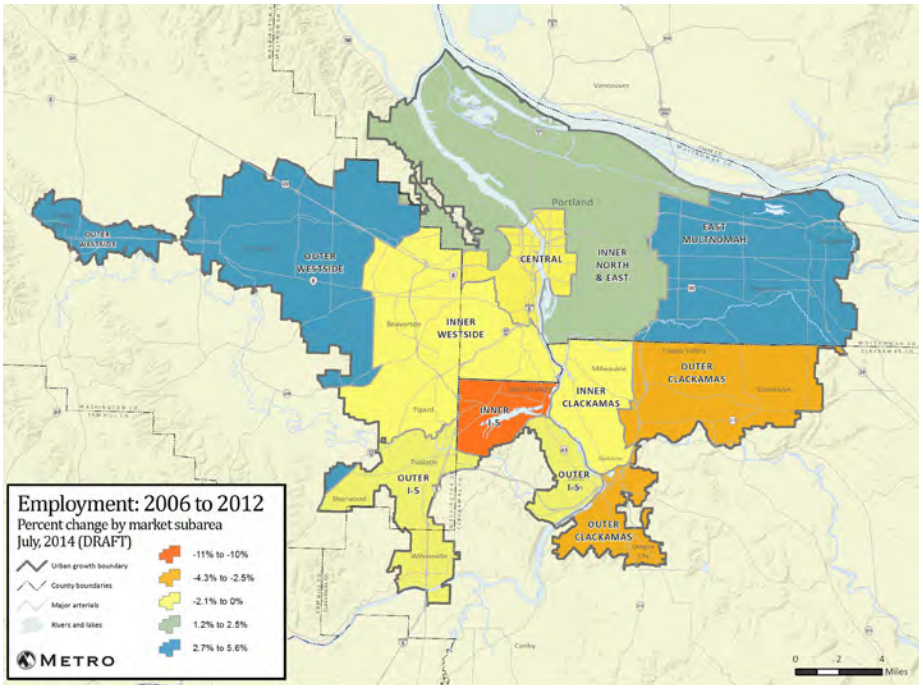
Working together, we can:

- ensure that communities have governance structures in place that can respond to growth and change
- provide the types of infrastructure and services that signal to the development community a site or area is primed for investment
- make the strategic investments needed to clean up and reuse neglected lands.

Policy considerations

CHANGES IN OUR COMMUNITIES

People around the region are concerned about new development in their communities. The concern exists not just in existing urban areas experiencing a new wave of development, but also in areas added to the urban growth boundary. With population growth expected to continue, change is inevitable. What policies and investments are needed to ensure that change is for the better?



Map 2 Employment gains and losses in Metro UGB 2006 - 2012

From 2006 to 2012, there was also a change in where jobs were located in the three-county area (Map 2). While about 25 percent of all jobs could still be found in the central part of the region, the subarea experienced a loss of about 2,300 jobs, or 1.2 percent. The inner I-5 area saw a decline in employment of roughly 2,200 jobs, or 11.0 percent of 2006 employment. This area was home to many firms involved in real estate and finance, industries that were hard hit by the housing collapse and recession. Many businesses in the area, like mortgage and title companies, contracted or closed during this time period. For example, the Kruse Way area in Lake Oswego had an office vacancy rate of 22.4 percent in 2012. In the southeastern part of the region, the outer Clackamas and outer I-5 subareas together lost about 3,400 jobs or 3.2 percent. In contrast, the outer Westside experienced the greatest increase in employment, gaining about 5,800 jobs, an increase of 5.6 percent. The East Multnomah subarea also gained jobs, increasing employment by 1,800 or 2.7 percent.

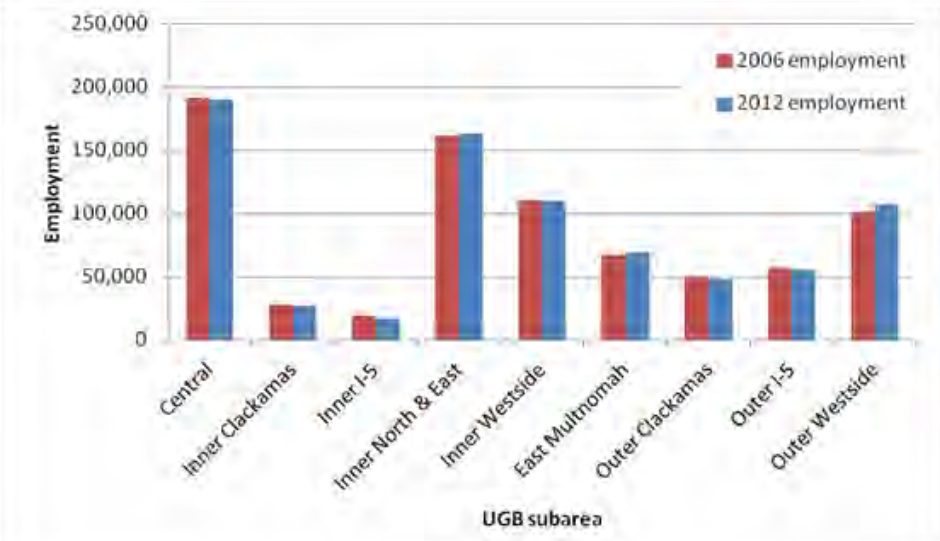


Figure 3 Total employment by subarea for 2006 and 2012

Case study

VILLEBOIS, WILSONVILLE

The Villebois community is one of only a few urban growth boundary expansion areas that has been developed. The roughly 500-acre area was brought into the UGB in 2000. With plans for about 2,600 households, the area quickly rebounded from the recession and is now about half built. Residents benefit from a variety of amenities such as parks, plazas, and community centers.

Case study

HASSALO ON 8TH, LLOYD DISTRICT, PORTLAND

Adjacent to MAX and streetcar stops, construction is now underway on a site that was previously a parking lot. Once built, the development will provide over 600 rental apartments, plazas, office and retail space, more than 1,000 underground car parking places, and space to park more than 1,000 bikes – all in a central location.

Policy considerations

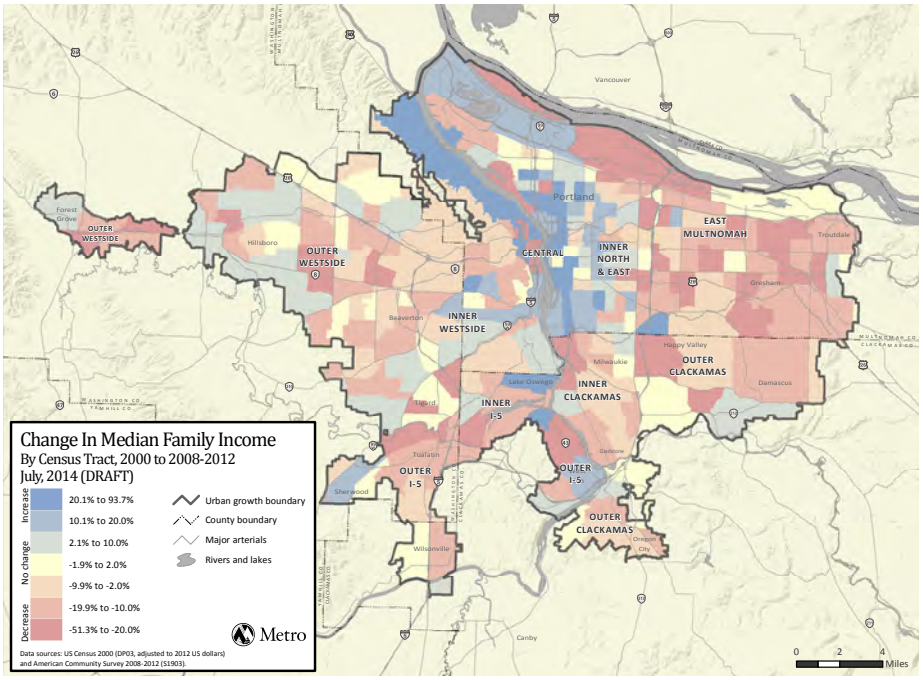
OPPORTUNITIES FOR WORKFORCE HOUSING

Market-rate workforce housing is typically provided by existing housing stock, not new construction. Yet, existing housing in locations with good access to jobs is often too expensive for the region's workforce. What policies, investments, innovative housing designs and construction techniques could provide additional workforce housing in locations with good transportation options? Who has a role?

UNINTENDED CONSEQUENCES OF REDEVELOPMENT

Our region has made a commitment to ensuring its decisions improve quality of life for all. Yet, like many metropolitan areas, we've struggled to make good on that intent. Investments made to encourage redevelopment and revitalization have too often disproportionately impacted those of modest means. The consequence has been that people with lower incomes have often been displaced from their long-time communities when redevelopment in the city center drives up land values and prices follow.

Map 3 shows the change in median family income around the region over the last decade. There is a clear trend of incomes increasing in close-in Northwest, Northeast, and Southeast Portland, Lake Oswego, and West Linn, while incomes have stagnated or decreased elsewhere. Outlying areas like outer east Portland, Gresham, Cornelius, and Aloha stand out as having decreasing incomes. In many cases, increases in incomes in central locations and decreases elsewhere indicate displacement of people from their communities as housing prices increase.



Map 3 Change in median family income 2000-2012

GROWTH WITHOUT SERVICES AND FACILITIES

Over the last couple of decades, the trend of depopulation of the urban core and the movement of the middle class to the suburbs has reversed in many regions in the U.S. The Portland metropolitan region is no exception. While there have been positive outcomes, this has also led to displacement and concentrations of poverty in places that lack adequate services and facilities like sidewalks and transit. Additional information about access to opportunity around the region can be found in Appendix 10. Information about housing and transportation cost burdens can be found in Appendix 12.

COMMUTING TRENDS: THE JOBS-HOUSING BALANCE

For years, leaders have talked about a jobs-housing balance – ensuring there are homes close to employment areas. But evidence and common sense tell us that people's lives don't neatly line up with the available housing inventory. Some people work at or close to home, some commute from one end of the region to the other, and some live halfway between where they work and their spouse works. In other words, putting homes next to major employers doesn't necessarily cut down on commuting.

However, services and amenities near residential areas can make our lives outside of jobs and commutes easier and help create strong local economies. When people can go out to eat, do their shopping, visit the bank or see a doctor close to where they live, they spend less time going somewhere and more time with friends and family, actively enjoying their communities and the region.

Map 4 illustrates the region's commute patterns. Using Washington County as an example (2011 data):[iii]

- about 120,000 people who live in Washington County also work there
- about 118,000 people who live outside Washington County work in Washington County
- about 104,000 people who live in Washington County work outside Washington County.

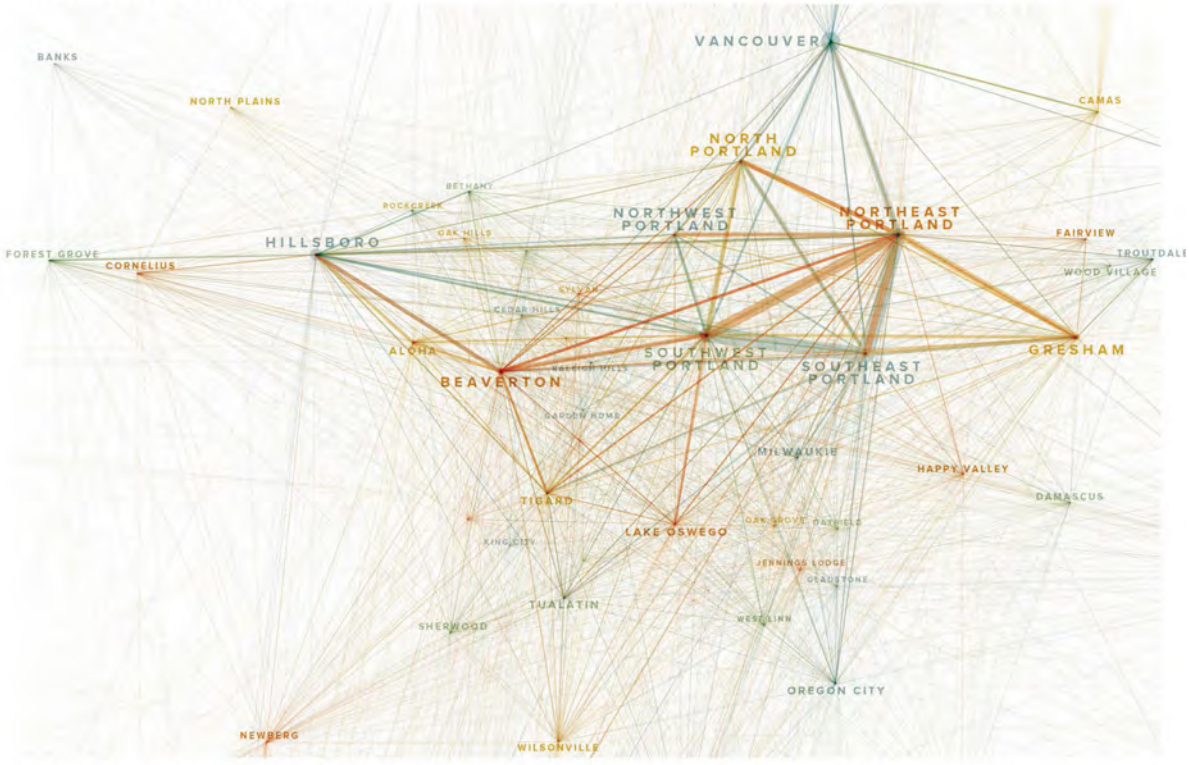
Policy considerations

A BIGGER PICTURE

Regional and local policies and investments also interact with actions taken in neighboring cities, Clark County and Salem. What are the best policies for using land efficiently and reducing time spent in traffic?

TRAVEL COMMUTE PATTERNS

2011 commute patterns from cities/places in the Portland metropolitan region
Lines connect a person's place of residence to place of employment
Line thickness represents number of people



DATA SOURCE: LONGITUDINAL EMPLOYER-HOUSEHOLD DYNAMICS, U.S. CENSUS BUREAU

Policy considerations

MANAGING UNCERTAINTY

- What are the risks and opportunities of planning for higher or lower growth in the forecast range?
- Recognizing that the two forecasts are linked, are there different risks when planning for employment or housing growth?
- Are there different risks when planning for land use, transportation, or for other infrastructure systems?
- Who bears the public and private costs and benefits associated with different growth management options?

How many more people and jobs should we expect in the future?

A core question this report addresses is how many more people and jobs should the region plan for between now and the year 2035. In creating the 2035 forecast, Metro convened a peer review group consisting of economists and demographers from Portland State University, ECONorthwest, Johnson Economics, and NW Natural. The forecast assumptions and results in this report reflect the recommendations of this peer review panel. A summary of the peer review can be found in Appendix 1C.

However, even with a peer review of the forecast, some forecast assumptions will turn out to be incorrect. For that reason, the population and employment forecasts in this report are expressed as ranges, allowing the region's policymakers the opportunity to err on the side of flexibility and resilience in choosing a path forward. As with a weather forecast, this population and employment range forecast is expressed in terms of probability. The baseline forecast (mid-point in the forecast range) is Metro staff's best estimate of what future growth may be. The range is bounded by a low end and a high end. There is a ninety percent chance that actual growth will occur somewhere in this range, but the probability of ending up at the high or low ends of the range is less.

Appendix 1B describes the accuracy of past forecasts. These typically have been reliable, particularly when it comes to population growth. For example, Metro's 1985 to 2005 forecast proved to be off by less than one percent per year for both population and employment over the 20-year time frame.

POPULATION AND JOB GROWTH IN THE SEVEN-COUNTY PORTLAND/VANCOUVER METROPOLITAN AREA

To "show our work" and to understand our region in its economic context, this analysis starts with a forecast for the larger seven-county Portland/Vancouver/Hillsboro metropolitan area.[2] Full documentation of the metropolitan area forecast is available in Appendix 1A. It is estimated that there will be about 470,000 to 725,000 more people in the seven-county area by the year 2035. Mid-point in the forecast range, or best estimate, is for 600,000 more people. This amount of growth would be consistent with the region's past growth; the seven-county area grew by about 600,000 people between 1985 and 2005 and by about 700,000 from 1990 to 2010. Adding 600,000 people would be comparable to adding the current population of the city of Portland to the area.

The forecast calls for 120,500 to 648,500 additional jobs in the seven-county Portland/Vancouver metropolitan area between 2015 and 2035. The forecast range for employment is wider than the forecast range for population since regional employment is more difficult to predict in a fast-moving global economy. Unexpected events like the Great Recession, technological advances, international relations, and monetary policy can lead to big changes. Mid-point in the forecast range, or best estimate, is for 384,500 additional jobs. This amount of growth would surpass the 240,000 additional jobs that were created in the seven-county metropolitan area during the 20-year period from 1990 to 2010, which included job losses from the recession.

2 The seven-county Portland/Vancouver metropolitan area includes Clackamas, Clark, Columbia, Multnomah, Skamania, Washington, and Yamhill counties.

POPULATION AND JOB GROWTH IN THE METRO UGB

A market-based land and transportation computer model is used to determine how many of the new jobs and households in the seven-county area are likely to locate inside the Metro urban growth boundary. The model indicates that about 75 percent of new households and jobs may locate inside the UGB. The share of regional growth accommodated inside the boundary varies depending on what point in the forecast range is chosen. More detail can be found in Appendices 4 and 6. It is estimated that there will be about 300,000 to 485,000 additional people inside the Metro urban growth boundary between 2015 and 2035 (Figure 4). At mid-point in this range, the UGB will have about 400,000 additional people. This would be comparable to adding more than four times the current population of the city of Hillsboro to the UGB . The population forecast is converted into household growth for this analysis.

It is estimated that there will be about 85,000 to 440,000 additional jobs in the Metro UGB between 2015 and 2035 (Figure 5). At mid-point in this range, there would be about 260,000 additional jobs between 2015 and 2035. This job forecast is converted into demand for acres for this analysis.

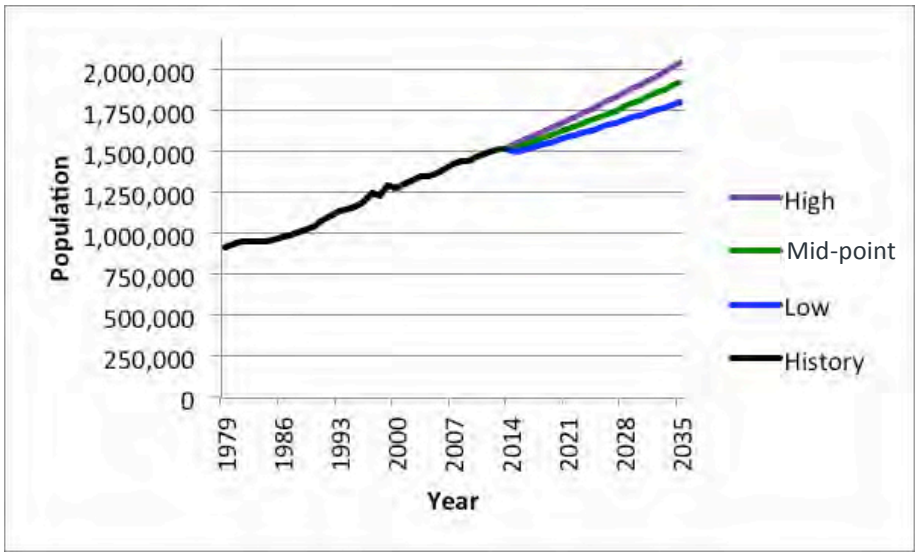


Figure 4 Population history and forecast for Metro UGB *1979 - 2035*

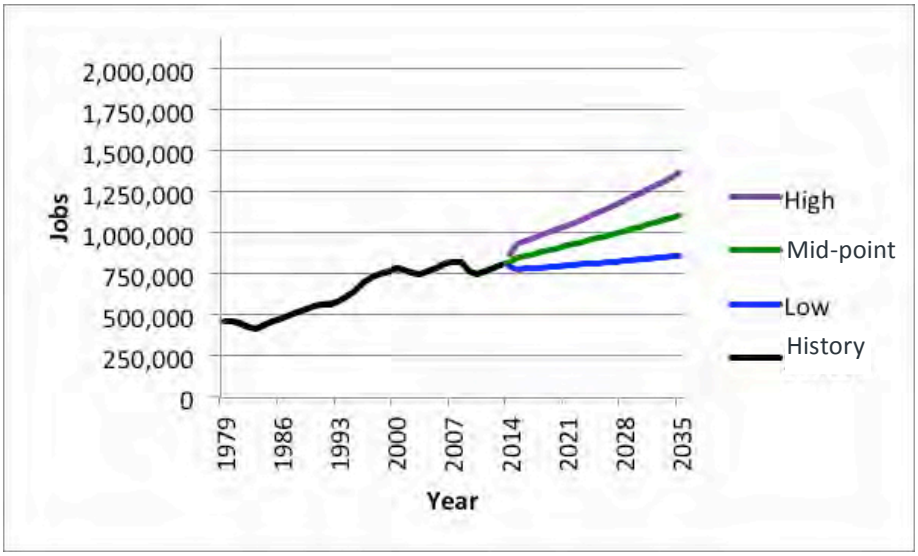


Figure 5 Employment history and forecast for Metro UGB, *1979-2035*

DIDN'T THE STATE LEGISLATURE JUST EXPAND THE UGB?

Signed into state law in the spring of 2014, HB 4078 codifies the fundamental principles behind our region's decision about urban and rural reserves. The legislation provides greater protection for farms, forests and natural areas, offers predictability to our communities, home builders and manufacturers, and makes our land use system more efficient. The legislation also expanded the UGB in several locations in Washington County and described how Metro must account for those lands in this urban growth report.

How much room for growth is there inside the UGB?

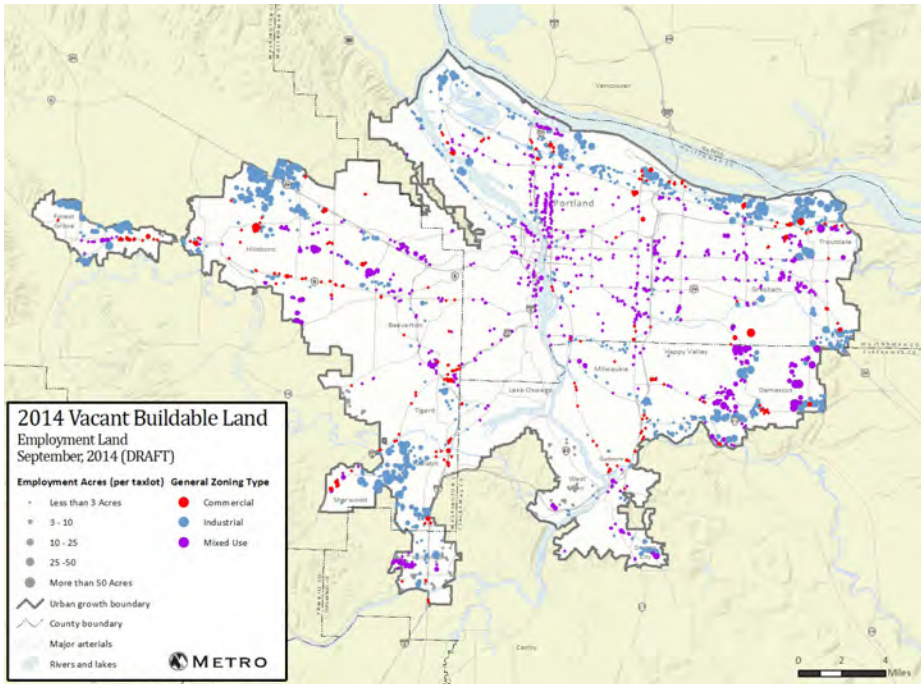
Cities and counties around the region plan for the future and prioritize investments that support their community's vision. In most cases, however, long-term plans for downtowns, main streets and employment areas are more ambitious than what is actually built or redeveloped. One task of this analysis is to help us understand how the market might respond to long-term community plans in the next 20 years.

To analyze the region's growth capacity, detailed aerial photos of all the land inside the urban growth boundary were taken. Factoring in current adopted plans and zoning designations, the photos were used to determine which parcels of land were developed and which were vacant. Methodologies for assessing the redevelopment potential and environmental constraints of the land were developed over the course of a year by Metro and a technical working group consisting of representatives from cities, counties, the state and the private sector (see pages 30-31 for a complete list of technical working group members).

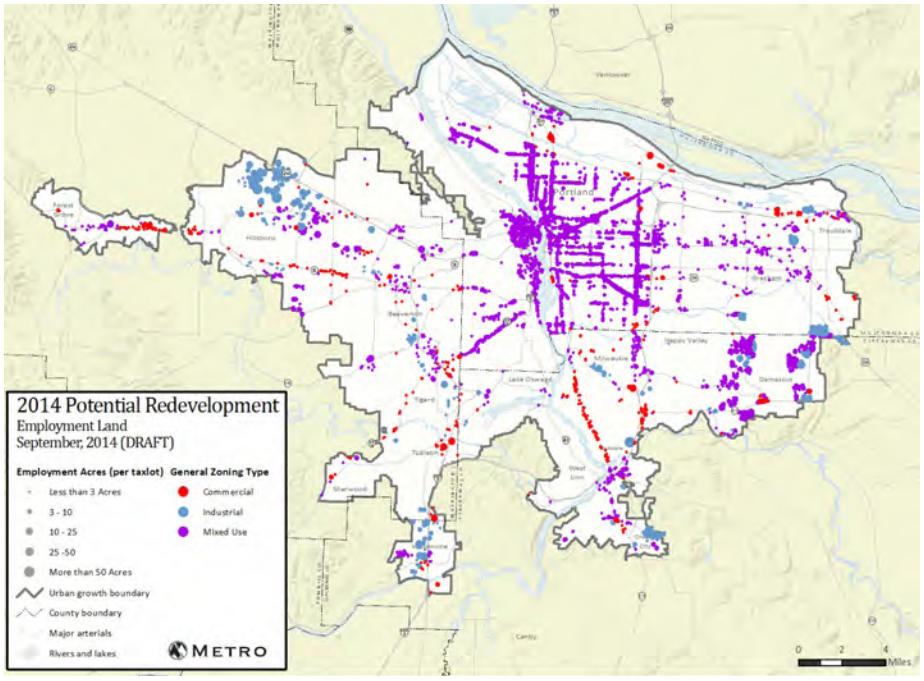
After settling on the methodology described in Appendix 2, Metro produced a preliminary buildable land inventory that local cities and counties had more than two months to review. The draft buildable land inventory described in Appendix 3 reflects refined local knowledge about factors such as environmental constraints including wetlands, steep slopes, and brownfield contamination. Maps 4 through 7 illustrate the buildable land inventory reviewed by local jurisdictions. They are available at a larger scale in Appendix 3. The buildable land inventory is considered a "first cut" at determining the region's growth capacity. For a variety of reasons described in the next section, not all of it may be developable in the 20-year time frame.

ESTIMATING RESIDENTIAL GROWTH CAPACITY

Current plans and zoning allow for a total of almost 1.3 million residences inside the urban growth boundary after accounting for environmental constraints and needs for future streets and sidewalks. About half of that potential capacity is in use today. This urban growth report does not count all of this capacity since doing so would assume that every developed property in the region will redevelop to its maximum density in the next twenty years. A rational developer will only build products that are expected to sell. Redevelopment requires market demand, which is a function of a number of factors, including expected population growth. This affects whether a property will be redeveloped and at what density.



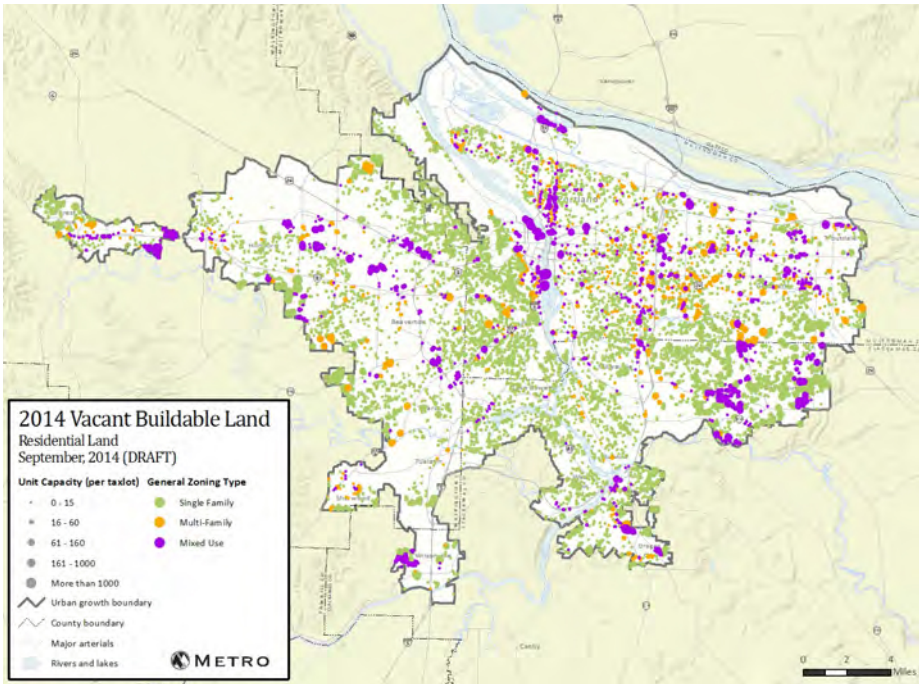
Map 4 Employment vacant buildable tax lots *(reviewed by local jurisdictions)*



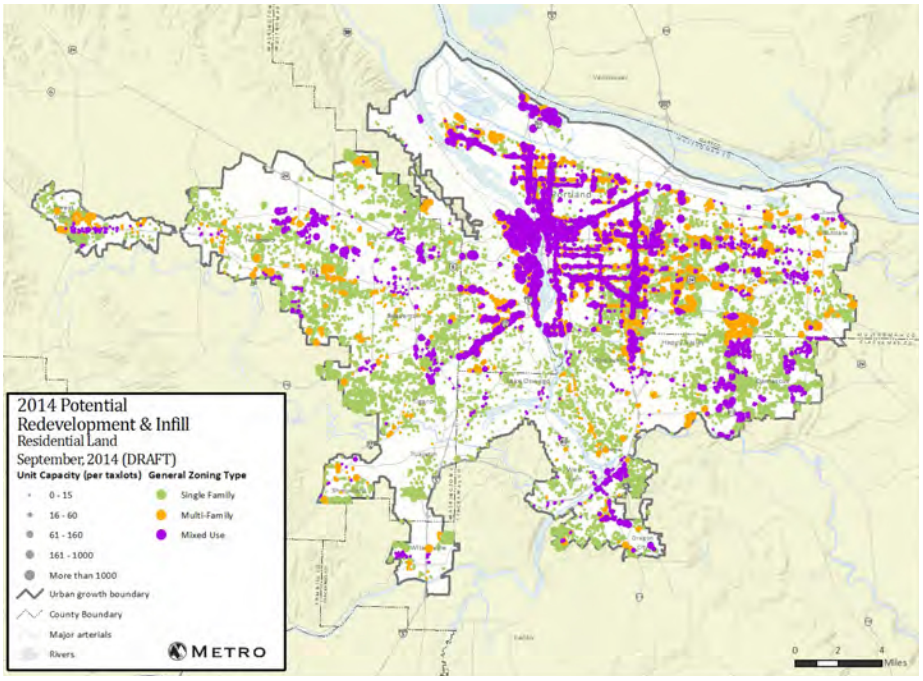
Map 5 Employment infill and redevelopment candidate tax lots *(reviewed by local jurisdictions)*

Acknowledging this complexity, Metro staff convened representatives from cities, counties, the state and the private sector to establish consensus for estimating how much of the region's buildable land inventory might be absorbed by the year 2035 (see pages 30-31 for a complete list of technical working group members). Redevelopment and infill are most common in locations where there is significant demand for housing, so the growth capacity from redevelopment and infill rises with assumptions for population growth. For this reason, the region's residential growth capacity is expressed as a range. The amount of growth capacity that the region has depends, in part, on the point in the household forecast range for which the Metro Council chooses to plan. Appendix 4 describes the approach for identifying the 20-year capacity range for housing.

Map 6 Residential vacant buildable tax lots *(reviewed by local jurisdictions)*



Map 7 Residential redevelopment candidate tax lots *(reviewed by local jurisdictions)*



HOW DO DEVELOPERS EVALUATE REDEVELOPMENT POTENTIAL?

The construction of new infill (original structure intact) and redevelopment (original structure demolished) projects is increasing in some places, fueled by a renewed interest in and market demand for housing and jobs close to the urban core. In order to realize a return on an investment, given the higher costs of urban redevelopment, investors will evaluate the redevelopment potential of the site by considering the following:

- Where is the site located? Is it an up and coming area?
- What is the value of the existing building or structure on the site? What is the value of the land? At what point does the building become worth less than the land it sits on?
- What is the developer allowed to build under the local zoning code?
- What are the construction costs and fees for the new building?
- How much will the developer be able to sell or rent space for in the new building?

Policy considerations

HOW SHOULD POLICYMAKERS EVALUATE DEVELOPMENT POTENTIAL?

Since the adoption of the 2040 Growth Concept, there has often been skepticism about the viability of redevelopment as a source of growth capacity. Our region's history shows that developing urban growth boundary expansion areas is difficult as well. Aside from developing a concept plan, what other factors support the likelihood that an urban reserve will be developed if brought into the UGB?

Case study

4TH MAIN, HILLSBORO

With a shared vision for an active, historic main street area, Metro, the City of Hillsboro and the Federal Transit Administration worked together to attract private sector redevelopment of a city block adjacent to the Hillsboro Central MAX station. 4th Main offers 71 market-rate apartments, underground parking, and active retail along main street. The existing 1950s era vacant bank building on site is being updated for restaurant and retail use. When 4th Main opened in May 2014, over half the units were leased.

ESTIMATING EMPLOYMENT GROWTH CAPACITY

To determine the UGB's employment growth capacity, analysis began with the creation of a buildable land inventory. As with the residential analysis, employment capacity depends on demand since different types of jobs have different space needs. For instance, an office job will have very different location and space needs than a warehouse job. Metro staff convened a group of public and private sector experts to help update these employment demand factors. Appendix 6 describes the approach for identifying the 20-year capacity range. (See pages 30-31 for a complete list of technical working group members).

Different jobs have different space needs

Is there a regional need for additional growth capacity?

Under state law, Metro's analysis must assess regional, not local or subregional, growth capacity needs. While some local jurisdictions may desire additional land for growth, this analysis is required to keep those needs in the regional context, knowing that other locations in the region may have greater growth capacity.

This analysis uses a probabilistic range forecast. The baseline forecast (middle of the range) has the highest probability. Though there is a 90 percent chance that growth will occur within the range, it is less probable at the low and high ends of the range.

DOES THE REGION NEED MORE LAND FOR HOUSING GROWTH?

Regional growth management policy alone cannot ensure adequate housing choices. Other elements that influence what kind of housing gets built include tax policy, lending practices, local plans and decisions, public investments, market demand, and developer responses. All of these factors impact housing production.

Appendix 4 describes in detail the residential demand analysis and includes estimates of potential demand by housing type (single-family and multifamily), tenure (own and rent), average density, as well as detail about demand from different household income brackets. For accounting purposes, the detailed analysis uses rigid supply and demand categories – for instance, single-family and multifamily. In reality, demand for these two housing types is somewhat fluid, particularly as average household sizes continue to decrease. By 2035, about 60 percent of new households are expected to include just one or two people.

WHAT THE NUMBERS SHOW

Population and employment forecasts in the urban growth report are expressed as ranges based on probability. Mid-point in the forecast range is Metro's best estimate of what future growth may be. It is less probable that growth will occur at the high or low ends of the range forecast.

This analysis looks at long-term capacity needs for:

- single-family and multifamily housing
- general industrial employment uses
- large industrial sites
- commercial employment uses.

This analysis finds that currently adopted plans can accommodate new housing at the low, middle or high ends of the growth forecast range. If policymakers choose to plan for the high end of the growth range, there is a need for additional capacity for new jobs.

Policy considerations

WHAT ABOUT DAMASCUS?

With its ongoing community and political challenges, how much of Damascus' growth capacity should be counted during the 2015 to 2035 time frame is more of a policy question than a technical question. For this analysis, Metro staff followed the advice of its technical advisory group and used a market-based model to determine that about half of Damascus' estimated buildable land inventory capacity could be counted in the "market-adjusted" residential supply. For modeling purposes, it was assumed that development challenges will persist in Damascus for another decade, delaying its availability to the market. If Damascus' capacity is not available, it may become somewhat more difficult to provide new single-family housing inside the existing urban growth boundary. Does the region have other options for making up for Damascus' capacity if it is not counted?

Policymakers have the challenge of balancing the type of housing and neighborhoods people prefer with funding realities, governance and annexation challenges. They also must consider regional and community goals such as preserving the character of existing neighborhoods, reducing carbon emissions, preserving farms and forests, and creating vibrant downtowns and main streets. To inform that discussion, Metro and a group of public and private sector partners conducted a study on residential preferences across the region and will make results available to policymakers in the early fall of 2014.

The capacity estimation method recommended by Metro's public and private sector advisory group recognizes that infill and redevelopment depend on demand. Consequently, the capacity from those two sources increases with greater household demand (i.e., a higher growth forecast results in a greater housing capacity).

Table 2 and Table 3 summarize the more detailed analysis of residential needs provided in Appendix 4.[3]

Single-family dwelling units

	Buildable land inventory	Market-adjusted supply	Market-adjusted demand	Surplus/ need
Low growth forecast	118,000	75,900	64,000	+11,900
Middle *(baseline)* growth forecast		90,000	76,900	+13,100
High growth forecast		97,000	90,800	+6,200

Table 2 Metro UGB single-family residential market analysis of existing plans and policies (2015-2035)[3]

Multifamily dwelling units

	Buildable land inventory	Market-adjusted supply	Market-adjusted demand	Surplus/ need
Low growth forecast	273,300	118,400	89,300	+29,100
Middle *(baseline)* growth forecast		130,100	120,500	+9,600
High growth forecast		165,100	145,900	+19,200

Table 3 Metro UGB multifamily residential market analysis of existing plans and policies (2015-2035)[3]

Over the last several decades, communities around the region adopted plans for job and housing growth that emphasize making the most of existing downtowns, main streets and employment areas. Based on those existing plans and estimates of what is likely to be developed in the next twenty years, this analysis finds that the region can accommodate new housing at the low, middle or high ends of the growth forecast range.

This analysis should not be understood as prescribing a future for the region. It remains up to policymakers to decide whether these projected outcomes are desirable and, if not, what plans and investments are needed to achieve a different outcome that matches the public's preferences, values and funding priorities, as well as state laws governing growth management.

3 These tables reflect two necessary corrections identified by Metro staff in September 2014. First, in one step of the July 2014 draft report's calculations for housing demand, household data for the entire seven-county metropolitan area were used instead of data limited to the area within the Metro urban growth boundary. As a result the July draft report overestimated demand for single-family housing within the urban growth boundary. A second correction related to lands added to the urban growth boundary by the Oregon Legislature in March 2014 under House Bill 4078. At the request of the city of Forest Grove, this revised report counts lands added near Forest Grove as industrial, rather than residential. This reduces regional capacity for housing, but increases the regional surplus of industrial land.

Policy considerations

PROVIDING HOUSING OPPORTUNITIES

As policymakers consider their options for responding to housing needs, there are considerations to keep in mind.

- If policymakers decide that a urban growth boundary expansion is needed to provide room for housing, where should that expansion occur? Metro is aware of two cities in the region that are currently interested in UGB expansions for housing – Sherwood and Wilsonville. Both cities had residential land added to the UGB in 2002 that they have not yet annexed. Sherwood requires voter-approved annexation and voters have twice rejected annexing the area. What is a reasonable time frame for seeing results in past and future UGB expansion areas?
- Given that the region has ample growth capacity for multifamily housing but a more finite supply of single-family growth capacity, should policymakers consider ways to encourage "family-friendly" housing in multifamily and mixed-use zones? To what extent might that address single-family housing needs in this analysis? Are there ways to ensure that housing in downtowns and along main streets remains within reach of families with moderate or low incomes?
- State land use laws and regional policy call for efficient use of any land added to the UGB. However, over the years very little multifamily housing has been built in UGB expansion areas. What is the right mix of housing types in areas added to the UGB in the future and how are they best served?
- How might policymakers balance residential preferences with other concerns such as infrastructure provision, transportation impacts, affordability, and environmental protection?

IMPACT OF MILLENNIALS ON HOUSING

Millennials, those born since 1980, are the biggest age cohort the U.S. has ever had (bigger than the Baby Boomer cohort) and will have a significant influence on the types of housing that are desired in the future. Today, 36 percent of the nation's 18 to 31-year olds are living with their parents.[i] This has variously been attributed to student loan debt, high unemployment or fear of losing a job, and stricter mortgage lending standards. Builders have responded by reducing their housing production and focusing on apartment construction. What will these trends mean for home ownership, housing type, and location choices in the longer term?

DOES THE REGION NEED MORE LAND FOR INDUSTRIAL JOB GROWTH?

Industrial employment includes a wide range of jobs like high tech manufacturers, truck drivers, and metal workers. Since it is common to find commercial jobs (offices, stores, restaurant, etc.) in industrial zones, this analysis shifts a portion of the overall industrial redevelopment supply into the commercial category.

Table 4 summarizes regional needs for general industrial employment growth, expressed in acres.[4] Additional detail about this analysis can be found in Appendix 6. The need for large industrial sites (sites with over 25 buildable acres) is described separately. At mid-point in the forecast range, there is no regional need for additional land for general industrial employment uses. At the high end of the forecast range, there is a deficit. However, there are limited areas in urban reserves that may eventually be suitable for industrial uses.

General industrial employment *(acres)*

	Buildable land inventory	Market-adjusted supply	Demand	Surplus/ need
Low growth forecast	7,300	6,000	1,200	+4,800
Middle *(baseline)* growth forecast		5,200	3,800	+1,400
High growth forecast		5,200	6,500	-1,300

Table 4 Metro UGB general industrial acreage needs 2015 to 2035[4]

Note: reflecting real market dynamics where commercial uses locate in industrial zones, the market adjustment shifts some of the region's industrial redevelopment supply into the commercial land supply. The amount varies by demand forecast.

Policy considerations

INVESTING IN JOB CREATION

Metro has been actively engaged in the question of regional investment priorities since the release of the 2008 Regional Infrastructure Analysis and consequential discussion with regional community and business leaders through the Community Investment Initiative. From these efforts, Metro established the Regional Infrastructure Supporting our Economy (RISE) team to deliver regionally significant projects and new infrastructure investment to enhance the local and regional economy. Are there areas where RISE should focus its attention to ensure the region can generate job growth?

Case study

TROUTDALE REYNOLDS INDUSTRIAL PARK

Located between the Columbia and Sandy rivers and bordered by the Troutdale Airport and Marine Drive, this 700-acre superfund site is being redeveloped with a mix of industrial uses, natural areas and utility and trail access. The Port of Portland is working closely with local, regional and state jurisdictions to redevelop this former aluminum plant brownfield site and return it to productive industrial use with a traded-sector job focus. The Port has invested over $37 million in the acquisition and redevelopment of the site. Today, a portion of the site is home to FedEx Ground's regional distribution center. Another $48 million in investment is needed to make the remainder of the site ready to market to industrial employers. At full build-out, this industrial development is projected to result in 3,500 direct jobs, $410 million in personal income and $41 million in state and local taxes annually (all jobs).

4 This table reflects a necessary correction identified by Metro staff in September 2014. The correction related to lands added to the urban growth boundary by the Oregon Legislature in March 2014 under House Bill 4078. At the request of the city of Forest Grove, this revised report counts lands added near Forest Grove as industrial, rather than residential with a small amount of commercial.

HOW SHOULD THE REGION PRIORITIZE INVESTMENTS IN LARGE INDUSTRIAL SITE READINESS?

The region's economic development strategy focuses on several sectors with anchor firms that sometimes use large industrial sites (over 25 buildable acres). These firms are important because they often pay higher-than-average wages, export goods outside the region (bringing wealth back), produce spin off firms, and induce other economic activity in the region. However, forecasting the recruitment of new firms or growth of existing firms that use large industrial sites is challenging since these events involve the unique decisions of individual firms. To produce an analysis that is as objective as possible, the estimate of future demand for large industrial sites is based on the employment forecast. That assessment and its caveats are described in Appendix 7.

The analysis finds that there may be demand for eight to 34 large industrial sites between 2015 and 2035. There are currently 50 large vacant industrial sites inside the UGB that are not being held for future expansion by existing firms.[5] This does not include sites added to the UGB in 2014 under HB 4078. To exhaust this supply of sites by 2035, the region would need to attract five major industrial firms every two years. In addition to this inventory of 50 sites, there are 24 sites inside the UGB that are being held by existing firms for future expansion (growth of existing firms is implicit in the demand forecast). Given this total supply of 74 large industrial sites and the fact that there are only two areas in urban reserves (near Boring and Tualatin) that may be suitable for eventual industrial use, policymakers can consider whether to focus on land supply or site readiness.

There are a limited number of areas in urban reserves that may be suitable for eventual industrial use. Therefore, this demand analysis may be more useful for informing the level of effort that the region may wish to apply to making its existing large industrial sites development-ready. Existing sites typically require actions such as infrastructure provision, wetland mitigation, site assembly, brownfield cleanup, annexation by cities, and planning to make sites development-ready. Many of these same development-readiness challenges exist in the two urban reserve areas that may eventually be suitable for industrial use. Metro and several public and private sector partners continue to work to understand the actions and investments that are needed to make more of the region's large industrial sites development-ready.

Policy considerations

THE PORTLAND HARBOR

The harbor is a unique environmental, recreational and economic asset that cannot be replaced elsewhere in the Portland region. For more than a century, the harbor has played a critical role in the history of trade and manufacturing in our region. Today, the harbor needs to be cleaned up to continue providing benefits. What is the appropriate balance between environmental and economic goals? What investments and policies can advance those goals?

5 This inventory is preliminary as of June 16, 2014, and will be confirmed by Metro and its partners before Metro Council consideration of the final UGR. This work is being conducted by Mackenzie for an update of the 2012 Regional Industrial Site Readiness project. However, the inventory is not expected to change enough to result in a different conclusion regarding there being no regional need for additional UGB expansion.

Policy considerations

KEEPING SHOPPING AND SERVICES CLOSE BY

It makes sense to locate commercial uses close to where people live. If the Metro Council chooses to plan for a high growth scenario, are there places where it makes sense to expand the UGB for a mix of residential and commercial uses?

DOES THE REGION NEED MORE LAND FOR COMMERCIAL JOB GROWTH?

The commercial employment category includes a diverse mix of jobs such as teachers, restaurant workers, lawyers, doctors and nurses, retail sales people, and government workers. Generally, these are population-serving jobs that are located close to where people live. Table 5 summarizes regional needs for commercial employment growth, expressed in acres.[6] Additional detail about this analysis can be found in Appendix 6. At mid-point in the forecast range, there is no regional need for additional land for commercial employment uses. At the high end of the forecast range, there is a deficit. However, it may not be desirable to locate commercial uses on the urban edge unless those uses are integrated with residential development.

Commercial employment *(acres)*

	Buildable land inventory	Market-adjusted supply	Demand	Surplus/ need
Low growth forecast	4,200	4,100	1,400	+2,700
Middle *(baseline)* growth forecast		4,400	3,600	+800
High growth forecast		5,000	5,700	-700

Table 5 Metro UGB commercial acreage needs 2015 to 2035[6]

Note: reflecting real market dynamics where commercial uses locate in industrial zones, the market adjustment shifts some of the region's industrial redevelopment supply into the commercial land supply. The amount varies by demand forecast.

6 This table reflects a necessary correction identified by Metro staff in September 2014. The correction related to lands added to the urban growth boundary by the Oregon Legislature in March 2014 under House Bill 4078. At the request of the city of Forest Grove, this revised report counts lands added near Forest Grove as industrial, rather than residential with a small amount of commercial. Making this correction reduces the region's commercial buildable land inventory by 100 acres.

Conclusion

The 2014 urban growth report is more than an accounting of available acres and forecast projections. It provides information about development trends, highlights challenges and opportunities, and encourages policymakers to discuss how we can work together as a region to help communities achieve their visions. This region has seen tremendous change and progress over the last 20 years and we know change will continue. Our shared challenge is to guide development in a responsible and cost-effective manner so that we preserve and enhance the quality of life and ensure that the benefits and costs of growth and change are distributed equitably across the region.

LOCAL LEADERSHIP

Examples of strong partnerships abound already. At the local level, cities and counties are working closely with the private sector to bring new vibrancy to downtowns, more jobs to employment areas, and to provide existing and new neighborhoods with safe and convenient transportation options. Residential and employment areas as varied as Beaverton's Creekside District, Portland's South Waterfront, Hillsboro's AmberGlen, Wilsonville's Villebois, the Gresham Vista Business Park and many others, both large and small, are pointing the way to our region's future.

METRO'S ROLE

At the regional level, Metro supports community work with a variety of financial and staff resources. The Community Planning and Development Grant program has funded over $14 million in local project work to support development readiness. The RISE (Regional Infrastructure Supporting our Economy) program is designed to deliver regionally significant projects and spur infrastructure investment. The Transit-Oriented Development Program provides developers with financial incentives that enhance the economic feasibility of higher density, mixed-used projects served by transit. Corridor projects such as the Southwest Corridor and East Metro Connections Plan are bringing together Metro, local jurisdictions, educational institutions, residents, businesses and others to develop comprehensive land use and transportation plans for individual areas that will support local community and economic development goals.

INVESTING IN OUR COMMUNITIES

These are just a few examples of the kind of work that's happening all across the region. While the Metro Council's growth management decision must address the question of whether to adjust the region's urban growth boundary, the more difficult questions center on how to find the resources needed to develop existing land within our communities and new land in urban growth boundary expansion areas in a way that meets community and regional goals. Many of these questions and policy considerations are highlighted throughout this urban growth report to support policy discussions in the 2015 growth management decision and beyond.

Next steps

JULY THROUGH DECEMBER 2014 The urban growth report helps inform policy discussions for the Metro Policy Advisory Committee (MPAC) and Metro Council.

DECEMBER 2014 The Metro Council will consider a final urban growth report that will serve as the basis for its growth management decision in 2015. The Metro Policy Advisory Committee will be asked to advise the council on whether the urban growth report provides a reasonable basis for its subsequent growth management decision.

JULY 2014 – MAY 2015 Local and regional governments will continue to implement policies and investments to create and enhance great communities while accommodating anticipated growth.

MAY 2015 Local jurisdictions interested in urban growth boundary expansions in urban reserves must complete concept plans for consideration by MPAC and the Metro Council.

SEPTEMBER 2015 Metro's chief operating officer makes a recommendation for the Metro Council's growth management decision that becomes the basis for MPAC and council discussion during fall 2015. The recommendation will take into account the final urban growth report, assessments of urban reserve areas, actions that have been taken at the regional or local level – such as measures that lead to more efficient land use and adopted concept plans for urban reserves – and other new information that may influence our understanding of future growth in the region.

BY THE END OF 2015 If any additional 20-year capacity need remains, the Metro Council will consider UGB expansions into designated urban reserves. The Metro Policy Advisory Committee will be asked to advise the council on the growth management decision.

References

i U.S. Bureau of Economic Analysis, Per Capita Real GDP by Metro Area, accessed online 4/29/14

ii Dean Runyan and Associates, 2013 Preliminary Travel Impacts for Portland Metro, accessed online 4/30/14 at http://www.travelportland.com/about-us/visitor-statistics-research/

iii U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2011)

iv Pew Research Center, A Rising Share of Young Adults Live in Their Parent's Home, August 1, 2013, accessed online 5/20/14 at http://www.pewsocialtrends.org/files/2013/07/SDT-millennials-living-with-parents-07-2013.pdf

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THE FOLLOWING PEOPLE GRACIOUSLY LENT THEIR EXPERTISE TO INFORM THIS REPORT

2014 Urban Growth Report: buildable land inventory technical working group

The following people advised Metro staff on the methods used for identifying the region's buildable land inventory. Additional review of the preliminary inventory was provided by numerous city and county staff.

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Erin Wardell, Washington County
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Chuck Beasley, Multnomah County
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Brian Martin, Gresham
Mike Tharp, Norris, Beggs, and Simpson
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2014 Urban Growth Report: residential supply range technical working group

This group advised Metro staff on how much of the residential buildable land inventory's redevelopment supply may be developable in the 20-year time horizon.

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2014 Urban Growth Report: employment land technical working group

This group advised Metro staff on how various employment sectors use building space (square feet per employee and floor-area ratios).

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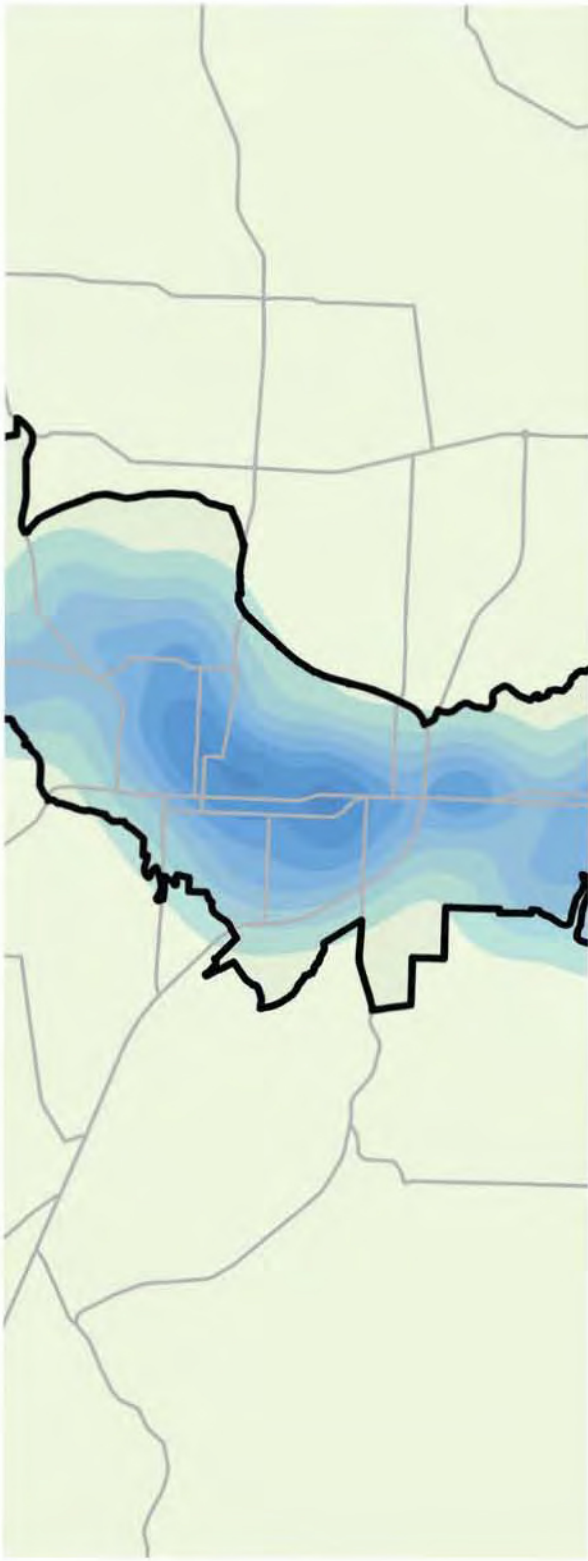
Dr. Randall Pozdena, ECONorthwest
Steve Storm, NW Natural



Appendix 1a

Population and employment forecast for the Portland-Vancouver-Hillsboro metropolitan statistical area (2015 - 2035)

Introduction

Under ORS 195.025, Metro is the governing body responsible for coordinating all planning activities affecting land uses in the urban portions of Clackamas, Multnomah and Washington Counties, which are contained within the metropolitan service district boundary. The purpose for this coordinating responsibility is to assure an integrated comprehensive plan for the entire urbanized area. The coordinating body – Metro – is required by ORS 195.036 to establish and maintain a population forecast (and employment forecast) for the entire area within in its boundary for use in maintaining and updating comprehensive plans, and shall coordinate the regional forecast with the local governments in its boundary. ORS 197.299 directs Metro to complete an assessment of urban growth boundary sufficiency that includes a complete inventory, determination and analysis of need every 5 years. The regional forecast becomes an essential piece of determining need for housing and employment in the analysis of buildable land supply sufficiency.

What's been updated in the 2014 regional forecast?

- IHS Global Insight U.S. macroeconomic (November 2013) provides the economic backdrop for the regional forecast past year 2040.
- 2012 National Population Projections for future birth rates, death rates and immigration provide the basis for adjusting regional population trends going forward.
- Economic equations in the regional econometric model have been re-estimated and the overall model re-calibrated to reflect the latest historical data available for employment (U.S. Bureau of Labor Statistics (BLS)), income and wages (Bureau of Economic analysis (BEA)), input-output coefficients (BEA), and population (Census, Oregon and Washington).

What trends can be seen in the 2014 regional forecast?

- Historically weak U.S. economic recovery dampening the outlook for U.S. gross domestic product (GDP)
- Resulting in less economic stimulus for the region in future years (*current baseline employment outlook is close to the "lower middle-third" of the range forecast that was adopted by the Metro Council in 2010*)
- Downshift in U.S. population projection – fertility and immigration adjusted lower
- Resulting in lower natural population increase in the region
- Net in-migration is expected to be on par with historical trends (*just not as robust as the forecast from 5-years ago*)

- A slower national economy and lower demographic growth factors combine to make a more muted regional population outlook (*current baseline population forecast is lower than the "lower middle-third" forecast*)

The Great Recession (Dec. 2007 to June 2009) continues to weigh heavily against the future growth projections. The recession eliminated (from peak to trough) nearly 100,000 jobs in the Portland-Vancouver-Hillsboro, OR-WA MSA. The bi-state MSA (metropolitan statistical area) is comprised of 7 counties (Clackamas, Columbia, Multnomah, Washington and Yamhill counties in Oregon and Clark and Skamania counties in Washington)[1]. Nearly 5 years after the recession, the regional economy continues to struggle with lackluster job growth, stubbornly high unemployment and low business/consumer confidence. The recovery has been unusually feeble and this anemic growth expansion provides a weaker basis going forward for the regional forecast.

The national outlook from IHS Global Insight projects much lower U.S. GDP growth as compared to the 2009 vintage regional forecast. Less GDP growth means lower job growth expectations for the U.S. job market and the regional job outlook. The regional job market has been slow to respond to economic stimuli and is just now barely back to pre-recession levels. Meanwhile, the population and labor force in the region has continued to grow, but weaker-than-expected job growth continues to sideline potential workers. So, the "actual" unemployment is at least double the reported headline unemployment rate and there are much larger numbers of under-employed workers than normal. The weak job market has hurt recent graduates and younger aged workers the most, and their lack of engagement in the real economy is expected have a long-lasting impact that will linger to dampen the economic recovery for more years to come.

The weaker recovery is expected to keep migration levels at moderate levels similar to historical levels. The regional forecast does not anticipate unusually large net in-migration flow.

The U.S. population is projected to grow at a slower pace over the coming years than was projected 5 years ago. The 2012 Census national population updates projects significantly lower foreign immigration and fertility rates. A lower fertility rate and a delay before a woman has her first child means that the typical American woman will bear fewer children during her lifetime. The Census also asserts that net immigration levels will be 24.4 million fewer than previous expectations. Factoring in the downsizing in immigration levels and lower fertility rates translates into lower expectations of in-migration and lower natural population increase in the region population than previously anticipated.

[1] The Whitehouse OMB is responsible for metropolitan area delineations. This link provides official notice and information about the standards and practices for update of metropolitan statistical areas: http://www.whitehouse.gov/omb/inforeg_statpolicy/#ms .

What a difference 5-years makes in between the 2014 regional forecast (baseline trend) vs. 2009 regional forecast ("lower middle-third")

	2009 vintage regional forecast (*lower middle-third*)		2014 vintage regional forecast (*baseline*)		Difference	
	Population	Employment	Population	Employment	Population	Employment
2000	1,927,881	973,230	1,927,881	973,230	0	0
2005	2,092,906	983,680	2,067,325	983,530	-25,581	-150
2010	2,258,600	986,300	2,226,000	968,830	-32,600	-17,470
2015	2,494,800	1,090,800	2,342,500	1,100,000	-152,300	9,200
2020	2,682,900	1,189,600	2,519,200	1,228,100	-163,700	38,500
2025	2,853,700	1,282,100	2,671,800	1,311,600	-181,900	29,500
2030	3,015,600	1,380,200	2,814,100	1,399,800	-201,500	19,600
2035	3,167,900	1,486,900	2,937,900	1,484,500	-230,000	-2,400
2040	3,322,300	1,596,100	3,052,100	1,571,300	-270,200	-24,800
APR% (2000-40)	1.37%	1.24%	1.16%	1.20%		
Portland-Vancouver-Hillsboro, OR-WA, MSA						
Source: 2009 UGR, 2014 UGR						

Exhibit A to Resolution No. 14-4582

Comparing Portland Metro's population forecasts and other forecasts

Portland MSA

Metro Regional Population Forecasts

	(7-county* MSA)		(7-county MSA)	
	2010 release	%APR	2014 release	%APR
2000	1,927,881	2.0%	1,927,881	2.0%
2005	2,092,906	1.7%	2,067,325	1.4%
2010	2,226,009	1.2%	2,226,000	1.5%
2015	2,494,800	2.3%	2,342,500	1.0%
2020	2,682,900	1.5%	2,519,200	1.5%
2025	2,853,700	1.2%	2,671,800	1.2%
2030	3,015,600	1.1%	2,814,100	1.0%
2035	3,167,900	1.0%	2,937,900	0.9%
2040	3,322,300	1.0%	3,052,100	0.8%
2010-40 APR%	1.3%		1.1%	

source: Metro Research Center (baseline medium growth scenario)

** 7 counties = Clackamas, Columbia, Multnomah, Washington, Yamhill, Clark and Skamania*

OEA / OFM Regional Population Forecast

	(7-county MSA)	
	2012/13 release	%APR
2000	1,927,881	2.0%
2005	2,067,325	1.4%
2010	2,229,899	1.5%
2015	2,346,849	1.0%
2020	2,509,701	1.4%
2025	2,678,730	1.3%
2030	2,840,509	1.2%
2035	2,987,264	1.0%
2040	3,121,048	0.9%
	1.1%	

source: Oregon Office of Economic Analysis,
Kanhaiya Vaidya (2013 release)
Washington Office of Financial Management
(2012 release)

IHS Global Insight Portland MSA Population Forecast

	(5-county PMSA)		(7-county MSA)		(7-county MSA)	
	Sep 2001 release	%APR	Sep 2008 release	%APR	Sep. 2013 release	%APR
2000	1,875,000	2.0%	1,942,000	2.1%	1,940,510	2.1%
2005	2,019,000	1.5%	2,297,000	3.4%	2,072,256	1.3%
2010	2,155,000	1.3%	2,474,000	1.5%	2,236,413	1.5%
2015	2,284,000	1.2%	2,637,000	1.3%	2,380,688	1.3%
2020	2,419,000	1.2%	2,794,000	1.2%	2,525,884	1.2%
2025	2,558,000	1.1%	2,947,000	1.1%	2,651,944	1.0%
2030			3,096,000	1.0%	2,769,572	0.9%
2035			3,245,000	0.9%	2,884,610	0.8%
2040					2,997,777	0.8%
	1.1%		1.1%		1.0%	

source: IHS Global Insight Regional Services

Oregon State

OEA Oregon Population Forecasts

	2004 release	%APR	2013 release	%APR
2000	3,436,750	1.5%	3,431,100	1.5%
2005	3,618,200	1.0%	3,626,900	1.1%
2010	3,843,900	1.2%	3,837,300	1.1%
2015	4,095,708	1.3%	4,001,600	0.8%
2020	4,359,258	1.3%	4,252,100	1.2%
2025	4,626,015	1.2%	4,516,200	1.2%
2030	4,891,225	1.1%	4,768,000	1.1%
2035	5,154,793	1.1%	4,995,200	0.9%
2040	5,425,408	1.0%	5,203,000	0.8%
2010-40 APR%	1.2%		1.0%	

source: Oregon Office of Economic Analysis,
http://www.oregon.gov/DAS/OEA/Pages/demographic.aspx

Census Oregon State Population Projections

	1996 release	%APR	2005 release	%APR
2000	3,397,000	1.6%	3,421,399	1.4%
2005	3,613,000	1.2%	3,596,083	1.0%
2010	3,803,000		3,790,996	1.1%
2015	3,992,000	1.0%	4,012,924	1.1%
2020	4,177,000		4,260,393	1.2%
2025	4,349,000	0.9%	4,536,418	1.3%
2030	N/A		4,833,918	1.3%
2035	N/A		N/A	
2040	N/A		N/A	
	0.9%		1.2%	

source: U.S. Census , State Population Projections
http://www.census.gov/population/projections/data/state/index.html

IHS Global Insight Oregon Population Forecasts

	2008 release	%APR	Oct. 2013 release	%APR
2000	3,436,350	1.5%	3,434,800	1.5%
2005	3,638,420	1.1%	3,621,200	1.1%
2010	3,920,340	1.5%	3,842,100	1.2%
2015	4,178,350	1.3%	4,006,900	0.8%
2020	4,408,740	1.1%	4,195,800	0.9%
2025	4,624,020	1.0%	4,370,500	0.8%
2030	4,826,450	0.9%	4,529,100	0.7%
2035	5,016,980	0.8%	4,680,900	0.7%
2040	5,200,410	0.7%	4,825,700	0.6%
	0.9%		0.8%	

source: IHS Global Insight Regional Services

United States

Census U.S. Population Projection

	2012 release	%APR
2000	281,421,906	1.4%
2005	295,516,599	1.0%
2010	309,349,689	0.9%
2015	321,362,789	0.8%
2020	333,895,553	0.8%
2025	346,407,223	0.7%
2030	358,471,142	0.7%
2035	369,662,023	0.6%
2040	380,015,683	0.6%
2010-40 APR%	0.7%	

source: U.S. Census
2012 National Population Projection
http://www.census.gov/population/projections/data/national/index.html

IHS Global Insight U.S. Population Forecast

	Apr 2008 release	Nov 2013 release	%APR
2000	282,841,119	282,790,000	1.5%
2005	297,336,781	296,460,000	0.9%
2010	310,852,451	310,064,000	0.9%
2015	324,286,814	321,937,000	0.8%
2020	337,732,931	334,474,000	0.8%
2025	351,404,489	346,978,000	0.7%
2030	365,583,894	359,025,000	0.7%
2035	379,902,031	370,192,000	0.6%
2040	N/A	380,530,000	0.6%
	0.8%	0.7%	

source: IHS Global Insight
Long-term U.S. Trend Projection

Pew Research U.S. Population Projection

	2008 release	%APR
2000	281,646,000	1.4%
2005	295,709,000	1.0%
2010	309,653,000	0.9%
2015		
2020	340,219,000	0.9%
2025		
2030	371,822,000	0.9%
2035		
2040	403,648,000	0.8%
	0.9%	

source: Pew Research Center
Jeffrey S. Passel and D'Vera Cohn
Social & Demograpphic Trends, Feb. 11, 2008
www.pewresearcg.org

World Bank U.S. Population Projection

	2013 release	%APR
2000	282,163,000	1.4%
2005		
2010	309,307,000	0.9%
2015		
2020	330,963,000	0.7%
2025		
2030	352,612,000	0.6%
2035		
2040	370,573,000	0.5%
	0.6%	

source: World Bank
http://datatopics.worldbank.org/hnp/popestimates

U.N. U.S. Population Projection

	2012 release	%APR
2000	284,594,000	1.6%
2005	298,166,000	0.9%
2010	312,247,000	0.9%
2015	325,128,000	0.8%
2020	337,983,000	0.8%
2025	350,626,000	0.7%
2030	362,629,000	0.7%
2035	373,468,000	0.6%
2040	383,165,000	0.5%
	0.7%	

Source: Population Division, United Nations
World Population Prospects: The 2012 Revision.
http://esa.un.org/unpd/wpp/unpp/p2k0data.asp

Comparing Portland Metro's employment forecasts and other forecasts

Portland MSA

Metro Regional Employment Forecasts

	(5-county MSA) 2002 release	%APR	(7-county* MSA) 2010 release	%APR	(7-county* MSA) 2014 release	%APR
2000	958,020	2.9%	973,230	2.9%	973,230	2.9%
2005	1,043,510	1.7%	983,680	0.2%	983,530	0.2%
2010	1,168,700	2.3%	965,500	-0.4%	968,830	-0.3%
2015	1,273,140	1.7%	1,090,800	2.5%	1,100,040	2.6%
2020	1,387,730	1.7%	1,189,600	1.7%	1,228,140	2.2%
2025	1,515,530	1.8%	1,282,100	1.5%	1,311,570	1.3%
2030			1,380,200	1.5%	1,399,790	1.3%
2035			1,486,900	1.5%	1,484,460	1.2%
2040			1,596,100	1.4%	1,571,290	1.1%
2010 to 2040 APR%			1.7%		1.6%	

source: Metro Research Center (baseline medium growth scenario)

** 7 counties = Clackamas, Columbia, Multnomah, Washington, Yamhill, Clark & Skamania*

IHS Global Insight Portland MSA Employment Forecast

(7-county* MSA)

	Sep. 2013 release	%APR
2000	973,500	3.0%
2005	983,400	0.2%
2010	968,700	-0.3%
2015	1,079,500	2.2%
2020	1,175,100	1.7%
2025	1,212,900	0.6%
2030	1,252,600	0.6%
2035	1,294,200	0.7%
2040	1,349,800	0.8%
	1.1%	

source: IHS Global Insight

Oregon Employment Department MSA Employment Forecast

(Oregon part of MSA)

	Aug. 2004 release	%APR
2000	852,630	2.8%
2005	848,960	-0.1%
2010	918,800	1.6%
2015	973,920	1.2%
2020	1,011,780	0.8%
2025	1,050,270	0.7%
2030	1,096,800	0.9%
2035	1,148,310	0.9%
2040	1,201,390	0.9%
	0.9%	

source: OED, Art Ayre

Oregon State

Metro's Oregon Employment Forecasts

	(Oregon) 2010 release	%APR	(Oregon) 2014 release	%APR
2000	1,617,800	2.5%	1,617,900	2.5%
2005	1,654,300	0.4%	1,654,400	0.4%
2010	1,728,200	0.9%	1,602,100	-0.6%
2015	1,908,600	2.0%	1,836,200	2.8%
2020	2,071,800	1.7%	2,061,200	2.3%
2025	2,224,100	1.4%	2,163,500	1.0%
2030	2,384,900	1.4%	2,270,900	1.0%
2035	2,558,300	1.4%	2,379,200	0.9%
2040	2,855,900	2.2%	2,493,100	0.9%
2010 to 2040 APR%	1.7%		1.5%	

source: Metro Research Center

IHS Global Insight Portland Oregon Employment Forecast

	Jun. 2014 release	%APR
2000	1,618,000	2.7%
2005	1,654,100	0.4%
2010	1,601,800	-0.6%
2015	1,756,400	1.9%
2020	1,898,400	1.6%
2025	1,952,800	0.6%
2030	2,007,300	0.6%
2035	2,071,900	0.6%
2040	2,159,000	0.8%
	1.0%	

source: IHS Global Insight

Oregon Employment Department Oregon Employment Forecast

	Aug. 2004 release	%APR
2000	1,606,700	2.5%
2005	1,620,900	0.2%
2010	1,751,280	1.6%
2015	1,857,480	1.2%
2020	1,934,560	0.8%
2025	2,013,080	0.8%
2030	2,108,480	0.9%
2035	2,215,530	1.0%
2040	2,326,810	1.0%
	1.0%	

source: OED, Art Ayre

United States

IHS Global Insight U.S. Employment Forecast (in millions)

	Feb 2001 release	%APR	Apr 2008 release	%APR	Nov 2013 release	%APR
2000	131.76	2.4%	131.79	2.4%	131.89	2.4%
2005	138.68	1.0%	133.69	0.3%	133.74	0.3%
2010	147.51	1.2%	140.77	1.0%	129.91	-0.6%
2015	154.93	1.0%	147.99	1.0%	140.54	1.6%
2020	162.00	0.9%	153.39	0.7%	149.56	1.3%
2025	168.84	0.8%	159.61	0.8%	153.48	0.5%
2030			167.03	0.9%	159.25	0.7%
2035			175.06	0.9%	164.47	0.6%
2040					170.63	0.7%
2010 to 2040 APR%			0.9%		0.9%	

source: IHS Global Insight

Long-term U.S. Trend Projection

Bureau of Labor Statistics (BLS) U.S. Employment Forecast

	Dec. 2013 release	%APR
2000	132.03	2.4%
2005	134.00	0.3%
2010	130.27	-0.6%
2012	134.43	0.3%
2022	149.75	1.1%
2025		
2030		
2035		
2040		
	(in millions)	

source: BLS, last updated Dec. 19, 2013

Population Range Projections through Year 2060

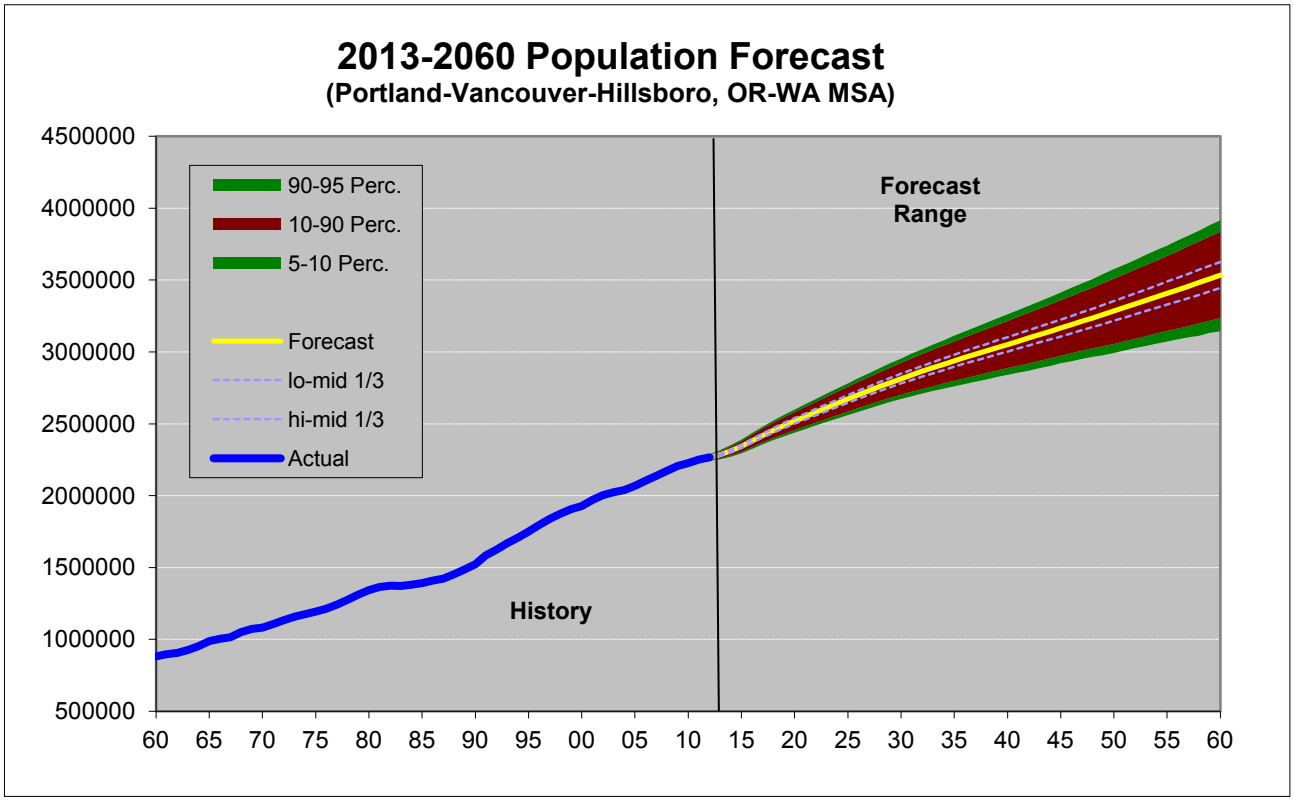
(7-county MSA)

Probabilistic Population Forecast Range

	POPULATION					POPULATION - annual pct. chg.				
	Low - 5%	mid-lo 1/3	Pop. Base	mid-hi 1/3	High - 95%	Low - 5%	mid-lo	Pop. Base	mid-hi	High - 95%
1990			1,523,741					1.8%		
1995			1,749,224					2.8%		
2000			1,927,881					2.0%		
2005			2,067,325					1.4%		
2010			2,226,009					1.5%		
2015	2,294,400	2,331,100	2,342,501	2,353,887	2,390,000	0.6%	0.9%	1.0%	1.1%	1.4%
2020	2,438,500	2,500,500	2,519,163	2,538,425	2,598,800	1.2%	1.4%	1.5%	1.5%	1.7%
2025	2,560,500	2,645,800	2,671,777	2,698,584	2,780,600	1.0%	1.1%	1.2%	1.2%	1.4%
2030	2,672,800	2,780,900	2,814,058	2,847,884	2,953,600	0.9%	1.0%	1.0%	1.1%	1.2%
2035	2,760,900	2,896,800	2,937,885	2,980,976	3,113,600	0.7%	0.8%	0.9%	0.9%	1.1%
2040	2,840,600	3,001,500	3,052,078	3,102,751	3,261,900	0.6%	0.7%	0.8%	0.8%	0.9%
2050	2,992,900	3,217,200	3,284,438	3,352,973	3,576,600	0.5%	0.7%	0.7%	0.8%	0.9%
2060	3,143,400	3,444,700	3,534,390	3,626,500	3,915,600	0.5%	0.7%	0.7%	0.8%	0.9%

Annual Percentage Rate (APR):

1960-80			2.12%		
1980-00			1.83%		
2000-20	1.18%	1.31%	1.35%	1.39%	1.50%
2020-40	0.77%	0.92%	0.96%	1.01%	1.14%



Employment Range Projections through Year 2060

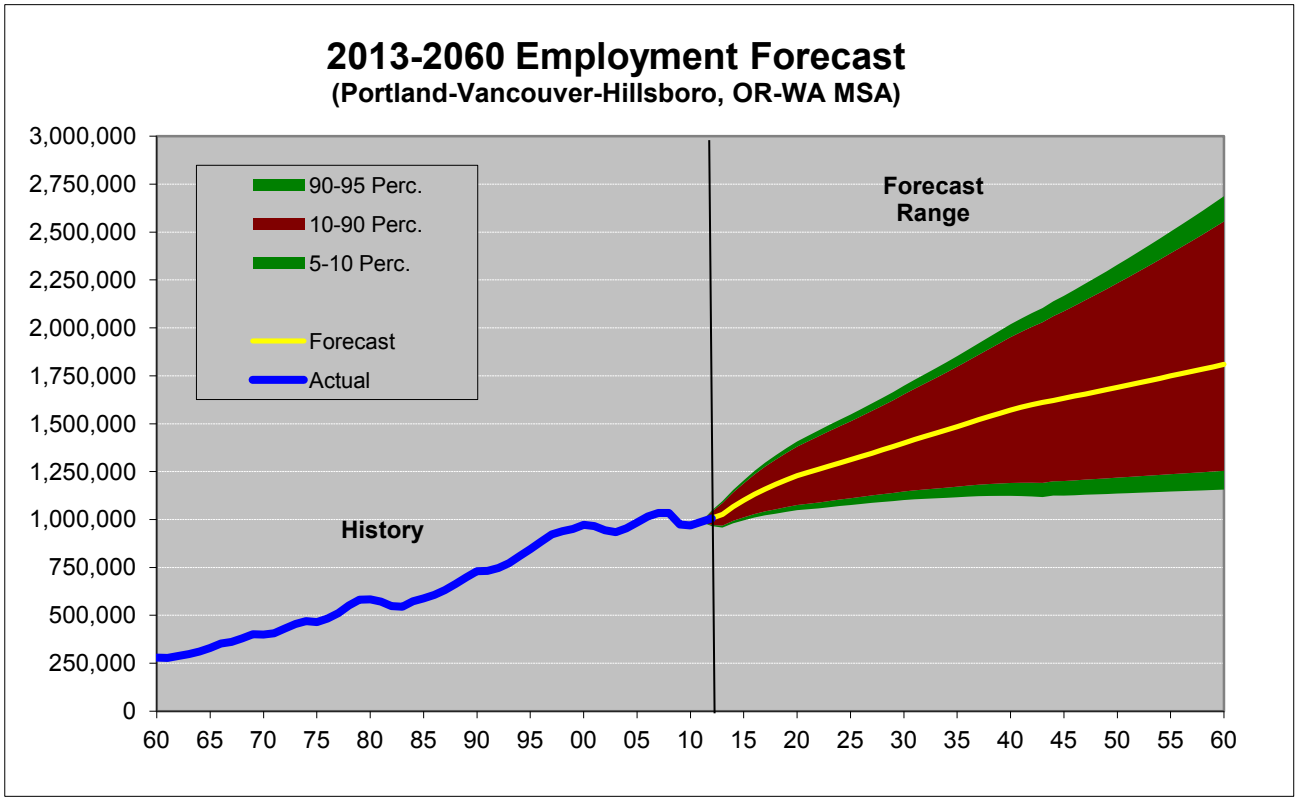
(7-county MSA)

Nonfarm Job Forecast Range

	EMPLOYMENT					e-p ratio	EMPLOYMENT - annual pct. chg.				
	Low	mid-lo 1/3	Job Base	mid-hi 1/3	High	(base)	Low	mid-lo	HH Base	mid-hi	High
1990			730,268			0.48			4.4%		
1995			845,611			0.48			3.0%		
2000			973,222			0.50			2.9%		
2005			983,526			0.48			0.2%		
2010			968,800			0.44			-0.3%		
2015	995,700	1,094,600	1,100,000	1,105,300	1,204,300	0.47	0.5%	2.5%	2.6%	2.7%	4.4%
2020	1,048,900	1,219,000	1,228,100	1,237,500	1,407,400	0.49	1.0%	2.2%	2.2%	2.3%	3.2%
2025	1,075,600	1,298,800	1,311,600	1,324,800	1,547,600	0.49	0.5%	1.3%	1.3%	1.4%	1.9%
2030	1,101,700	1,383,300	1,399,800	1,416,600	1,697,900	0.50	0.5%	1.3%	1.3%	1.3%	1.9%
2035	1,116,200	1,463,700	1,484,500	1,506,300	1,852,800	0.51	0.3%	1.1%	1.2%	1.2%	1.8%
2040	1,123,600	1,545,300	1,571,300	1,597,400	2,019,000	0.51	0.1%	1.1%	1.1%	1.2%	1.7%
2050	1,135,700	1,655,300	1,689,900	1,725,200	2,329,300	0.51	0.1%	0.7%	0.7%	0.8%	1.4%
2060	1,156,200	1,763,500	1,809,400	1,856,600	2,687,400	0.51	0.2%	0.6%	0.7%	0.7%	1.4%

Annual Percentage Rate (APR):

1960-80			3.74%		
1980-00			2.60%		
2000-20	0.38%	1.13%	1.17%	1.21%	1.86%
2020-40	0.34%	1.19%	1.24%	1.28%	1.82%



Household Range Projections through Year 2060

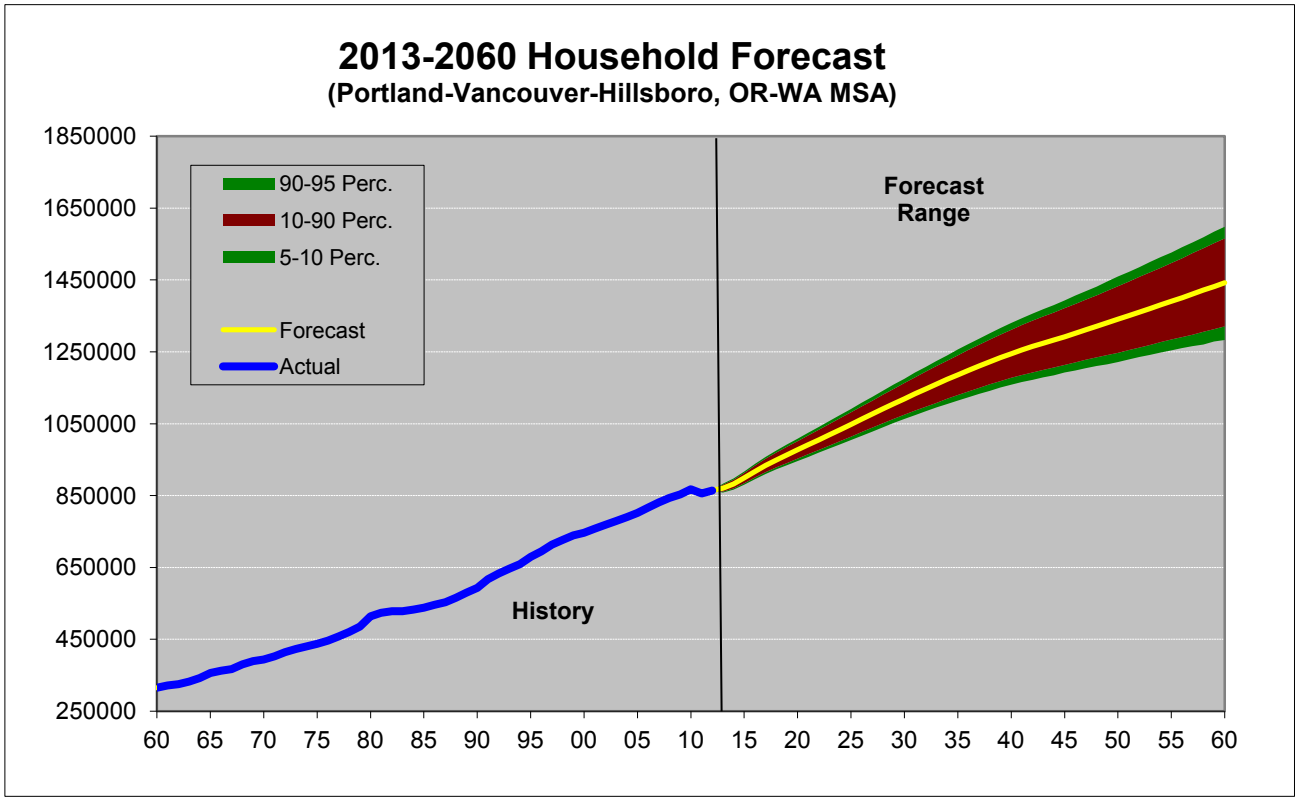
(7-county MSA)

Household Forecast Range

	HOUSEHOLDS						HOUSEHOLD - annual pct. chg.				
	Low	mid-lo 1/3	HH Base	mid-hi 1/3	High	HH Size	Low	mid-lo	HH Base	mid-hi	High
1990			593,092			2.57			1.5%		
1995			679,640			2.60			2.8%		
2000			746,625			2.58			1.9%		
2005			801,794			2.58			1.4%		
2010			867,794			2.60			1.6%		
2015	880,300	894,400	898,746	903,100	917,000	2.61	0.3%	0.6%	0.7%	0.8%	1.1%
2020	946,100	970,200	977,439	984,900	1,008,400	2.57	1.5%	1.6%	1.7%	1.7%	1.9%
2025	1,004,600	1,038,000	1,048,227	1,058,700	1,090,900	2.53	1.2%	1.4%	1.4%	1.5%	1.6%
2030	1,063,300	1,106,300	1,119,466	1,132,900	1,175,000	2.50	1.1%	1.3%	1.3%	1.4%	1.5%
2035	1,114,400	1,169,200	1,185,775	1,203,200	1,256,700	2.47	0.9%	1.1%	1.2%	1.2%	1.4%
2040	1,158,500	1,224,200	1,244,782	1,265,400	1,330,300	2.45	0.8%	0.9%	1.0%	1.0%	1.1%
2050	1,221,600	1,313,200	1,340,587	1,368,600	1,459,800	2.45	0.5%	0.7%	0.7%	0.8%	0.9%
2060	1,283,000	1,406,000	1,406,000	1,480,200	1,598,200	2.45	0.5%	0.7%	0.5%	0.8%	0.9%

Annual Percentage Rate (APR):

1990-00			2.33%		
2000-20	1.19%	1.32%	1.36%	1.39%	1.51%
2020-40	1.02%	1.17%	1.22%	1.26%	1.39%
2010-40 diff	290,700	356,400	377,000	397,600	462,500



Population and Demographic Forecast, 2010 to 2040

Portland-Hillsboro-Vancouver, OR-WA MSA

	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
Components of Population (in thousands)										
Population (7 counties)	1,523.7	1,927.9	2,067.3	2,226.0	2,342.5	2,519.2	2,671.8	2,814.1	2,937.9	3,052.1
Pct. Chg. (5-year avg.)	1.8	2.0	1.4	1.5	1.0	1.5	1.2	1.0	0.9	0.8
Annual Avg. Change	26.5	35.8	27.9	31.7	23.3	35.3	30.5	28.5	24.8	22.8
Births, annual avg.	22.2	26.9	28.2	29.4	29.7	31.4	32.8	33.8	34.6	35.1
Crude Birth Rate	15.2	14.4	13.9	13.5	12.9	12.8	12.5	12.3	12	11.7
Deaths, annual avg.	12.0	14.0	14.9	15.2	16.8	18.7	21	23.5	26.1	28.3
Crude Death Rate	8.2	7.5	7.4	7.0	7.3	7.6	8.0	8.5	9.0	9.4
Natural Increase	10.2	12.9	13.3	14.2	12.9	12.6	11.8	10.3	8.5	6.8
Net Migration (5-year avg.)	16.5	23.1	17.2	14.8	10.9	24.4	20.6	19.7	17.7	17.5
%Migration Growth Share	62.3	64.6	61.6	46.6	46.9	69.2	67.4	69.1	71.3	76.7
Regional Population Cohorts										
under 5 years old	112.6	134.8	140.2	145.3	151.1	155.2	160.9	166.4	170.7	174
5 to 9 years old	113.2	140.7	143.7	146.1	154	159.4	164	169	173.4	177.3
10 to 14 years old	107.3	136	141.9	147.5	155	161.7	166.2	170.8	175	179.1
15 to 19 years old	99	128.9	136.2	143.5	155.7	163.1	168.2	172.8	176.8	180.9
20 to 24 years old	101.7	127.2	133.2	138.9	162.2	171.5	177.1	181.7	185.2	189
25 to 29 years old	124	147.6	157.2	166.8	163.9	176.8	184.1	189.6	193.3	196.8
30 to 34 years old	139.4	152.1	160.5	168.7	164.3	176.6	185.7	192.8	197.5	201.4
35 to 39 years old	142.8	159.3	162.3	164.8	167.2	176.2	185	193.1	199.2	204
40 to 44 years old	126.7	162.7	161.2	159.1	170.7	176.1	182.9	190.8	197.6	203.5
45 to 49 years old	92.5	155	157.8	159.9	171	175.1	180.1	186.6	193.5	200
50 to 54 years old	67.6	130	144.2	159.3	164.7	171.2	176	181.6	187.8	194.4
55 to 59 years old	57.2	90.9	116.9	149.9	148.1	160.4	168	174.1	180	186.4
60 to 64 years old	57.2	62.9	88.3	123.8	122.3	140.8	153.1	161.8	168.7	175.3
65 to 69 years old	56.5	50.5	64.9	83.2	94.7	114.8	130.9	142.8	151.8	159.3
70 to 74 years old	46.4	48.3	51.7	55	70.5	87.6	104.1	118	129	137.9
75 to 79 years old	34.9	43.3	42.4	41.3	51	62.9	76.6	90	101.6	111.3
80 to 84 years old	23.8	30.9	32.7	34.5	34.4	41.5	50.9	61.4	71.4	80.4
85 years or older	20.9	26.8	32.1	38.2	41.6	48.1	57.9	70.8	85.5	101.1
Total	1,523.7	1,927.9	2,067.3	2,226.0	2,342.5	2,519.2	2,671.8	2,814.1	2,937.9	3,052.1
Population Share by Age (in percents)										
under 5 years old	7.39	6.99	6.78	6.53	6.45	6.16	6.02	5.91	5.81	5.7
5 to 9 years old	7.43	7.3	6.95	6.56	6.58	6.33	6.14	6	5.9	5.81
10 to 14 years old	7.04	7.05	6.86	6.63	6.62	6.42	6.22	6.07	5.96	5.87
15 to 19 years old	6.49	6.68	6.59	6.45	6.65	6.48	6.3	6.14	6.02	5.93
20 to 24 years old	6.67	6.6	6.44	6.24	6.92	6.81	6.63	6.46	6.31	6.19

Population and Demographic Forecast, 2010 to 2040

Portland-Hillsboro-Vancouver, OR-WA MSA

	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
25 to 29 years old	8.14	7.65	7.60	7.49	7	7.02	6.89	6.74	6.58	6.45
30 to 34 years old	9.15	7.89	7.76	7.58	7.01	7.01	6.95	6.85	6.72	6.6
35 to 39 years old	9.37	8.26	7.85	7.4	7.14	6.99	6.93	6.86	6.78	6.68
40 to 44 years old	8.31	8.44	7.80	7.15	7.29	6.99	6.85	6.78	6.73	6.67
45 to 49 years old	6.07	8.04	7.63	7.19	7.3	6.95	6.74	6.63	6.59	6.55
50 to 54 years old	4.44	6.75	6.97	7.16	7.03	6.8	6.59	6.45	6.39	6.37
55 to 59 years old	3.75	4.71	5.66	6.73	6.32	6.37	6.29	6.19	6.13	6.11
60 to 64 years old	3.75	3.26	4.27	5.56	5.22	5.59	5.73	5.75	5.74	5.74
65 to 69 years old	3.71	2.62	3.14	3.74	4.04	4.56	4.9	5.07	5.17	5.22
70 to 74 years old	3.04	2.51	2.50	2.47	3.01	3.48	3.9	4.19	4.39	4.52
75 to 79 years old	2.29	2.25	2.05	1.86	2.18	2.5	2.87	3.2	3.46	3.65
80 to 84 years old	1.56	1.6	1.58	1.55	1.47	1.65	1.91	2.18	2.43	2.63
85 years or older	1.37	1.39	1.55	1.71	1.78	1.91	2.17	2.52	2.91	3.31
Population Groups (in thousands)										
Children under 18 years old	398.9	496.8	497.4	525.1	553.5	574.2	592	609.9	625.2	639
Pct. of Children	26.2	25.8	24.1	23.6	23.6	22.8	22.2	21.7	21.3	20.9
Working age (16 to 64)	982.9	1,284.3	1,399.6	1,506.1	1,559.0	1,655.3	1,726.6	1,790.3	1,844.2	1,895.5
Pct. Working-Age Pop.	64.5	66.6	67.7	67.7	66.6	65.7	64.6	63.6	62.8	62.1
65 years and older	181.5	198.3	225.2	252.2	292.3	354.9	420.5	483	539.2	589.9
Pct. Retirement Age	11.9	10.3	10.9	11.3	12.5	14.1	15.7	17.2	18.4	19.3
Percent of Women of Child-bearing Age										
Women, 15 to 44 years old	24.1	22.9	22.3	21.3	21.1	20.8	20.4	20	19.7	19.4
Dependency Ratio (working age = 16 to 64 years old) (in										
Kids (under 16 years old)	36.6	34.7	31.6	31	31.5	30.7	30.4	30.2	30.1	29.9
Seniors (65+ years old)	18.5	15.4	16.1	16.7	18.7	21.4	24.4	27	29.2	31.1
Total Dependency Ratio	55.0	50.1	47.7	47.8	50.3	52.2	54.7	57.2	59.3	61
Households by Age of Head Person (in thousands)										
Households, total	593.1	746.6	801.8	857.4	896.5	980.9	1056	1125.8	1187.3	1244
Share of Household by Age (in percents)										
15 to 24 years old	5.3	5.9	5	4	4.3	4.1	4	3.8	3.7	3.6
25 to 34 years old	21.7	19.3	18.9	18.2	17	16.7	16.3	15.8	15.3	14.9
35 to 44 years old	25.7	23.5	21.9	20.1	20	19.1	18.5	18.1	17.7	17.4
45 to 54 years old	15.9	22	21.4	20.5	20.6	19.4	18.5	18	17.7	17.4
55 to 64 years old	11.4	12.3	15.3	18.8	17.7	18.1	17.9	17.5	17.3	17.1
65 to 74 years old	11.19	8.23	9.15	10.15	11.6	12.98	14	14.57	14.88	15.03
75 to 84 years old	6.69	6.56	5.96	5.33	5.72	6.39	7.26	8.08	8.76	9.26
85 years or older	2.17	2.17	2.54	2.91	3.04	3.22	3.6	4.12	4.72	5.33

Population and Demographic Forecast, 2010 to 2040

Portland-Hillsboro-Vancouver, OR-WA MSA

	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
State-level Forecasts (in percents)										
CA Population	2.43	1.34	1.11	0.8	0.74	0.75	0.77	0.71	0.64	0.56
CA Employment	3.02	3.13	0.43	-1.19	1.46	1.73	1.33	1.22	1.12	0.97
WA Population	2.04	1.46	1.2	1.45	0.65	1.19	1.31	1.17	1.02	0.91
WA Employment	4.61	2.93	0.48	0.07	1.75	2.09	1.51	1.37	1.34	1.29
OR Population	1.24	1.45	1.1	1.18	0.74	1.13	1.13	1.03	0.91	0.82
OR Employment	4.04	2.53	0.45	-0.64	2.77	2.34	0.97	0.97	0.94	0.94
U.S. Population (% chg.)	0.97	1.16	0.95	0.9	0.75	0.77	0.74	0.68	0.61	0.55
16 years and older	1.02	1.29	1.16	1.12	0.9	0.83	0.78	0.74	0.7	0.62

Age Adjusted Fertility Rates, 2010 to 2040

Portland-Hillsboro-Vancouver, OR-WA MSA

Both Sexes for all Race and Ethnicities*

	Fertility rates per 10,000 persons								Total Fertility
	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	TFR
1990	3.720	253.582	655.352	620.866	469.911	218.043	46.326	3.773	2.27
2000	2.920	197.718	535.133	537.668	460.196	212.201	41.825	2.789	1.99
2010	2.033	139.326	439.108	491.527	474.094	248.740	59.715	4.689	1.86
2011	2.033	139.326	439.108	491.527	474.094	248.740	59.715	4.689	1.86
2012	2.033	139.326	439.108	491.527	474.094	248.740	59.715	4.689	1.86
2013	2.031	139.174	438.730	491.442	473.666	248.211	59.499	4.666	1.86
2014	2.029	139.021	438.352	491.356	473.239	247.682	59.283	4.643	1.86
2015	2.027	138.868	437.974	491.270	472.811	247.153	59.067	4.620	1.85
2016	2.025	138.716	437.595	491.185	472.384	246.624	58.851	4.597	1.85
2017	2.022	138.563	437.217	491.099	471.956	246.095	58.635	4.573	1.85
2018	2.020	138.410	436.839	491.013	471.529	245.566	58.419	4.550	1.85
2019	2.018	138.258	436.461	490.928	471.101	245.037	58.203	4.527	1.85
2020	2.016	138.105	436.083	490.842	470.674	244.509	57.987	4.504	1.84
2021	2.013	137.952	435.705	490.756	470.246	243.980	57.771	4.481	1.84
2022	2.011	137.800	435.327	490.671	469.819	243.451	57.555	4.458	1.84
2023	2.009	137.647	434.949	490.585	469.391	242.922	57.339	4.434	1.84
2024	2.007	137.494	434.570	490.500	468.964	242.393	57.124	4.411	1.84
2025	2.004	137.342	434.192	490.414	468.536	241.864	56.908	4.388	1.84
2026	2.002	137.189	433.814	490.328	468.109	241.335	56.692	4.365	1.83
2027	2.000	137.036	433.436	490.243	467.681	240.806	56.476	4.342	1.83
2028	1.998	136.884	433.058	490.157	467.254	240.277	56.260	4.319	1.83
2029	1.996	136.731	432.680	490.071	466.826	239.748	56.044	4.295	1.83
2030	1.993	136.578	432.302	489.986	466.399	239.220	55.828	4.272	1.83
2031	1.991	136.426	431.923	489.900	465.971	238.691	55.612	4.249	1.82
2032	1.989	136.273	431.545	489.814	465.544	238.162	55.396	4.226	1.82
2033	1.987	136.121	431.167	489.729	465.116	237.633	55.180	4.203	1.82
2034	1.984	135.968	430.789	489.643	464.689	237.104	54.964	4.180	1.82
2035	1.982	135.815	430.411	489.558	464.261	236.575	54.748	4.156	1.82
2036	1.980	135.663	430.033	489.472	463.834	236.046	54.533	4.133	1.82
2037	1.978	135.510	429.655	489.386	463.407	235.517	54.317	4.110	1.81
2038	1.976	135.357	429.277	489.301	462.979	234.988	54.101	4.087	1.81
2039	1.973	135.205	428.898	489.215	462.552	234.460	53.885	4.064	1.81
2040	1.971	135.052	428.520	489.129	462.124	233.931	54	4.041	1.81

* Fertility rates are combined together on a weighted-average basis. The weights are derived from 2010 Census estimates of persons by race and held constant through the forecast period. Rates reflect change over time on the basis of fertility assumptions included in the Census 2012 National Population Projections. Rates are denominated by total population.

Age Adjusted Mortality Rates, 2010 to 2040

Portland-Hillsboro-Vancouver, OR-WA MSA

Both Sexes for all Race and Ethnicities*

Mortality rates per 10,000 persons

	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44
1990	20.648	2.908	1.023	8.298	9.362	9.148	12.078	14.117	23.951
2000	12.028	1.872	0.657	5.327	6.648	5.897	8.643	12.523	18.520
2010	12.594	1.574	0.542	4.737	5.975	5.395	8.000	9.707	15.086
2011	12.594	1.574	0.542	4.737	5.975	5.395	8.000	9.707	15.086
2012	12.594	1.574	0.542	4.737	5.975	5.395	8.000	9.707	15.086
2013	12.487	1.561	0.532	4.646	5.829	5.278	7.814	9.489	14.771
2014	12.385	1.561	0.523	4.549	5.701	5.158	7.635	9.289	14.450
2015	12.267	1.540	0.515	4.457	5.570	5.036	7.460	9.077	14.137
2016	12.164	1.508	0.509	4.351	5.451	4.920	7.302	8.886	13.844
2017	12.056	1.460	0.498	4.278	5.336	4.804	7.143	8.695	13.545
2018	11.960	1.458	0.492	4.177	5.208	4.701	6.970	8.502	13.261
2019	11.873	1.445	0.482	4.115	5.099	4.588	6.825	8.318	12.981
2020	11.774	1.435	0.478	4.032	4.993	4.487	6.664	8.148	12.712
2021	11.663	1.432	0.470	3.923	4.868	4.382	6.512	7.955	12.449
2022	11.571	1.431	0.463	3.851	4.771	4.282	6.367	7.802	12.182
2023	11.482	1.429	0.456	3.776	4.671	4.182	6.236	7.629	11.925
2024	11.383	1.403	0.449	3.709	4.563	4.078	6.095	7.453	11.680
2025	11.287	1.400	0.444	3.624	4.462	3.999	5.970	7.302	11.438
2026	11.189	1.399	0.440	3.548	4.363	3.899	5.832	7.148	11.197
2027	11.091	1.367	0.431	3.466	4.269	3.811	5.709	7.003	10.962
2028	11.009	1.365	0.429	3.398	4.173	3.729	5.583	6.844	10.739
2029	10.918	1.349	0.420	3.340	4.082	3.653	5.461	6.699	10.518
2030	10.818	1.307	0.413	3.259	3.997	3.566	5.343	6.555	10.290
2031	10.729	1.295	0.403	3.210	3.906	3.487	5.239	6.431	10.089
2032	10.639	1.295	0.393	3.154	3.827	3.421	5.127	6.301	9.890
2033	10.554	1.291	0.389	3.075	3.744	3.346	5.011	6.179	9.703
2034	10.480	1.280	0.388	3.016	3.668	3.276	4.915	6.040	9.505
2035	10.396	1.280	0.382	2.968	3.602	3.208	4.823	5.919	9.316
2036	10.320	1.268	0.381	2.902	3.521	3.127	4.712	5.789	9.112
2037	10.235	1.266	0.375	2.849	3.440	3.068	4.606	5.662	8.919
2038	10.151	1.265	0.367	2.789	3.375	2.988	4.497	5.546	8.737
2039	10.086	1.253	0.360	2.734	3.286	2.927	4.393	5.424	8.539
2040	10.012	1.240	0.358	2.689	3.235	2.859	4.299	5.292	8.360

Age Adjusted Mortality Rates, 2010 to 2040

Portland-Hillsboro-Vancouver, OR-WA MSA

Both Sexes for all Race and Ethnicities*

Mortality rates per 10,000 persons

	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
1990	28.136	47.007	101.996	124.555	210.041	313.093	302.599	792.841	2017.935
2000	29.443	42.399	67.506	119.162	262.106	225.973	438.568	754.515	1579.668
2010	30.948	37.984	59.300	87.836	145.948	180.642	390.415	572.357	1384.974
2011	30.948	37.984	59.300	87.836	145.948	180.642	390.415	572.357	1384.974
2012	30.948	37.984	59.300	87.836	145.948	180.642	390.415	572.357	1384.974
2013	30.334	37.259	58.319	86.474	144.079	178.787	387.190	568.698	1378.846
2014	29.720	36.547	57.334	85.133	142.231	176.965	384.001	565.072	1372.762
2015	29.128	35.860	56.380	83.823	140.433	175.144	380.818	561.456	1366.739
2016	28.523	35.190	55.434	82.526	138.614	173.359	377.675	557.896	1360.755
2017	27.964	34.519	54.509	81.238	136.849	171.585	374.557	554.335	1354.829
2018	27.415	33.875	53.594	79.988	135.108	169.836	371.492	550.812	1348.948
2019	26.854	33.238	52.704	78.749	133.376	168.114	368.443	547.337	1343.124
2020	26.335	32.614	51.818	77.552	131.685	166.400	365.418	543.870	1337.355
2021	25.798	32.004	50.976	76.353	130.024	164.731	362.482	540.538	1331.973
2022	25.291	31.416	50.119	75.190	128.382	163.082	359.568	537.203	1326.641
2023	24.792	30.822	49.313	74.038	126.768	161.446	356.700	533.912	1321.368
2024	24.312	30.255	48.479	72.920	125.164	159.838	353.835	530.655	1316.138
2025	23.828	29.689	47.670	71.801	123.588	158.237	351.018	527.397	1310.946
2026	23.351	29.141	46.909	70.695	122.039	156.657	348.201	524.190	1305.820
2027	22.898	28.590	46.133	69.615	120.512	155.092	345.433	520.990	1300.728
2028	22.443	28.070	45.381	68.569	118.977	153.552	342.677	517.809	1295.693
2029	22.013	27.548	44.624	67.505	117.498	152.021	339.949	514.672	1290.703
2030	21.578	27.048	43.895	66.489	116.033	150.498	337.268	511.556	1285.764
2031	21.171	26.563	43.206	65.520	114.638	149.074	334.693	508.590	1281.155
2032	20.779	26.084	42.529	64.552	113.251	147.655	332.148	505.666	1276.586
2033	20.386	25.612	41.862	63.632	111.881	146.257	329.649	502.753	1272.064
2034	19.994	25.185	41.191	62.691	110.545	144.859	327.145	499.861	1267.585
2035	19.628	24.718	40.549	61.779	109.225	143.488	324.675	496.980	1263.149
2036	19.211	24.245	39.865	60.810	107.806	141.952	321.781	493.415	1255.930
2037	18.840	23.795	39.197	59.871	106.386	140.428	318.902	489.890	1248.745
2038	18.465	23.351	38.532	58.916	105.007	138.921	316.046	486.376	1241.608
2039	18.095	22.904	37.891	58.009	103.635	137.437	313.232	482.880	1234.514
2040	17.721	22.470	37.254	57.102	102.283	135.960	310.437	479.425	1227.464

* Mortality rates by race are combined together on a weighted-average basis. The weights are derived from 2010 Census estimates of persons by race and held constant through the forecast period. Rates for men and women are averaged together. Projected rates are based on the Census 2012 National Population Projections.

Household Headship Rates and Household Size Forecast

Portland-Hillsboro-Vancouver, OR-WA MSA

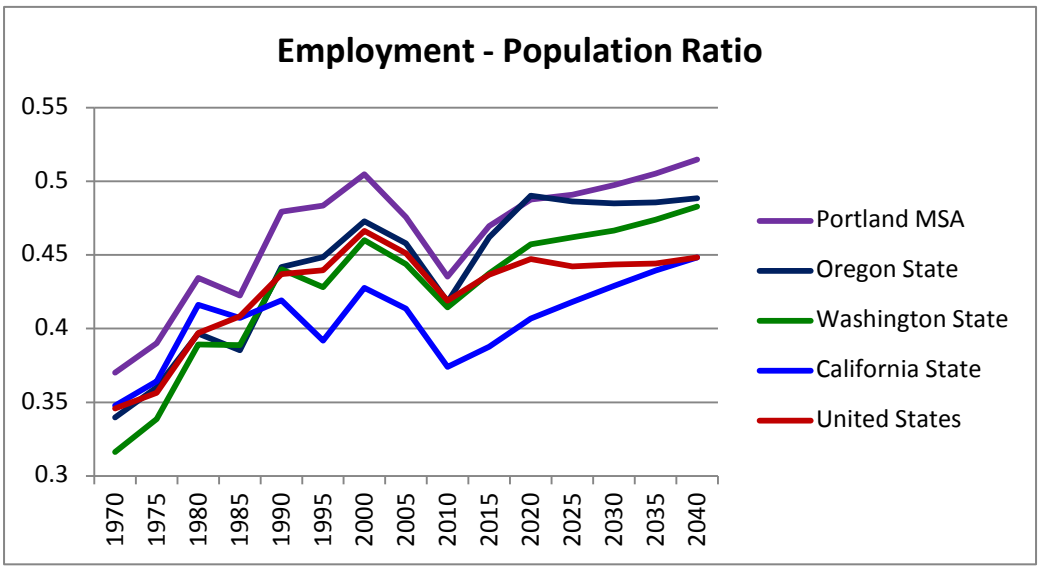
	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
Age-specific Household Headship Rate Assumptions										
15 to 24 year olds	0.16	0.171	0.147	0.123	0.121	0.121	0.121	0.121	0.121	0.121
25 to 34 year olds	0.488	0.482	0.473	0.465	0.464	0.464	0.464	0.464	0.464	0.464
35 to 44 year olds	0.565	0.545	0.538	0.532	0.531	0.531	0.531	0.531	0.531	0.531
45 to 54 year olds	0.585	0.576	0.563	0.55	0.55	0.55	0.55	0.55	0.55	0.55
55 to 64 year olds	0.59	0.599	0.594	0.588	0.588	0.588	0.588	0.588	0.588	0.588
65 to 74 year olds	0.643	0.622	0.626	0.629	0.629	0.629	0.629	0.629	0.629	0.629
75 to 84 year olds	0.709	0.66	0.632	0.604	0.601	0.601	0.601	0.601	0.601	0.601
85 years and over	0.654	0.605	0.63	0.655	0.656	0.656	0.656	0.656	0.656	0.656
Population - MSA	1,523,740	1,927,881	2,067,325	2,226,009	2,342,501	2,519,163	2,671,777	2,814,058	2,937,885	3,052,078
Households - MSA	593,092	746,625	801,794	857,379	896,519	980,872	1,055,978	1,125,755	1,187,311	1,244,034
Household Size (persons per household)										
Portland MSA	2.57	2.58	2.58	2.60	2.61	2.57	2.53	2.50	2.47	2.45
U.S.	2.65	2.64	2.62	2.65	2.60	2.55	2.53	2.5	2.47	2.44

Exhibit A to Resolution No. 14-4582

Employment-Population Ratio

(Total Nonfarm Payroll Employment / Total Population)

	Portland MSA	Oregon State	Washington State	California State	United States
1970	0.370031	0.339759	0.316209	0.347811	0.345713
1975	0.390162	0.360125	0.338692	0.364347	0.356436
1980	0.434323	0.396675	0.389205	0.416125	0.397082
1985	0.422572	0.385401	0.388724	0.407311	0.408418
1990	0.47926	0.441752	0.440322	0.41925	0.436916
1995	0.483482	0.448478	0.42822	0.39191	0.439527
2000	0.504819	0.472864	0.460002	0.427765	0.466392
2005	0.475749	0.45789	0.443821	0.413488	0.451118
2010	0.435233	0.418195	0.414358	0.374135	0.418981
2015	0.4696	0.461959	0.437437	0.387639	0.436547
2020	0.48752	0.490309	0.457267	0.406942	0.447142
2025	0.490897	0.486422	0.461898	0.418191	0.442322
2030	0.497426	0.485082	0.466474	0.428989	0.443571
2035	0.505281	0.485631	0.473839	0.439416	0.444289
2040	0.514827	0.488494	0.48283	0.448343	0.448407



Employment Forecast, 2010 to 2040

Portland-Hillsboro-Vancouver, OR-WA MSA

	1985	1990	1995	2000	2005	2010
(Employment in thousands)						
Nonfarm Wage & Salary Jobs	**587.98**	**730.27**	**845.61**	**973.23**	**983.53**	**968.83**
Manufacturing, TOTAL	**108.69**	**124.91**	**135.34**	**143.3**	**123.42**	**107.02**
Durables, total	78.1	89.04	96.28	107.52	93.6	79.64
Wood Products	7.65	7.94	6.36	5.91	5.88	3.53
Primary Metals	6.55	8.5	6.76	7.73	6.01	5.47
Fab. Metals	9.91	10.76	13.2	13.67	12.52	11.17
Machinery Mfg.	7.12	9.2	10.48	10.44	8.38	7.08
Computer & Electronics	27.88	28.12	32.7	41.21	36.48	33.27
Transportation Equipment	6.74	9.51	9.56	11.16	8.95	6.3
Other Durable Goods	12.24	15.01	17.23	17.4	15.37	12.83
Nondurables, total	30.59	35.88	39.06	35.78	29.82	27.38
Food Processing	8.76	9.53	9.63	8.87	8.56	9.48
Paper	6.72	7.52	7.12	6.52	4.98	3.63
Other Nondurables	15.12	18.83	22.31	20.39	16.27	14.27
Nonmanufacturing (private)	**395.78**	**501.11**	**595.38**	**699.43**	**722.47**	**714.43**
Natural Resources & Mining	2.07	2.05	2.01	1.88	1.78	1.07
Construction	22.26	36.87	45.34	53.17	58.46	45.05
Wholesale Trade	35.54	41.62	49.07	55.58	56.29	53.23
Retail Trade	67.67	82.56	92.46	106.78	104.83	101.16
Auto	9.11	10.83	12.18	14.24	14.16	11.37
Food	11.59	15.18	16.62	18.78	18.55	19.86
Other	46.97	56.55	63.66	73.76	72.12	69.94
TWU	23.65	31.72	35.01	38.63	36.88	33.28
Information Services	16.14	16.14	19.03	25.96	23.09	22.46
Publishing	4.67	4.49	6.49	9.73	9.12	9.07
Internet, etc.	11.47	11.64	12.54	16.23	13.97	13.39
Financial Activities	42.03	49.96	55.43	64.85	68.22	61.92
Finance & Insurance	27.93	30	33.12	41.57	43.85	39.96
Real Estate	14.1	19.96	22.3	23.28	24.37	21.95
Pro. Business Services	57.1	77.51	104.63	130.45	128.5	127.8
Pro., Sci., Tech.	22.73	36.31	43.88	48.51	49.08	53.04
Mgmt. of Co.	8.63	10.2	14.92	20.19	20.25	23.22
Admin Sup. & Waste Mgmt.	25.75	30.99	45.83	61.74	59.17	51.55
Education & Health	55.65	73.47	87.35	102.92	119.83	139.38
Education	8.21	11.68	14.07	18.03	20.95	24.9
Health	47.43	61.79	73.29	84.89	98.87	114.48
Leisure + Hospitality	51.47	63.57	75.97	85.78	90.08	94.48
Arts, ent. & rec.	6.9	9.91	11.77	13.05	13.22	13.64
Lodgings & Food	44.57	53.66	64.19	72.73	76.86	80.83
Other Services	22.2	25.65	29.09	33.42	34.51	34.6
Social Orgs., & Churches	6.56	11.96	13.16	15.33	15.12	16.29
Other	10.94	13.69	15.93	18.09	19.38	18.31
Government, TOTAL	**96.03**	**112.73**	**122.23**	**137.66**	**144.84**	**154.35**
Fed. Defense	7.97	8.48	7.34	7.16	7.12	6.96
Civilian. Govt. Total	88.07	104.24	114.89	130.5	137.64	147.38
Civilian. Federal	16.94	18.8	17.96	18.89	18.36	18.58
State & Local	71	85	97	112	119	129

Employment Forecast, 2010 to 2040

Portland-Hillsboro-Vancouver, OR-WA MSA

	2015	2020	2025	2030	2035	2040
(Employment in thousands)						
Nonfarm Wage & Salary Jobs	**1100.04**	**1228.14**	**1311.57**	**1399.79**	**1484.46**	**1571.29**
Manufacturing, TOTAL	**119.11**	**123.1**	**123.23**	**123**	**124.37**	**127.16**
Durables, total	90.21	93.57	94.43	94.76	96.74	100.01
Wood Products	4.2	4.62	4.36	4.16	3.91	3.77
Primary Metals	5.82	5.15	4.85	4.62	4.45	4.35
Fab. Metals	13.53	13.17	12.67	12.39	12.26	12.33
Machinery Mfg.	8.89	8.64	8.3	8.13	7.97	7.9
Computer & Electronics	36.42	40.33	42.93	44.39	47.31	51.08
Transportation Equipment	7.23	6.36	5.76	5.39	5.13	4.83
Other Durable Goods	14.12	15.29	15.56	15.69	15.71	15.76
Nondurables, total	28.9	29.54	28.8	28.24	27.63	27.15
Food Processing	10.39	9.82	9.6	9.53	9.5	9.5
Paper	3.3	3.03	2.62	2.31	2.01	1.79
Other Nondurables	15.21	16.68	16.58	16.41	16.12	15.86
Nonmanufacturing (private)	**827.69**	**937.9**	**1011.01**	**1087.06**	**1158.79**	**1229.74**
Natural Resources & Mining	1.44	1.73	1.49	1.39	1.28	1.25
Construction	59.92	72.49	79.78	90.11	99.27	110.88
Wholesale Trade	60.22	66.67	71.15	75.45	79.55	82.72
Retail Trade	113.41	123.25	129.7	137.66	144.63	150.66
Auto	12.03	13.81	14.76	15.64	16.33	17.05
Food	22.5	24.57	26.21	28	29.67	30.93
Other	78.88	84.87	88.73	94.03	98.64	102.69
TWU	37.84	41.44	42.44	43.86	45.01	46.05
Information Services	23.46	26.79	29.89	32.64	35.56	38.31
Publishing	9.55	11.3	13.34	15.46	17.62	19.45
Internet, etc.	13.92	15.5	16.56	17.18	17.95	18.86
Financial Activities	65.66	68.26	70.15	72.6	75.54	78.74
Finance & Insurance	42.58	43.34	44.35	46	48.34	50.98
Real Estate	23.08	24.92	25.8	26.6	27.2	27.75
Pro. Business Services	161.58	196.35	217.42	235.18	251.66	270.47
Pro., Sci., Tech.	65.62	77.4	84.37	91.13	97.68	104.45
Mgmt. of Co.	27.6	33.44	37.44	40.68	43.6	46.35
Admin Sup. & Waste Mgmt.	68.37	85.51	95.6	103.38	110.39	119.67
Education & Health	155.44	176.68	193.55	211.05	227.46	240.78
Education	27.58	28.66	28.92	30.63	32.58	34.43
Health	127.86	148.02	164.62	180.42	194.88	206.34
Leisure + Hospitality	110.69	121.87	128.88	136.45	144.1	151.01
Arts, ent. & rec.	16.66	19.09	19.78	20.78	21.83	22.73
Lodgings & Food	94.03	102.78	109.1	115.67	122.27	128.28
Other Services	38.02	42.37	46.57	50.66	54.72	58.88
Social Orgs., & Churches	17.24	19.25	21.26	23.16	24.98	26.73
Other	20.78	23.12	25.3	27.5	29.75	32.15
Government, TOTAL	**159.86**	**173.66**	**183.84**	**196.31**	**207.94**	**221.08**
Fed. Defense	6.62	6.51	6.51	6.57	6.63	6.68
Civilian. Govt. Total	153.25	167.15	177.33	189.73	201.31	214.4
Civilian. Federal	17.58	17.4	16.6	17.66	17.54	18.57
State & Local	136	150	161	172	184	196

Employment

(percent change)

Portland-Hillsboro-Vancouver, OR-WA MSA

	1985	1990	1995	2000	2005	2010
(average annual percent change)						
Total Nonfarm W & S	**0.18**	**4.43**	**2.98**	**2.85**	**0.21**	**-0.3**
Manufacturing, TOTAL	**-1.91**	**2.82**	**1.62**	**1.15**	**-2.94**	**-2.81**
Durables, total	-2.59	2.66	1.58	2.23	-2.73	-3.18
Wood Products	-3.77	0.75	-4.34	-1.46	-0.09	-9.73
Primary Metals	-2.21	5.33	-4.47	2.72	-4.92	-1.85
Fab. Metals	-3.65	1.65	4.17	0.71	-1.75	-2.27
Machinery Mfg.	-6.95	5.25	2.63	-0.07	-4.3	-3.31
Computer & Electronics	-1.05	0.17	3.07	4.73	-2.4	-1.83
Transp. Equipment	-4.32	7.14	0.09	3.15	-4.31	-6.79
Other Durable Goods	-0.45	4.16	2.8	0.2	-2.45	-3.56
Nondurables, total	-0.01	3.24	1.71	-1.74	-3.58	-1.69
Food Processing	0.46	1.72	0.21	-1.63	-0.71	2.06
Paper	-1.51	2.28	-1.08	-1.75	-5.22	-6.13
Other Nondurables	0.42	4.49	3.45	-1.78	-4.41	-2.6
Nonmanufacturing (private)	**0.8**	**4.83**	**3.51**	**3.27**	**0.65**	**-0.22**
Natural Resources & Mining	-0.75	-0.2	-0.37	-1.37	-1.1	-9.66
Construction	-4.52	10.63	4.22	3.24	1.91	-5.08
Wholesale Trade	-0.32	3.2	3.35	2.52	0.25	-1.11
Retail Trade	0.66	4.06	2.29	2.92	-0.37	-0.71
Auto	1.04	3.52	2.39	3.16	-0.11	-4.29
Food	5.2	5.55	1.83	2.48	-0.25	1.37
Other	-0.36	3.78	2.4	2.99	-0.45	-0.61
TWU	0.77	6.05	1.99	1.99	-0.92	-2.03
Information Services	-0.58	0	3.35	6.41	-2.31	-0.56
Publishing	7.54	-0.77	7.64	8.42	-1.27	-0.13
Internet, etc.	-3.02	0.31	1.49	5.3	-2.96	-0.84
Financial Activities	-0.08	3.52	2.1	3.19	1.02	-1.92
Finance & Insurance	-0.28	1.44	2	4.65	1.08	-1.84
Real Estate	0.32	7.19	2.25	0.86	0.92	-2.07
Pro. Business Services	3.85	6.3	6.18	4.51	-0.3	-0.11
Pro., Sci., Tech.	2.95	9.83	3.86	2.03	0.23	1.56
Mgmt. of Co.	2.27	3.41	7.9	6.24	0.06	2.78
Admin Sup. & Waste Mgmt.	5.29	3.78	8.14	6.14	-0.85	-2.72
Education & Health	2.25	5.71	3.52	3.33	3.09	3.07
Education	3.14	7.3	3.79	5.08	3.05	3.51
Health	2.1	5.43	3.47	2.98	3.1	2.97
Leisure + Hospitality	0.87	4.31	3.63	2.46	0.98	0.96
Arts, ent. & rec.	0.87	7.49	3.51	2.08	0.26	0.63
Lodgings & Food	0.87	3.78	3.65	2.53	1.11	1.01
Other Services	1.44	2.93	2.55	2.81	0.64	0.06
Social Orgs., & Churches	-0.08	12.76	1.93	3.09	-0.27	1.5
Other	2	4.59	3.08	2.58	1.39	-1.14
Government, TOTAL	**0.54**	**3.26**	**1.63**	**2.41**	**1.02**	**1.28**
Fed. Defense	3.25	1.25	-2.85	-0.5	-0.11	-0.44
Civilian. Govt. Total	0.32	3.43	1.96	2.58	1.07	1.38
Civilian. Federal	0.25	2.11	-0.91	1.01	-0.57	0.24
State & Local	0.33	3.73	2.55	2.86	1.34	1.55

Employment

(percent change)

Portland-Hillsboro-Vancouver, OR-WA MSA

	2015	2020	2025	2030	2035	2040
(average annual percent change)						
Total Nonfarm W & S	**2.57**	**2.23**	**1.32**	**1.31**	**1.18**	**1.14**
Manufacturing, TOTAL	**2.16**	**0.66**	**0.02**	**-0.04**	**0.22**	**0.44**
Durables, total	2.52	0.73	0.18	0.07	0.42	0.67
Wood Products	3.57	1.92	-1.16	-0.95	-1.21	-0.74
Primary Metals	1.22	-2.38	-1.2	-0.98	-0.73	-0.45
Fab. Metals	3.92	-0.54	-0.77	-0.45	-0.2	0.11
Machinery Mfg.	4.65	-0.57	-0.79	-0.42	-0.4	-0.18
Computer & Electronics	1.83	2.06	1.26	0.67	1.28	1.54
Transp. Equipment	2.79	-2.54	-1.95	-1.32	-0.99	-1.21
Other Durable Goods	1.94	1.61	0.35	0.16	0.02	0.06
Nondurables, total	1.09	0.44	-0.5	-0.39	-0.43	-0.35
Food Processing	1.84	-1.12	-0.45	-0.15	-0.05	0
Paper	-1.88	-1.69	-2.89	-2.53	-2.68	-2.36
Other Nondurables	1.29	1.87	-0.12	-0.21	-0.36	-0.32
Nonmanufacturing (private)	**2.99**	**2.53**	**1.51**	**1.46**	**1.29**	**1.2**
Natural Resources & Mining	6.13	3.71	-2.84	-1.48	-1.64	-0.46
Construction	5.87	3.88	1.93	2.47	1.95	2.24
Wholesale Trade	2.5	2.05	1.31	1.18	1.06	0.78
Retail Trade	2.31	1.68	1.02	1.2	0.99	0.82
Auto	1.13	2.81	1.33	1.17	0.86	0.87
Food	2.53	1.78	1.3	1.32	1.17	0.84
Other	2.44	1.47	0.89	1.17	0.96	0.81
TWU	2.6	1.83	0.48	0.66	0.52	0.46
Information Services	0.88	2.69	2.22	1.77	1.73	1.5
Publishing	1.04	3.42	3.38	3	2.64	2
Internet, etc.	0.78	2.17	1.33	0.74	0.88	0.99
Financial Activities	1.18	0.78	0.55	0.69	0.8	0.83
Finance & Insurance	1.28	0.36	0.46	0.73	1	1.07
Real Estate	1.01	1.55	0.7	0.61	0.44	0.41
Pro. Business Services	4.8	3.97	2.06	1.58	1.36	1.45
Pro., Sci., Tech.	4.35	3.36	1.74	1.55	1.4	1.35
Mgmt. of Co.	3.52	3.91	2.29	1.67	1.4	1.23
Admin Sup. & Waste Mgmt.	5.81	4.58	2.26	1.58	1.32	1.63
Education & Health	2.21	2.59	1.84	1.75	1.51	1.14
Education	2.07	0.77	0.18	1.16	1.24	1.11
Health	2.24	2.97	2.15	1.85	1.55	1.15
Leisure + Hospitality	3.22	1.94	1.13	1.15	1.1	0.94
Arts, ent. & rec.	4.08	2.76	0.71	0.99	0.99	0.81
Lodgings & Food	3.07	1.79	1.2	1.18	1.12	0.96
Other Services	1.9	2.19	1.91	1.7	1.55	1.48
Social Orgs., & Churches	1.14	2.23	2.01	1.72	1.52	1.37
Other	2.57	2.16	1.82	1.68	1.58	1.57
Government, TOTAL	**0.7**	**1.67**	**1.15**	**1.32**	**1.16**	**1.23**
Fed. Defense	-1.01	-0.32	-0.01	0.19	0.17	0.17
Civilian. Govt. Total	0.78	1.75	1.19	1.36	1.19	1.27
Civilian. Federal	-1.1	-0.21	-0.93	1.24	-0.13	1.14
State & Local	1.04	2	1.42	1.37	1.32	1.28

High Growth Scenario

Portland-Hillsboro-Vancouver, OR-WA MSA

	2015	2020	2025	2030	2035	2040
(in thousands)						
Nonfarm Employment, Civ. total	1,204.3	1,407.4	1,547.6	1,697.9	1,852.8	2,019.0
Private nonfarm emp.	1,045.6	1,233.3	1,362.3	1,498.9	1,641.0	1,792.8
Manufacturing, total	135.97	151.29	157.08	161.27	167.74	175.59
Durable Goods	103.39	115.88	121.44	125.2	131.36	138.74
Wood Products	4.98	6.01	6.12	6.27	6.35	6.54
Primary Metals	6.68	6.36	6.07	5.85	5.74	5.71
Fab. Metals	14.26	14.08	13.68	13.66	13.83	14.26
Machinery	9.82	9.98	9.79	9.79	9.79	9.91
Electronics	41.69	50.64	56.09	59.1	64.44	70.59
Computers	32.36	39.6	44.27	47.29	52.14	57.6
Oth. Elect.	9.33	11.04	11.83	11.81	12.29	12.99
Transport. Eq.	10	10.91	11.57	12.1	12.53	12.74
Oth. Durables	15.96	17.9	18.12	18.44	18.67	18.98
Non-Durable Goods	32.59	35.42	35.64	36.07	36.39	36.85
Food Proc.	11.42	11.15	11.03	11	11	11.01
Paper	4.02	4	3.64	3.33	3.02	2.77
Other Non-Dur.	17.15	20.28	20.97	21.73	22.36	23.06
Non-Mfg. (private)	909.65	1,082.03	1,205.21	1,337.58	1,473.25	1,617.18
Natural Resources	1.67	1.97	1.7	1.58	1.46	1.44
Construction	74.43	93.52	104.9	120.5	135.97	155.05
Trade, Transport & Utilities	223.9	248.37	262.12	278.33	293.33	307.04
Wholesale Trade	62.63	69.4	73.97	78.45	82.77	86.21
Retail Trade	120.85	134.05	141.83	151.6	160.52	169.02
Auto parts	13.53	16.27	17.23	18.34	19.2	20.17
Food & Bev.	25.21	28.78	31.38	34.22	37.08	39.83
Other Retail	82.11	89	93.21	99.05	104.24	109.01
TWU	40.42	44.92	46.32	48.28	50.05	51.81
Information	26.35	31.28	35.65	39.55	43.63	47.65
Printing	11.84	15.08	18.19	21.22	24.2	26.85
Internet, etc.	14.51	16.21	17.46	18.33	19.43	20.8
Financial Activities	70.69	76.39	80.86	86.04	92.02	98.5
Finance & Insurance	45.4	47.73	50.29	53.72	58.05	62.79
Real Estate	25.29	28.66	30.57	32.32	33.97	35.71
Pro. Business	185.47	252.71	302.51	351.86	403.69	462.23
Pro., Sci., Tech.	71.87	90.55	103.59	117.39	132.09	148.33
Management of Companies	32.16	42.12	50.09	57.66	65.48	73.67
Admin & Waste Mgmt.	81.44	120.03	148.84	176.81	206.12	240.23
Edu. & Health	166.92	195.82	220.51	247.44	274.86	300.57
Education	32.41	34.56	35.25	37.5	39.82	41.85
Health Care	134.51	161.26	185.26	209.95	235.04	258.72
Leisure & Hospitality	117.1	131.33	140.04	149.32	158.91	168.11
Arts, Entertain. & Rec.	18.62	22.45	24.19	26.15	28.15	30.06
Accomm. & Food Ser.	98.48	108.88	115.84	123.17	130.76	138.05
Other Services	43.11	50.65	56.93	62.94	69.4	76.61
Social Orgs.	21.18	26.09	29.93	33.5	37.4	41.76
Other	21.93	24.55	26.99	29.45	32	34.84
Government, total	166.33	181.77	193.07	206.9	219.66	234.17
Military	7.61	7.71	7.76	7.84	7.89	7.95
Civilian Federal	18.89	19.49	19.21	20.95	21.26	22.93
State & Local	139.83	154.57	166.1	178.11	190.51	203.29

Medium Growth Scenario

Portland-Hillsboro-Vancouver, OR-WA MSA

	2015	2020	2025	2030	2035	2040
(in thousands)						
Nonfarm Employment, Civ. total	1,100.0	1,228.1	1,311.6	1,399.8	1,484.5	1,571.3
Private nonfarm emp.	946.8	1,061.0	1,134.2	1,210.1	1,283.2	1,356.9
Manufacturing, total	119.11	123.1	123.23	123	124.37	127.16
Durable Goods	90.21	93.57	94.43	94.76	96.74	100.01
Wood Products	4.2	4.62	4.36	4.16	3.91	3.77
Primary Metals	5.82	5.15	4.85	4.62	4.45	4.35
Fab. Metals	13.53	13.17	12.67	12.39	12.26	12.33
Machinery	8.89	8.64	8.3	8.13	7.97	7.9
Electronics	36.42	40.33	42.93	44.39	47.31	51.08
Computers	28.48	31.88	34.32	36.02	38.93	42.48
Oth. Elect.	7.94	8.45	8.62	8.37	8.39	8.6
Transport. Eq.	7.23	6.36	5.76	5.39	5.13	4.83
Oth. Durables	14.12	15.29	15.56	15.69	15.71	15.76
Non-Durable Goods	28.9	29.54	28.8	28.24	27.63	27.15
Food Proc.	10.39	9.82	9.6	9.53	9.5	9.5
Paper	3.3	3.03	2.62	2.31	2.01	1.79
Other Non-Dur.	15.21	16.68	16.58	16.41	16.12	15.86
Non-Mfg. (private)	827.69	937.9	1,011.01	1,087.06	1,158.79	1,229.74
Natural Resources	1.44	1.73	1.49	1.39	1.28	1.25
Construction	59.92	72.49	79.78	90.11	99.27	110.88
Trade, Transport & Utilities	211.47	231.36	243.28	256.98	269.18	279.43
Wholesale Trade	60.22	66.67	71.15	75.45	79.55	82.72
Retail Trade	113.41	123.25	129.7	137.66	144.63	150.66
Auto parts	12.03	13.81	14.76	15.64	16.33	17.05
Food & Bev.	22.5	24.57	26.21	28	29.67	30.93
Other Retail	78.88	84.87	88.73	94.03	98.64	102.69
TWU	37.84	41.44	42.44	43.86	45.01	46.05
Information	23.46	26.79	29.89	32.64	35.56	38.31
Printing	9.55	11.3	13.34	15.46	17.62	19.45
Internet, etc.	13.92	15.5	16.56	17.18	17.95	18.86
Financial Activities	65.66	68.26	70.15	72.6	75.54	78.74
Finance & Insurance	42.58	43.34	44.35	46	48.34	50.98
Real Estate	23.08	24.92	25.8	26.6	27.2	27.75
Pro. Business	161.58	196.35	217.42	235.18	251.66	270.47
Pro., Sci., Tech.	65.62	77.4	84.37	91.13	97.68	104.45
Management of Companies	27.6	33.44	37.44	40.68	43.6	46.35
Admin & Waste Mgmt.	68.37	85.51	95.6	103.38	110.39	119.67
Edu. & Health	155.44	176.68	193.55	211.05	227.46	240.78
Education	27.58	28.66	28.92	30.63	32.58	34.43
Health Care	127.86	148.02	164.62	180.42	194.88	206.34
Leisure & Hospitality	110.69	121.87	128.88	136.45	144.1	151.01
Arts, Entertain. & Rec.	16.66	19.09	19.78	20.78	21.83	22.73
Accomm. & Food Ser.	94.03	102.78	109.1	115.67	122.27	128.28
Other Services	38.02	42.37	46.57	50.66	54.72	58.88
Social Orgs.	17.24	19.25	21.26	23.16	24.98	26.73
Other	20.78	23.12	25.3	27.5	29.75	32.15
Government, total	159.86	173.66	183.84	196.31	207.94	221.08
Military	6.62	6.51	6.51	6.57	6.63	6.68
Civilian Federal	17.58	17.4	16.6	17.66	17.54	18.57
State & Local	135.67	149.75	160.73	172.07	183.77	195.83

Low Growth Scenario

Portland-Hillsboro-Vancouver, OR-WA MSA

	2015	2020	2025	2030	2035	2040
(in thousands)						
Nonfarm Employment, Civ. total	995.75	1048.92	1075.56	1101.69	1116.19	1123.62
Private nonfarm emp.	102.24	94.91	89.39	84.73	81	78.71
Manufacturing, total	102.24	94.91	89.39	84.73	81.01	78.73
Durable Goods	77.03	71.26	67.43	64.32	62.13	61.28
Wood Products	3.42	3.23	2.59	2.04	1.47	1
Primary Metals	4.95	3.95	3.64	3.39	3.17	2.99
Fab. Metals	12.81	12.26	11.65	11.11	10.69	10.39
Machinery	7.96	7.3	6.81	6.46	6.14	5.88
Electronics	31.15	30.03	29.77	29.68	30.19	31.57
Computers	24.6	24.16	24.37	24.75	25.71	27.37
Oth. Elect.	6.55	5.86	5.41	4.94	4.49	4.2
Transport. Eq.	4.46	1.81	-0.04	-1.32	-2.27	-3.09
Oth. Durables	12.28	12.68	13	12.94	12.75	12.53
Non-Durable Goods	25.21	23.65	21.96	20.41	18.88	17.45
Food Proc.	9.35	8.49	8.16	8.05	8	7.99
Paper	2.59	2.07	1.6	1.28	1.01	0.8
Other Non-Dur.	13.26	13.09	12.19	11.08	9.87	8.66
Non-Mfg. (private)	745.74	793.77	816.82	836.55	844.33	842.32
Natural Resources	1.2	1.49	1.29	1.19	1.09	1.06
Construction	45.41	51.46	54.65	59.72	62.58	66.72
Trade, Transport & Utilities	199.05	214.34	224.45	235.63	245.04	251.82
Wholesale Trade	57.81	63.93	68.32	72.46	76.33	79.23
Retail Trade	105.96	112.46	117.57	123.73	128.74	132.31
Auto parts	10.52	11.36	12.28	12.94	13.45	13.92
Food & Bev.	19.78	20.36	21.04	21.77	22.25	22.02
Other Retail	75.66	80.74	84.24	89.01	93.03	96.37
TWU	35.27	37.95	38.55	39.45	39.97	40.29
Information	20.58	22.3	24.14	25.73	27.5	28.97
Printing	7.25	7.52	8.48	9.71	11.04	12.06
Internet, etc.	13.32	14.79	15.66	16.02	16.46	16.91
Financial Activities	60.63	60.14	59.45	59.15	59.06	58.97
Finance & Insurance	39.76	38.95	38.41	38.27	38.64	39.17
Real Estate	20.88	21.18	21.04	20.88	20.42	19.79
Pro. Business	137.69	139.99	132.32	118.5	99.64	78.72
Pro., Sci., Tech.	59.37	64.25	65.16	64.86	63.26	60.57
Management of Companies	23.04	24.76	24.79	23.69	21.71	19.03
Admin & Waste Mgmt.	55.29	50.99	42.37	29.95	14.66	-0.88
Edu. & Health	143.96	157.54	166.58	174.66	180.07	180.99
Education	22.75	22.76	22.59	23.76	25.34	27.02
Health Care	121.21	134.79	143.99	150.89	154.73	153.97
Leisure & Hospitality	104.29	112.4	117.72	123.58	129.3	133.92
Arts, Entertain. & Rec.	14.7	15.73	15.36	15.41	15.51	15.4
Accomm. & Food Ser.	89.58	96.68	102.36	108.17	113.79	118.52
Other Services	32.93	34.1	36.21	38.38	40.05	41.16
Social Orgs.	13.3	12.4	12.59	12.82	12.56	11.69
Other	19.63	21.69	23.62	25.56	27.49	29.46
Government, total	153.4	165.55	174.61	185.72	196.21	207.99
Military	5.63	5.31	5.26	5.31	5.36	5.42
Civilian Federal	16.26	15.3	14	14.37	13.83	14.2
State & Local	131.51	144.94	155.35	166.04	177.02	188.37

Location Quotients

Portland-Hillsboro-Vancouver, OR-WA MSA

	1990	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
Manufacturing, total	1.06	1.09	1.12	1.18	1.24	1.22	1.19	1.18	1.19	1.21	1.25
Durable Goods, total	1.24	1.29	1.34	1.42	1.51	1.44	1.39	1.4	1.43	1.48	1.54
Wood Products	2.19	1.53	1.3	1.43	1.38	1.06	1.01	1	0.97	0.94	0.92
Primary Metal	1.85	1.46	1.68	1.75	2.03	1.86	1.47	1.38	1.43	1.55	1.79
Fabricated Metal	1	1.13	1.06	1.12	1.17	1.11	0.97	0.91	0.92	0.93	0.93
Machinery	0.98	1.01	0.97	0.98	0.95	0.98	0.87	0.82	0.83	0.87	0.91
Electrical Machinery	2.22	2.69	3.07	3.77	4.08	4.32	4.39	4.5	4.68	4.78	4.85
Transportation Equipment	0.67	0.67	0.74	0.69	0.63	0.59	0.52	0.5	0.47	0.44	0.43
Non-durable Goods, total	0.77	0.79	0.76	0.77	0.82	0.83	0.81	0.78	0.76	0.75	0.74
Food Processing	0.95	0.86	0.77	0.79	0.88	0.89	0.76	0.7	0.66	0.64	0.62
Paper	1.74	1.54	1.46	1.4	1.23	1.13	0.97	0.83	0.7	0.59	0.52
Non-manufacturing, total	1.02	1.02	1.01	1.01	1	1	1.01	1.01	1.01	1.01	1
Natural Resources	0.4	0.44	0.42	0.38	0.2	0.2	0.22	0.18	0.17	0.15	0.14
Construction	1.05	1.19	1.06	1.08	1.09	1.16	1.1	1.09	1.09	1.11	1.12
Retail Trade	0.94	0.92	0.95	0.93	0.94	0.94	0.97	1.01	1.02	1.02	1.02
Motor Vehicle & Parts	1.09	1.04	1.04	1	0.94	0.84	0.95	1	1.03	1.04	1.05
Food & Beverage Stores	0.82	0.8	0.85	0.89	0.95	0.98	1.05	1.11	1.16	1.2	1.23
Other Retail	0.95	0.94	0.96	0.93	0.94	0.95	0.96	0.98	0.98	0.98	0.96
Transp., Warehouse, & Utilities	1.13	1.08	1.04	1.02	0.94	0.92	0.87	0.85	0.84	0.85	0.88
Information, total	0.9	0.93	0.97	1.03	1.11	1.12	1.11	1.11	1.14	1.14	1.12
Publishing	0.77	0.99	1.27	1.37	1.6	1.75	2.03	2.42	2.72	2.94	3.06
Internet & Other	0.96	0.9	0.85	0.88	0.92	0.9	0.83	0.77	0.75	0.71	0.68
Finance Activities	1.13	1.12	1.13	1.13	1.08	1.06	1.07	1.06	1.05	1.03	1.03
Finance & Insurance	0.9	0.9	0.98	0.98	0.93	0.93	0.94	0.9	0.89	0.87	0.86
Real Estate	1.83	1.76	1.57	1.55	1.52	1.44	1.44	1.49	1.54	1.55	1.57
Pro. Business Services	1.07	1.13	1.06	1.03	1.02	1.03	1.05	1.01	0.97	0.94	0.91
Pro., Sci., & Tech.	1.2	1.2	0.98	0.95	0.96	0.98	1.03	0.94	0.86	0.8	0.75
Mgmt. of Companies	0.92	1.23	1.52	1.56	1.66	1.73	1.97	2.22	2.49	2.75	3.01
Admin. Support	1	1.05	1.02	0.99	0.93	0.92	0.9	0.88	0.87	0.85	0.84
Edu. & Health Care	1	0.91	0.92	0.94	0.96	0.94	0.94	0.96	0.97	0.97	0.97
Educational	1.04	0.97	1.02	1.01	1.06	1.07	1.09	1.14	1.18	1.2	1.22
Health Care	1	0.9	0.9	0.92	0.94	0.91	0.91	0.94	0.95	0.94	0.93
Leisure & Hospitality	1.03	1	0.98	0.96	0.97	0.97	0.98	1	1.01	1	0.99
Arts, Entertainment & Rec.	1.31	1.12	0.99	0.95	0.96	1.05	1.12	1.12	1.04	0.98	0.95
Accommodation & Food	0.99	0.99	0.98	0.96	0.97	0.96	0.96	0.98	1	1.01	1
Other Services	0.9	0.88	0.88	0.87	0.87	0.89	0.95	1.01	1.03	1.07	1.11
Government, Civilian total	0.92	0.87	0.9	0.9	0.92	0.92	0.91	0.89	0.89	0.9	0.91
Federal, Civilian											
State & Local	0.84	0.82	0.84	0.85	0.89	0.9	0.89	0.87	0.89	0.9	0.92

Personal Income (includes nominal and inflation adjusted fig.)

Portland-Hillsboro-Vancouver, OR-WA MSA

	1975	1980	1985	1990	1995	2000	2005
(annualized percent change)							
Personal Income (MSA)	11.36	13.26	6.73	8.19	7.5	7.55	3.33
+ Wage Disbursement	10.04	13.16	4.78	8.71	7.41	8.59	2.62
- Social Ins. Contribution	15.93	15.53	8.21	9.91	7.94	7.41	2.94
+ Transfer Payments	17.95	10.47	8.82	5.88	8.32	5.91	6.63
+ Other Labor Income	17.06	17.79	7.75	8.16	7.84	6.63	5.29
+ Farm Proprietors Inc.	10.37	-2.6	5.83	19.69	-12.15	-32.26	55.54
+ Bus. Proprietors Inc.	9.17	11.47	5.77	10.47	7.61	9.47	3.84
+ Div., Interest, & Rent	10.84	16.89	11.73	7.95	7.67	5.57	1.6
+ Res. Adjustment	94.81	-163.04	241.98	1.17	-20.49	-244.33	19.65
Personal Income (MSA)							
(in millions)	$8,028	$14,963	$20,724	$30,720	$44,100	$63,463	$74,750
% change	11.36	13.26	6.73	8.19	7.5	7.55	3.33
inflation adjusted (2000$)	$26,642	$30,530	$34,716	$42,406	$50,602	$62,696	$67,043
% change	4.4	2.76	2.6	4.08	3.6	4.38	1.35
Per Capita Income (MSA)	$6,738	$11,183	$15,003	$20,159	$25,212	$32,918	$35,923
% change	9.24	10.66	6.05	6.09	4.58	5.48	1.76
inflation adjusted (2000$)	$22,502	$22,758	$25,040	$27,833	$28,931	$32,521	$32,221
% change	2.57	0.23	1.93	2.14	0.78	2.37	-0.19
Average Household Inc. (MSA)				$51,796	$64,888	$85,000	$93,229
% change					4.61	5.55	1.87
inflation adjusted (2000$)				$72,376	$75,371	$85,000	$84,643
% change					0.81	2.43	-0.08
U.S. Personal Income Components - Nominal Levels							
(annualized percent change)							
Personal Income	9.74	11.51	8.72	6.75	5.06	6.58	4.21
+ Wage Disbursement	8.11	11.01	7.62	6.69	4.51	7.14	3.36
- Social Ins. Contribution	14.05	13.21	11.08	7.82	5.38	5.79	4.36
+ Transfer Payments	17.88	10.46	8.74	6.96	8.12	4.26	6.9
+ Other Labor Income	15.94	16.16	8.73	6.11	5.67	5.66	7.12
+ Farm Proprietors Inc.	11.24	-11.84	12.38	8.93	-7.3	7.4	8.06
+ Bus. Proprietors Inc.	8.29	10.63	6.83	8.15	7.49	9.45	5.13
+ Div., Interest, & Rent	10.2	14.65	13.51	6.88	3.97	5.7	3.06

Personal Income (includes nominal and inflation adjusted fig.)

Portland-Hillsboro-Vancouver, OR-WA MSA

	2010	2015	2020	2025	2030	2035	2040
(annualized percent change)							
Personal Income (MSA)	3.3	5.19	6.12	4.81	4.57	4.45	4.44
+ Wage Disbursement	2.51	5.02	5.44	4.6	4.59	4.44	4.43
- Social Ins. Contribution	2.54	5.67	6.37	4.87	4.49	4.32	4.33
+ Transfer Payments	10.52	3.09	5.03	5.35	5.42	4.98	4.73
+ Other Labor Income	2.33	4.79	5.76	4.73	4.53	4.59	4.63
+ Farm Proprietors Inc.	-197.69	11.33	1.12	2.17	2.19	3.2	5.21
+ Bus. Proprietors Inc.	0.23	5.67	5.57	4.9	4.87	4.61	4.36
+ Div., Interest, & Rent	2.16	7.97	9.31	4.99	3.81	3.88	4.08
+ Res. Adjustment	14.41	-35.97	-5.38	-4.62	-4.63	-4.5	-4.47
Personal Income (MSA)							
(in millions)	$87,940	$113,240	$152,425	$192,794	$241,065	$299,650	$372,295
% change	3.3	5.19	6.12	4.81	4.57	4.45	4.44
inflation adjusted (2000$)	$70,804	$84,083	$102,933	$118,531	$134,748	$151,602	$169,905
% change	1.1	3.5	4.13	2.86	2.6	2.39	2.31
Per Capita Income (MSA)	$39,505	$48,339	$60,503	$72,155	$85,660	$101,990	$121,975
% change	1.92	4.12	4.59	3.59	3.49	3.55	3.64
inflation adjusted (2000$)	$31,807	$35,893	$40,858	$44,362	$47,882	$51,601	$55,667
% change	-0.26	2.45	2.63	1.66	1.54	1.51	1.53
Average Household Inc. (MSA	$102,569	$126,311	$155,397	$182,574	$214,136	$252,377	$299,264
% change	1.93	4.25	4.23	3.28	3.24	3.34	3.47
inflation adjusted (2000$)	$83,593	$94,222	$105,425	$112,765	$120,247	$128,274	$137,206
% change	-0.25	2.42	2.27	1.36	1.29	1.3	1.36
U.S. Personal Income Compor							
(annualized percent change)							
Personal Income	3.23	4.5	5.02	4.32	4.39	4.32	4.35
+ Wage Disbursement	2.3	4.12	4.64	4	4.32	4.2	4.26
- Social Ins. Contribution	2.41	4.76	5.44	4.32	4.31	4.2	4.25
+ Transfer Payments	8.53	3.36	4.84	5.34	5.41	5.01	4.77
+ Other Labor Income	2.99	2.69	4.68	3.79	3.98	4.03	4.2
+ Farm Proprietors Inc.	-0.16	16.9	-1.12	-2.17	-2.19	-3.2	-5.21
+ Bus. Proprietors Inc.	1.13	6.58	4.69	4.76	5.12	4.91	4.67
+ Div., Interest, & Rent	2.34	6.36	6.71	4.39	3.58	3.83	4.11

Personal Income (includes nominal and inflation adjusted fig.)

Portland-Hillsboro-Vancouver, OR-WA MSA

	1975	1980	1985	1990	1995	2000	2005
U.S. Personal Income							
(in billions)	$1,335	$2,302	$3,497	$4,847	$6,276	$8,633	$10,610
% change	9.74	11.51	8.72	6.75	5.06	6.58	4.21
inflation adjusted (2000$)	$4,270	$4,810	$5,596	$6,387	$7,092	$8,633	$9,356
% change	2.81	2.41	3.07	2.68	1.87	4.01	1.62
U.S. Per Capita Income	$6,173	$10,095	$14,646	$19,341	$23,509	$30,527	$35,790
% change	8.62	10.34	7.73	5.72	3.73	5.36	3.23
inflation adjusted (2000$)	$19,750	$21,101	$23,438	$25,489	$26,565	$30,527	$31,560
% change	1.76	1.33	2.12	1.69	0.59	2.82	0.67
U.S. Avg. Household Inc.	$18,442	$28,099	$39,757	$51,425	$62,150	$80,665	$93,663
% change	7.24	8.79	7.19	5.28	3.72	5.35	3.03
inflation adjusted (2000$)	$58,999	$58,729	$63,623	$67,772	$70,229	$80,665	$82,594
% change	0.47	-0.09	1.61	1.27	0.58	2.81	0.47
U.S. Consumer Price Index	53.8	82.4	107.6	130.7	152.4	172.2	195.3

Personal Income (includes nominal and inflation adjusted fig.)

Portland-Hillsboro-Vancouver, OR-WA MSA

	2010	2015	2020	2025	2030	2035	2040
U.S. Personal Income							
(in billions)	$12,435	$15,494	$19,790	$24,454	$30,315	$37,452	$46,332
% change	3.23	4.5	5.02	4.32	4.39	4.32	4.35
inflation adjusted (2000$)	$9,818	$11,101	$12,870	$14,443	$16,227	$18,068	$20,082
% change	0.97	2.49	3	2.33	2.36	2.17	2.14
U.S. Per Capita Income	$40,105	$48,128	$59,169	$70,476	$84,437	$101,170	$121,757
% change	2.3	3.71	4.22	3.56	3.68	3.68	3.77
inflation adjusted (2000$)	$31,666	$34,481	$38,478	$41,624	$45,198	$48,807	$52,774
% change	0.07	1.72	2.22	1.58	1.66	1.55	1.57
U.S. Avg. Household Inc.	$106,166	$124,906	$150,952	$178,222	$210,815	$250,002	$297,221
% change	2.54	3.3	3.86	3.38	3.42	3.47	3.52
inflation adjusted (2000$)	$83,825	$89,488	$98,166	$105,261	$112,847	$120,608	$128,826
% change	0.3	1.32	1.87	1.41	1.4	1.34	1.33
U.S. Consumer Price Index	218.1	240.3	264.8	291.5	321.7	356.9	397.3

Industry Wage Rates (nominal dollars)

Portland-Hillsboro-Vancouver, OR-WA MSA

	1980	1985	1990	1995	2000	2005	2010
Hourly Wage Rates (annualized percent change)							
Lumber & Wood Products		2.3	3.1	5.6	2.6	6.7	0.7
Primary Metal Mfg.		3.4	4.2	3	4	5.3	3.1
Fabricated Metal Mfg.		2.9	3.3	3	4	2.7	3
Machinery Mfg.		4.5	4.2	3.7	6.3	3.9	3.1
Computer & Electronics		6.9	5.6	9	12.5	-2	5
Transportation Equipment		5	3.1	2.2	5.3	-0.2	4.7
Other Durables		4.2	3.3	3.8	3.9	3.6	2.7
Food Manufacturing		2.6	1.5	3.9	4	2.2	1.2
Paper Manufacturing		6.3	1.8	4.1	1.8	3.2	0.2
Other Nondurables		3.2	3.9	3.7	4.3	1.3	2.5
Wholesale Trade		3.5	4.1	4.7	6.3	3.7	3
Retail Trade		3.1	2.7	4.1	4.1	2	1.1
Transport., Warehousing & Util.		2.2	3.6	2.4	5.2	-0.5	2.5
Information		6.2	3.5	5.6	7.8	3.6	3.3
Finance & Insurance		6.1	6	5.5	5.3	6.5	1.9
Real Estate Rental & Leasing		3.9	4.7	3.6	5.5	6.9	0.2
Pro., Sci., & Tech. Services		6.8	7.8	4.2	5.7	-1.9	3.3
Management of Co.		3.8	7.3	4.2	12.7	-3.8	1.2
Admin. & Waste Support		4.1	1.1	3.7	6.3	1.6	3.4
Educational Services		4.5	3.7	3.9	3.5	2.8	3.1
Health Services		6.2	5	4.5	3.6	1.3	2.8
Federal Govt., Civilian		6.9	4.3	5	2.8	5.6	3.3
State & Local Govt.		7.8	2.5	4.2	3.3	3.9	2.9
Industry Hourly Wage Rates (nominal dollars)							
Lumber & Wood Products	7.02	7.87	9.15	12.05	13.66	18.89	19.56
Primary Metal Mfg.	10.55	12.44	15.25	17.69	21.56	27.87	32.46
Fabricated Metal Mfg.	9	10.37	12.22	14.19	17.29	19.75	22.84
Machinery Mfg.	9.03	11.24	13.81	16.59	22.57	27.35	31.92
Computer & Electronics	8.81	12.32	16.15	24.8	44.7	40.42	51.56
Transportation Equipment	10.71	13.65	15.86	17.71	22.96	22.76	28.57
Other Durables	7.53	9.26	10.9	13.11	15.84	18.91	21.57
Food Manufacturing	8.56	9.74	10.49	12.73	15.45	17.2	18.22
Paper Manufacturing	11.32	15.35	16.76	20.45	22.41	26.22	26.44
Other Nondurables	8.22	9.62	11.64	13.94	17.21	18.33	20.78
Wholesale Trade	10.1	11.97	14.64	18.38	24.9	29.84	34.52
Retail Trade	5.67	6.6	7.55	9.23	11.31	12.48	13.16

Industry Wage Rates (nominal dollars)

Portland-Hillsboro-Vancouver, OR-WA MSA

	2015	2020	2025	2030	2035	2040	2040
Hourly Wage Rates (annualized percent change)							
Lumber & Wood Products	3	1.9	2.4	2.6	2.6	2.6	2.6
Primary Metal Mfg.	0.8	3.1	3	2.7	2.5	2.4	2.4
Fabricated Metal Mfg.	1.2	2.1	2.3	2.3	2.2	2.2	2.2
Machinery Mfg.	4.1	3.9	3.8	3.8	3.6	3.6	3.6
Computer & Electronics	3.5	5	5.2	4.9	4.9	4.7	4.7
Transportation Equipment	0.6	2.7	2.4	2.3	2.2	2.2	2.2
Other Durables	1.5	2.4	2.5	2.5	2.5	2.4	2.4
Food Manufacturing	1.5	1.9	1.9	1.9	1.9	1.9	1.9
Paper Manufacturing	2	2.4	2.3	2.4	2.3	2.3	2.3
Other Nondurables	1.6	2.3	2.3	2.3	2.2	2.2	2.2
Wholesale Trade	3.1	3.2	3.4	3.4	3.4	3.4	3.4
Retail Trade	2	2.6	2.3	2.3	2.2	2.2	2.2
Transport., Warehousing & Util.	0.9	2	1.8	1.8	1.8	1.7	1.7
Information	2.3	4.3	3.9	3.9	3.8	3.8	3.8
Finance & Insurance	3.6	3.9	3.8	3.9	3.7	3.7	3.7
Real Estate Rental & Leasing	2.7	3.6	3.7	3.5	3.5	3.4	3.4
Pro., Sci., & Tech. Services	1.9	4	3.4	3.1	3	3.1	3.1
Management of Co.	4.5	4.5	3.4	3.3	3.2	3.2	3.2
Admin. & Waste Support	2.1	2.4	2.5	2.5	2.5	2.5	2.5
Educational Services	1.7	2.8	2.8	2.7	2.7	2.6	2.6
Health Services	2.3	2.9	2.8	2.7	2.6	2.6	2.6
Federal Govt., Civilian	2.9	2.6	2.9	3.8	3.5	3.6	3.6
State & Local Govt.	3.2	2.8	3.1	3.2	3.1	3.1	3.1
Industry Hourly Wage Rates (nominal dollars)							
Lumber & Wood Products	22.67	24.93	28.04	31.91	36.29	41.23	41.23
Primary Metal Mfg.	33.79	39.45	45.66	52.14	58.9	66.26	66.26
Fabricated Metal Mfg.	24.27	26.98	30.16	33.76	37.71	42.06	42.06
Machinery Mfg.	39.04	47.19	56.84	68.37	81.74	97.75	97.75
Computer & Electronics	61.21	78.11	100.42	127.64	161.91	204.14	204.14
Transportation Equipment	29.51	33.75	37.91	42.47	47.43	52.9	52.9
Other Durables	23.27	26.26	29.75	33.71	38.07	42.93	42.93
Food Manufacturing	19.66	21.64	23.83	26.25	28.83	31.64	31.64
Paper Manufacturing	29.14	32.89	36.9	41.53	46.64	52.37	52.37
Other Nondurables	22.47	25.2	28.22	31.6	35.28	39.33	39.33
Wholesale Trade	40.3	47.13	55.58	65.81	77.72	91.68	91.68
Retail Trade	14.51	16.48	18.45	20.62	23.01	25.64	25.64

Industry Wage Rates (nominal dollars)

Portland-Hillsboro-Vancouver, OR-WA MSA

	1980	1985	1990	1995	2000	2005	2010
Transport., Warehousing & Util.	10.38	11.55	13.75	15.51	19.96	19.42	21.95
Information	8.17	11.01	13.07	17.18	25.03	29.92	35.23
Finance & Insurance	7.03	9.43	12.61	16.51	21.39	29.33	32.25
Real Estate Rental & Leasing	5.26	6.36	8.01	9.55	12.5	17.42	17.64
Pro., Sci., & Tech. Services	7.45	10.34	15.09	18.57	24.54	22.26	26.2
Management of Co.	11.22	13.54	19.3	23.66	43.08	35.51	37.75
Admin. & Waste Support	5.4	6.61	6.98	8.38	11.34	12.27	14.51
Educational Services	5.56	6.91	8.28	10.01	11.9	13.63	15.88
Health Services	7.1	9.59	12.21	15.22	18.16	19.33	22.22
Federal Govt., Civilian	13.25	18.53	22.92	29.21	33.59	44.19	52.06
State & Local Govt.	8.28	12.08	13.67	16.76	19.74	23.95	27.67
U.S. Consumer Price Index	82.4	107.6	130.7	152.4	172.2	195.3	218.1

Industry Wage Rates (nominal dollars)

Portland-Hillsboro-Vancouver, OR-WA MSA

	2015	2020	2025	2030	2035	2040	2040
Transport., Warehousing & Util.	22.91	25.32	27.71	30.31	33.07	36.04	36.04
Information	39.53	48.88	59.29	71.8	86.59	104.2	104.2
Finance & Insurance	38.49	46.67	56.35	68.09	81.84	98.18	98.18
Real Estate Rental & Leasing	20.15	24.02	28.83	34.3	40.73	48.17	48.17
Pro., Sci., & Tech. Services	28.72	34.9	41.33	48.1	55.8	64.85	64.85
Management of Co.	47.06	58.66	69.19	81.42	95.4	111.54	111.54
Admin. & Waste Support	16.09	18.11	20.47	23.21	26.28	29.73	29.73
Educational Services	17.25	19.79	22.76	26.05	29.74	33.87	33.87
Health Services	24.94	28.79	32.99	37.73	42.99	48.9	48.9
Federal Govt., Civilian	60.06	68.39	79.05	95.23	113.24	135.13	135.13
State & Local Govt.	32.4	37.13	43.3	50.76	59.19	69.01	69.01
U.S. Consumer Price Index	240.3	264.8	291.5	321.7	356.9	397.3	397.3

Annual Employment (Portland MSA and U.S.)

Manufacturing employment sectors

	2000	2001	2002	2003	2004	2005	2006	2007
Total Nonfarm Wage and Salary Jobs, TOTAL								
Portland PMSA	973.8	966.5	945.0	935.2	955.6	985.1	1,017.0	1,036.6
%ch	2.4	-0.75	-2.23	-1.04	2.19	3.09	3.24	1.93
U.S.	111.1	110.8	108.94	108.52	109.88	111.93	114.15	115.42
%ch	2.13	-0.27	-1.68	-0.39	1.25	1.87	1.98	1.11
Manufacturing, TOTAL								
Portland PMSA	143.32	135.86	123.82	118.11	120.22	123.42	126.62	126.06
%ch	1.1	-5.21	-8.86	-4.61	1.78	2.66	2.59	-0.44
U.S.	17.27	16.44	15.26	14.51	14.31	14.23	14.16	13.88
%ch	-0.33	-4.78	-7.2	-4.9	-1.34	-0.62	-0.49	-1.97
Durable Goods, total								
Portland PMSA	107.55	102.26	92.8	87.93	90.05	93.61	96.38	95.71
%ch	2.09	-4.92	-9.25	-5.25	2.41	3.96	2.96	-0.69
U.S.	10.88	10.34	9.48	8.96	8.92	8.95	8.98	8.81
%ch	0.43	-4.99	-8.24	-5.49	-0.43	0.34	0.3	-1.94
Wood Products								
Portland PMSA	5.91	5.68	5.54	5.53	5.69	5.88	5.95	5.58
%ch	-3.17	-3.81	-2.49	-0.29	3.01	3.36	1.12	-6.17
U.S.	0.62	0.58	0.56	0.54	0.55	0.56	0.56	0.52
%ch	-1.18	-6.35	-3.35	-3.17	2.29	1.71	-0.08	-7.8
Primary Metals								
Portland PMSA	7.73	6.69	6.26	5.58	5.72	6.01	6.29	6.57
%ch	-2.9	-13.46	-6.46	-10.79	2.38	5.09	4.71	4.5
U.S.	0.62	0.57	0.51	0.48	0.47	0.47	0.46	0.46
%ch	-0.51	-8.26	-10.79	-6.26	-2.18	-0.16	-0.52	-1.75
Fabricated Metals								
Portland PMSA	13.67	12.71	11.97	11.51	11.87	12.52	12.93	13.31
%ch	0.73	-7.07	-5.77	-3.9	3.12	5.54	3.26	2.96
U.S.	1.75	1.68	1.55	1.48	1.5	1.52	1.55	1.56
%ch	1.44	-4.35	-7.64	-4.51	1.21	1.68	2.03	0.62
Machinery Mfg.								
Portland PMSA	10.44	9.9	8.78	8.43	8.26	8.38	8.38	8.59
%ch	2.97	-5.19	-11.28	-3.99	-2.07	1.52	0.01	2.49
U.S.	1.46	1.37	1.23	1.15	1.15	1.16	1.18	1.19
%ch	-0.78	-5.95	-10.13	-6.48	-0.58	1.69	1.58	0.35
Computer & Electronics								
Portland PMSA	41.22	42.72	37.68	34.69	35.63	36.48	37.7	36.88
%ch	7.33	3.64	-11.8	-7.94	2.71	2.41	3.33	-2.19
U.S.	1.82	1.75	1.51	1.36	1.32	1.32	1.31	1.27
%ch	2.22	-3.93	-13.81	-10.1	-2.41	-0.46	-0.69	-2.68

Annual Employment (Portland MSA and U.S.)

Manufacturing employment sectors

	2008	2009	2010	2011	2012	2013	2014	2015
Total Nonfarm Wage and Sala								
Portland PMSA	1,036.0	975.6	968.8	987.5	1,006.5	1,026.9	1,067.1	1,100.0
%ch	-0.06	-5.83	-0.54	1.93	1.92	2.03	3.92	3.08
U.S.	114.35	108.31	107.42	109.41	111.82	114.06	116.12	118.44
%ch	-0.93	-5.28	-0.82	1.85	2.21	2	1.81	2
Manufacturing, TOTAL								
Portland PMSA	123.16	109.08	107.02	111.05	114.18	115.58	118.38	119.11
%ch	-2.3	-11.43	-1.9	3.76	2.82	1.23	2.42	0.61
U.S.	13.4	11.85	11.53	11.73	11.92	11.98	12.21	12.44
%ch	-3.41	-11.62	-2.69	1.72	1.65	0.48	1.93	1.85
Durable Goods, total								
Portland PMSA	93.54	81.72	79.64	83.36	86.09	87.37	89.72	90.21
%ch	-2.27	-12.64	-2.55	4.67	3.27	1.49	2.69	0.55
U.S.	8.46	7.28	7.06	7.27	7.46	7.52	7.75	8
%ch	-3.91	-13.94	-3.03	2.97	2.63	0.78	3.03	3.2
Wood Products								
Portland PMSA	4.82	3.73	3.53	3.28	3.38	3.42	3.68	4.2
%ch	-13.58	-22.61	-5.6	-7.04	3.26	1.02	7.62	14.22
U.S.	0.46	0.36	0.34	0.34	0.34	0.35	0.4	0.5
%ch	-11.45	-21.34	-5.02	-1.55	0.45	2.9	15.72	25.21
Primary Metals								
Portland PMSA	7.07	5.84	5.47	5.72	6.07	6.21	6.02	5.82
%ch	7.48	-17.34	-6.29	4.57	5.97	2.43	-3.07	-3.45
U.S.	0.44	0.36	0.36	0.39	0.4	0.39	0.4	0.4
%ch	-3.02	-18.04	0.04	7.2	3.47	-1.82	0.76	0.74
Fabricated Metals								
Portland PMSA	13.43	11.07	11.17	11.92	12.48	12.99	13.38	13.53
%ch	0.89	-17.55	0.79	6.73	4.75	4.06	3.02	1.13
U.S.	1.53	1.31	1.28	1.35	1.41	1.44	1.49	1.56
%ch	-2.24	-14.12	-2.29	5.14	4.73	1.81	3.72	4.44
Machinery Mfg.								
Portland PMSA	8.33	7	7.08	7.72	7.94	8.29	8.72	8.89
%ch	-3	-16	1.16	8.94	2.92	4.35	5.23	1.94
U.S.	1.19	1.03	1	1.06	1.1	1.1	1.13	1.16
%ch	0.04	-13.34	-3.21	5.97	4.04	0.58	2.42	2.47
Computer & Electronics								
Portland PMSA	35.92	33.85	33.27	34.7	35.37	35.86	36.96	36.42
%ch	-2.6	-5.76	-1.73	4.3	1.92	1.4	3.05	-1.46
U.S.	1.24	1.14	1.09	1.1	1.09	1.08	1.09	1.08
%ch	-2.2	-8.64	-3.73	0.82	-0.87	-0.97	0.76	-1.36

Annual Employment (Portland MSA and U.S.)

Manufacturing employment sectors

	2016	2017	2018	2019	2020	2021	2022	2023
Total Nonfarm Wage and Sala								
Portland PMSA	1,131.9	1,159.5	1,183.0	1,206.4	1,228.1	1,244.9	1,261.4	1,278.8
%ch	2.89	2.44	2.03	1.97	1.81	1.36	1.32	1.38
U.S.	120.95	123.07	124.54	125.6	126.29	126.83	127.38	127.95
%ch	2.12	1.75	1.19	0.85	0.55	0.43	0.43	0.44
Manufacturing, TOTAL								
Portland PMSA	119.24	120.24	121.44	122.46	123.1	123.38	123.63	123.99
%ch	0.11	0.84	1	0.84	0.53	0.22	0.21	0.29
U.S.	12.59	12.66	12.69	12.7	12.65	12.57	12.46	12.4
%ch	1.26	0.56	0.21	0.07	-0.41	-0.63	-0.81	-0.53
Durable Goods, total								
Portland PMSA	90.07	90.86	91.93	92.89	93.57	93.98	94.42	94.93
%ch	-0.15	0.88	1.17	1.04	0.73	0.44	0.47	0.54
U.S.	8.17	8.24	8.24	8.24	8.21	8.15	8.08	8.05
%ch	2.18	0.79	0.02	0.08	-0.48	-0.7	-0.8	-0.46
Wood Products								
Portland PMSA	4.57	4.63	4.61	4.63	4.62	4.55	4.47	4.42
%ch	8.7	1.33	-0.47	0.44	-0.13	-1.47	-1.77	-1.24
U.S.	0.57	0.56	0.55	0.56	0.55	0.54	0.52	0.52
%ch	12.04	-0.43	-1.99	0.88	-0.31	-2.62	-2.95	-1.51
Primary Metals								
Portland PMSA	5.55	5.4	5.3	5.22	5.15	5.09	5.03	4.97
%ch	-4.5	-2.85	-1.86	-1.39	-1.28	-1.26	-1.2	-1.13
U.S.	0.41	0.42	0.43	0.43	0.43	0.42	0.42	0.42
%ch	2.37	2.82	1.36	0.5	-0.29	-0.8	-0.84	-0.5
Fabricated Metals								
Portland PMSA	13.58	13.55	13.42	13.28	13.17	13.05	12.92	12.81
%ch	0.35	-0.23	-0.96	-1.01	-0.87	-0.92	-1	-0.8
U.S.	1.61	1.64	1.64	1.64	1.65	1.65	1.66	1.66
%ch	3.61	1.68	-0.12	0.28	0.47	0.26	0.08	0.16
Machinery Mfg.								
Portland PMSA	8.89	8.86	8.77	8.7	8.64	8.57	8.48	8.41
%ch	-0.01	-0.38	-0.91	-0.86	-0.71	-0.75	-1.03	-0.88
U.S.	1.19	1.2	1.21	1.21	1.21	1.21	1.2	1.2
%ch	2.27	1.62	0.28	0.25	-0.07	-0.23	-0.47	-0.25
Computer & Electronics								
Portland PMSA	35.95	36.84	38.22	39.4	40.33	41.13	42.02	42.87
%ch	-1.3	2.48	3.76	3.06	2.38	1.97	2.16	2.03
U.S.	1.05	1.06	1.08	1.11	1.12	1.13	1.14	1.15
%ch	-2.25	0.7	2.38	1.88	1.3	0.87	0.85	0.77

Annual Employment (Portland MSA and U.S.)

Manufacturing employment sectors

	2024	2025	2026	2027	2028	2029	2030	2031
Total Nonfarm Wage and Sala								
Portland PMSA	1,295.7	1,311.6	1,328.8	1,346.4	1,363.3	1,380.6	1,399.8	1,417.3
%ch	1.33	1.22	1.31	1.32	1.26	1.27	1.39	1.25
U.S.	128.56	129.3	130.18	131.12	132.13	133.13	134.16	135.11
%ch	0.48	0.58	0.68	0.73	0.77	0.76	0.77	0.71
Manufacturing, TOTAL								
Portland PMSA	123.94	123.23	123.09	123.13	122.98	122.91	123	123.1
%ch	-0.04	-0.57	-0.12	0.03	-0.12	-0.06	0.07	0.08
U.S.	12.3	12.21	12.13	12.04	11.94	11.84	11.75	11.67
%ch	-0.76	-0.78	-0.64	-0.74	-0.82	-0.87	-0.77	-0.64
Durable Goods, total								
Portland PMSA	95	94.43	94.41	94.58	94.55	94.59	94.76	94.96
%ch	0.07	-0.6	-0.02	0.17	-0.02	0.03	0.18	0.21
U.S.	7.97	7.9	7.84	7.78	7.7	7.61	7.54	7.48
%ch	-0.89	-0.93	-0.72	-0.85	-1.01	-1.15	-0.98	-0.76
Wood Products								
Portland PMSA	4.37	4.36	4.35	4.3	4.22	4.17	4.16	4.12
%ch	-1	-0.31	-0.2	-1.11	-1.83	-1.14	-0.45	-0.85
U.S.	0.51	0.51	0.51	0.51	0.49	0.49	0.49	0.49
%ch	-1.17	0.17	0.41	-1.41	-2.37	-1.27	0.18	-0.44
Primary Metals								
Portland PMSA	4.93	4.85	4.8	4.76	4.72	4.66	4.62	4.59
%ch	-0.94	-1.47	-1.08	-0.77	-1.01	-1.13	-0.92	-0.66
U.S.	0.42	0.41	0.4	0.4	0.39	0.38	0.37	0.36
%ch	-0.8	-1.15	-1.67	-2.1	-2.49	-2.47	-2.54	-2.42
Fabricated Metals								
Portland PMSA	12.73	12.67	12.62	12.56	12.49	12.42	12.39	12.38
%ch	-0.64	-0.51	-0.38	-0.46	-0.56	-0.56	-0.28	-0.07
U.S.	1.65	1.63	1.62	1.59	1.57	1.55	1.53	1.52
%ch	-0.55	-0.9	-1.14	-1.43	-1.45	-1.51	-1.23	-0.76
Machinery Mfg.								
Portland PMSA	8.35	8.3	8.27	8.23	8.2	8.16	8.13	8.11
%ch	-0.7	-0.62	-0.42	-0.38	-0.45	-0.49	-0.36	-0.19
U.S.	1.19	1.19	1.18	1.16	1.15	1.13	1.11	1.09
%ch	-0.48	-0.62	-0.87	-1.24	-1.31	-1.64	-1.7	-1.55
Computer & Electronics								
Portland PMSA	43.23	42.93	43.1	43.49	43.75	44.05	44.39	44.71
%ch	0.83	-0.68	0.4	0.88	0.6	0.68	0.78	0.72
U.S.	1.14	1.12	1.1	1.1	1.09	1.08	1.08	1.08
%ch	-0.73	-1.91	-1.15	-0.7	-0.58	-0.57	-0.47	-0.42

Annual Employment (Portland MSA and U.S.)

Manufacturing employment sectors

	2032	2033	2034	2035	2036	2037	2038	2039
Total Nonfarm Wage and Sala								
Portland PMSA	1,433.8	1,450.2	1,467.0	1,484.5	1,502.7	1,520.6	1,537.8	1,554.5
%ch	1.16	1.15	1.16	1.19	1.23	1.19	1.13	1.09
U.S.	136.01	136.93	137.92	138.89	139.92	141.02	142.11	143.17
%ch	0.67	0.68	0.72	0.71	0.74	0.78	0.77	0.75
Manufacturing, TOTAL								
Portland PMSA	123.2	123.49	123.87	124.37	124.95	125.5	126.09	126.67
%ch	0.08	0.24	0.31	0.41	0.46	0.44	0.47	0.47
U.S.	11.58	11.49	11.41	11.35	11.28	11.21	11.15	11.09
%ch	-0.81	-0.8	-0.63	-0.59	-0.63	-0.62	-0.55	-0.53
Durable Goods, total								
Portland PMSA	95.2	95.64	96.13	96.74	97.41	98.06	98.74	99.43
%ch	0.25	0.46	0.52	0.63	0.69	0.67	0.7	0.7
U.S.	7.41	7.34	7.29	7.25	7.2	7.15	7.12	7.08
%ch	-0.96	-0.91	-0.67	-0.6	-0.64	-0.63	-0.55	-0.53
Wood Products								
Portland PMSA	4.01	3.93	3.91	3.91	3.9	3.87	3.84	3.8
%ch	-2.59	-1.96	-0.58	-0.05	-0.2	-0.85	-0.7	-1.15
U.S.	0.47	0.46	0.46	0.46	0.46	0.45	0.45	0.45
%ch	-3.62	-2.53	0.13	0.34	0.15	-1.05	-0.45	-1.23
Primary Metals								
Portland PMSA	4.56	4.52	4.48	4.45	4.43	4.41	4.39	4.38
%ch	-0.73	-0.86	-0.81	-0.59	-0.43	-0.45	-0.48	-0.4
U.S.	0.35	0.34	0.33	0.32	0.31	0.29	0.28	0.27
%ch	-2.61	-2.73	-2.73	-3.36	-3.83	-3.77	-3.7	-3.56
Fabricated Metals								
Portland PMSA	12.34	12.3	12.27	12.26	12.27	12.27	12.29	12.31
%ch	-0.28	-0.36	-0.22	-0.09	0.07	0.05	0.12	0.19
U.S.	1.5	1.49	1.48	1.47	1.46	1.45	1.44	1.44
%ch	-0.72	-0.88	-0.86	-0.8	-0.62	-0.52	-0.34	-0.14
Machinery Mfg.								
Portland PMSA	8.08	8.03	7.99	7.97	7.95	7.93	7.92	7.91
%ch	-0.45	-0.57	-0.46	-0.34	-0.23	-0.18	-0.14	-0.13
U.S.	1.07	1.05	1.03	1.02	1	0.98	0.97	0.96
%ch	-1.7	-1.8	-1.86	-1.73	-1.79	-1.54	-1.37	-1.23
Computer & Electronics								
Portland PMSA	45.21	45.93	46.6	47.31	48.05	48.8	49.58	50.38
%ch	1.12	1.57	1.46	1.54	1.55	1.57	1.6	1.6
U.S.	1.08	1.08	1.09	1.1	1.11	1.11	1.12	1.13
%ch	0.17	0.55	0.63	0.71	0.76	0.83	0.88	0.9

Annual Employment (Portland MSA and U.S.)

	Manufacturing employment sectors				APR
	2040	2041	2042	2043	2000-43
Total Nonfarm Wage and Sala					
Portland PMSA	1,571.3	1,585.5	1,598.9	1,610.4	1.2%
%ch	1.08	0.91	0.84	0.72	
U.S.	144.28	145.4	146.51	147.57	0.7%
%ch	0.77	0.77	0.77	0.72	
Manufacturing, TOTAL					
Portland PMSA	127.16	127.63	128.15	128.7	- 0.2%
%ch	0.38	0.37	0.4	0.43	
U.S.	11.02	10.98	10.95	10.93	- 1.1%
%ch	-0.56	-0.4	-0.3	-0.14	
Durable Goods, total					
Portland PMSA	100.01	100.58	101.19	101.82	- 0.1%
%ch	0.59	0.56	0.61	0.63	
U.S.	7.04	7.02	7	7.01	- 1.0%
%ch	-0.52	-0.32	-0.18	0.02	
Wood Products					
Portland PMSA	3.77	3.76	3.74	3.73	- 1.1%
%ch	-0.78	-0.18	-0.57	-0.39	
U.S.	0.44	0.44	0.44	0.44	- 0.8%
%ch	-0.75	0.09	-0.94	-0.18	
Primary Metals					
Portland PMSA	4.35	4.33	4.31	4.28	- 1.4%
%ch	-0.51	-0.6	-0.52	-0.51	
U.S.	0.26	0.25	0.25	0.24	- 2.2%
%ch	-3.59	-3.42	-3.17	-3.08	
Fabricated Metals					
Portland PMSA	12.33	12.35	12.37	12.4	- 0.2%
%ch	0.13	0.18	0.19	0.23	
U.S.	1.44	1.44	1.44	1.45	- 0.4%
%ch	-0.21	-0.04	0.11	0.34	
Machinery Mfg.					
Portland PMSA	7.9	7.88	7.86	7.84	- 0.7%
%ch	-0.2	-0.2	-0.22	-0.26	
U.S.	0.95	0.94	0.93	0.93	- 1.0%
%ch	-1.04	-0.76	-0.64	-0.4	
Computer & Electronics					
Portland PMSA	51.08	51.73	52.43	53.14	0.6%
%ch	1.39	1.27	1.35	1.37	
U.S.	1.14	1.15	1.16	1.17	- 1.0%
%ch	0.68	0.63	0.67	0.71	

Annual Employment (Portland MSA and U.S.)

Manufacturing employment sectors

	2000	2001	2002	2003	2004	2005	2006	2007
Transport. Equipment								
Portland PMSA	11.18	8.55	7.71	7.59	7.96	8.95	9.32	9
%ch	-3.68	-23.48	-9.84	-1.6	4.95	12.46	4.08	-3.41
U.S.	2.06	1.94	1.83	1.78	1.77	1.77	1.77	1.71
%ch	-1.51	-5.73	-5.61	-3	-0.48	0.31	-0.19	-3.23
Other Durable Goods								
Portland PMSA	17.4	16.01	14.86	14.61	14.93	15.37	15.81	15.77
%ch	-0.9	-8	-7.18	-1.69	2.16	3	2.82	-0.21
U.S.	4.01	3.82	3.53	3.34	3.32	3.32	3.33	3.29
%ch	0.61	-4.65	-7.64	-5.51	-0.52	-0.09	0.34	-1.2
Non-Durable Goods								
Portland PMSA	35.77	33.6	31.02	30.18	30.18	29.82	30.24	30.35
%ch	-1.78	-6.08	-7.69	-2.68	-0.03	-1.19	1.43	0.36
U.S.	6.39	6.1	5.77	5.55	5.39	5.27	5.17	5.07
%ch	-1.6	-4.42	-5.44	-3.94	-2.8	-2.21	-1.83	-2.02
Food Processing								
Portland PMSA	8.87	8.79	8.74	8.72	8.64	8.56	8.8	9.1
%ch	-0.89	-0.84	-0.66	-0.19	-0.87	-0.97	2.82	3.4
U.S.	1.55	1.55	1.52	1.52	1.49	1.48	1.48	1.48
%ch	0.19	-0.19	-1.64	-0.49	-1.54	-1.1	0.12	0.29
Paper								
Portland PMSA	6.52	6.3	5.6	5.38	5.15	4.98	4.94	4.66
%ch	1.84	-3.32	-11.11	-4.01	-4.18	-3.24	-0.85	-5.74
U.S.	0.6	0.58	0.55	0.52	0.5	0.48	0.47	0.46
%ch	-1.77	-4.47	-5.38	-5.55	-4.02	-2.28	-2.83	-2.63
Other Non-Durable Goods								
Portland PMSA	20.39	18.51	16.68	16.09	16.38	16.27	16.5	16.59
%ch	-3.26	-9.24	-9.87	-3.55	1.82	-0.66	1.39	0.56
U.S.	4.23	3.98	3.7	3.51	3.4	3.31	3.22	3.13
%ch	-2.22	-5.96	-6.93	-5.11	-3.17	-2.69	-2.55	-2.98

Annual Employment (Portland MSA and U.S.)

Manufacturing employment sectors

	2008	2009	2010	2011	2012	2013	2014	2015
Transport. Equipment								
Portland PMSA	8.58	6.93	6.3	6.78	7.32	7.47	7.31	7.23
%ch	-4.74	-19.15	-9.12	7.55	7.99	2.08	-2.12	-1.09
U.S.	1.61	1.35	1.33	1.38	1.46	1.49	1.52	1.55
%ch	-6.07	-16.17	-1.08	3.63	5.37	2.27	2.28	2.1
Other Durable Goods								
Portland PMSA	15.39	13.28	12.83	13.25	13.53	13.13	13.65	14.12
%ch	-2.42	-13.69	-3.48	3.32	2.08	-2.97	3.96	3.47
U.S.	3.18	2.76	2.65	2.71	2.76	2.77	2.84	2.91
%ch	-3.17	-13.17	-4.17	2.47	1.76	0.28	2.68	2.12
Non-Durable Goods								
Portland PMSA	29.62	27.36	27.38	27.69	28.1	28.22	28.67	28.9
%ch	-2.39	-7.63	0.05	1.13	1.47	0.43	1.59	0.81
U.S.	4.94	4.56	4.46	4.45	4.46	4.46	4.46	4.44
%ch	-2.56	-7.64	-2.15	-0.24	0.06	-0.03	0.09	-0.48
Food Processing								
Portland PMSA	9.22	9.11	9.48	9.69	10.1	10.52	10.62	10.39
%ch	1.27	-1.1	4.02	2.2	4.2	4.23	0.91	-2.19
U.S.	1.48	1.46	1.45	1.46	1.47	1.47	1.48	1.49
%ch	-0.23	-1.59	-0.38	0.53	0.66	0.04	0.86	0.77
Paper								
Portland PMSA	4.45	3.92	3.63	3.43	3.31	3.25	3.26	3.3
%ch	-4.48	-11.79	-7.43	-5.72	-3.4	-1.72	0.3	1.31
U.S.	0.44	0.41	0.39	0.39	0.38	0.38	0.37	0.37
%ch	-2.88	-8.56	-3.03	-1.84	-2.08	-0.86	-0.48	-0.07
Other Non-Durable Goods								
Portland PMSA	15.96	14.32	14.27	14.57	14.69	14.44	14.79	15.21
%ch	-3.82	-10.24	-0.42	2.16	0.81	-1.69	2.38	2.85
U.S.	3.02	2.7	2.62	2.61	2.61	2.61	2.6	2.57
%ch	-3.62	-10.48	-2.97	-0.43	0.05	0.05	-0.27	-1.26

Annual Employment (Portland MSA and U.S.)

Manufacturing employment sectors

	2016	2017	2018	2019	2020	2021	2022	2023
Transport. Equipment								
Portland PMSA	7.05	6.79	6.63	6.51	6.36	6.2	6.06	5.96
%ch	-2.44	-3.71	-2.36	-1.78	-2.38	-2.52	-2.2	-1.67
U.S.	1.58	1.57	1.55	1.53	1.48	1.44	1.41	1.38
%ch	1.63	-0.36	-1.26	-1.57	-3.08	-2.65	-2.57	-1.92
Other Durable Goods								
Portland PMSA	14.48	14.8	14.97	15.14	15.29	15.39	15.44	15.48
%ch	2.57	2.22	1.15	1.14	0.98	0.63	0.32	0.29
U.S.	2.95	2.98	2.98	2.98	2.97	2.96	2.94	2.92
%ch	1.61	0.9	0.11	-0.02	-0.4	-0.47	-0.65	-0.4
Non-Durable Goods								
Portland PMSA	29.17	29.37	29.51	29.57	29.54	29.4	29.21	29.06
%ch	0.94	0.71	0.47	0.19	-0.12	-0.47	-0.63	-0.53
U.S.	4.42	4.43	4.45	4.45	4.44	4.42	4.38	4.35
%ch	-0.39	0.12	0.58	0.04	-0.27	-0.52	-0.84	-0.64
Food Processing								
Portland PMSA	10.23	10.09	9.98	9.89	9.82	9.75	9.7	9.66
%ch	-1.52	-1.32	-1.14	-0.87	-0.75	-0.71	-0.53	-0.41
U.S.	1.5	1.52	1.55	1.56	1.57	1.58	1.58	1.59
%ch	0.78	1.1	1.59	0.92	0.85	0.57	0.14	0.36
Paper								
Portland PMSA	3.33	3.28	3.2	3.11	3.03	2.94	2.85	2.77
%ch	0.7	-1.45	-2.56	-2.57	-2.51	-3.08	-3.05	-2.86
U.S.	0.37	0.38	0.38	0.38	0.38	0.38	0.38	0.38
%ch	0.08	0.39	0.8	0.35	0.21	0.07	-0.29	-0.07
Other Non-Durable Goods								
Portland PMSA	15.61	16	16.34	16.57	16.68	16.71	16.66	16.63
%ch	2.67	2.49	2.11	1.38	0.71	0.15	-0.27	-0.2
U.S.	2.54	2.53	2.53	2.51	2.49	2.46	2.42	2.38
%ch	-1.13	-0.5	-0.06	-0.55	-1.03	-1.29	-1.56	-1.39

Annual Employment (Portland MSA and U.S.)

Manufacturing employment sectors

	2024	2025	2026	2027	2028	2029	2030	2031
Transport. Equipment								
Portland PMSA	5.86	5.76	5.68	5.59	5.52	5.45	5.39	5.33
%ch	-1.73	-1.64	-1.48	-1.43	-1.31	-1.23	-1.15	-1.12
U.S.	1.35	1.34	1.33	1.33	1.33	1.32	1.31	1.3
%ch	-2.02	-1.2	-0.16	-0.12	-0.3	-0.76	-0.86	-0.42
Other Durable Goods								
Portland PMSA	15.53	15.56	15.6	15.64	15.66	15.67	15.69	15.72
%ch	0.33	0.17	0.25	0.24	0.14	0.07	0.12	0.2
U.S.	2.91	2.89	2.87	2.85	2.83	2.8	2.77	2.74
%ch	-0.57	-0.59	-0.64	-0.66	-0.82	-1.16	-1.08	-0.88
Non-Durable Goods								
Portland PMSA	28.94	28.8	28.67	28.55	28.43	28.33	28.24	28.13
%ch	-0.41	-0.48	-0.44	-0.44	-0.43	-0.35	-0.31	-0.37
U.S.	4.33	4.31	4.29	4.26	4.25	4.23	4.21	4.2
%ch	-0.52	-0.5	-0.49	-0.54	-0.45	-0.35	-0.4	-0.43
Food Processing								
Portland PMSA	9.63	9.6	9.58	9.56	9.54	9.53	9.53	9.52
%ch	-0.31	-0.3	-0.21	-0.18	-0.17	-0.12	-0.08	-0.11
U.S.	1.6	1.61	1.61	1.62	1.62	1.63	1.63	1.64
%ch	0.56	0.55	0.46	0.29	0.3	0.32	0.31	0.36
Paper								
Portland PMSA	2.69	2.62	2.56	2.49	2.43	2.36	2.31	2.25
%ch	-2.88	-2.59	-2.36	-2.54	-2.74	-2.69	-2.29	-2.57
U.S.	0.37	0.37	0.37	0.37	0.37	0.37	0.38	0.38
%ch	-1.34	-0.84	0.06	0.12	0.21	0.33	0.27	0.2
Other Non-Durable Goods								
Portland PMSA	16.62	16.58	16.54	16.49	16.46	16.43	16.41	16.37
%ch	-0.05	-0.24	-0.27	-0.27	-0.23	-0.14	-0.15	-0.22
U.S.	2.36	2.33	2.3	2.27	2.25	2.23	2.2	2.18
%ch	-1.11	-1.16	-1.23	-1.23	-1.1	-0.95	-1.02	-1.12

Annual Employment (Portland MSA and U.S.)

Manufacturing employment sectors

	2032	2033	2034	2035	2036	2037	2038	2039
Transport. Equipment								
Portland PMSA	5.28	5.22	5.18	5.13	5.08	5.02	4.96	4.89
%ch	-1.05	-0.97	-0.9	-0.9	-0.99	-1.1	-1.27	-1.37
U.S.	1.3	1.29	1.29	1.28	1.27	1.26	1.25	1.24
%ch	-0.33	-0.47	-0.42	-0.37	-0.68	-0.74	-1.01	-1.19
Other Durable Goods								
Portland PMSA	15.73	15.71	15.7	15.71	15.73	15.74	15.75	15.76
%ch	0.03	-0.11	-0.04	0.04	0.11	0.08	0.06	0.05
U.S.	2.71	2.68	2.65	2.62	2.6	2.58	2.56	2.54
%ch	-1.15	-1.19	-1.09	-0.95	-0.97	-0.83	-0.71	-0.59
Non-Durable Goods								
Portland PMSA	28	27.86	27.74	27.63	27.54	27.44	27.35	27.25
%ch	-0.49	-0.51	-0.42	-0.39	-0.34	-0.35	-0.35	-0.37
U.S.	4.17	4.15	4.12	4.1	4.08	4.05	4.03	4.01
%ch	-0.54	-0.61	-0.55	-0.57	-0.6	-0.59	-0.54	-0.54
Food Processing								
Portland PMSA	9.51	9.51	9.5	9.5	9.5	9.5	9.5	9.5
%ch	-0.08	-0.03	-0.02	-0.01	0	-0.01	0	-0.01
U.S.	1.64	1.65	1.65	1.65	1.65	1.65	1.65	1.65
%ch	0.25	0.14	0.16	0.11	0.01	0.01	0.07	0.08
Paper								
Portland PMSA	2.18	2.12	2.06	2.01	1.97	1.92	1.88	1.83
%ch	-2.9	-3.02	-2.52	-2.39	-2.23	-2.39	-2.37	-2.45
U.S.	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
%ch	0.04	0.03	0.08	0.03	-0.06	-0.02	0.05	0.11
Other Non-Durable Goods								
Portland PMSA	16.31	16.23	16.17	16.12	16.07	16.02	15.97	15.92
%ch	-0.39	-0.45	-0.38	-0.35	-0.3	-0.3	-0.3	-0.34
U.S.	2.15	2.12	2.1	2.07	2.05	2.02	2	1.98
%ch	-1.23	-1.3	-1.21	-1.21	-1.19	-1.18	-1.15	-1.17

Annual Employment (Portland MSA and U.S.)

	Manufacturing employment sectors				APR
	2040	2041	2042	2043	2000-43
Transport. Equipment					
Portland PMSA	4.83	4.77	4.73	4.68	- 2.0%
%ch	-1.3	-1.16	-0.92	-0.95	
U.S.	1.22	1.21	1.2	1.2	- 1.2%
%ch	-1.23	-1.12	-0.43	-0.16	
Other Durable Goods					
Portland PMSA	15.76	15.75	15.75	15.74	- 0.2%
%ch	-0.01	-0.02	-0.03	-0.04	
U.S.	2.53	2.52	2.52	2.52	- 1.1%
%ch	-0.52	-0.28	-0.19	-0.04	
Non-Durable Goods					
Portland PMSA	27.15	27.05	26.96	26.87	- 0.7%
%ch	-0.37	-0.34	-0.35	-0.32	
U.S.	3.98	3.96	3.94	3.93	- 1.1%
%ch	-0.64	-0.54	-0.51	-0.42	
Food Processing					
Portland PMSA	9.5	9.5	9.5	9.5	0.2%
%ch	0.02	-0.03	0	0	
U.S.	1.65	1.65	1.65	1.65	0.1%
%ch	-0.09	-0.04	0.01	0.03	
Paper					
Portland PMSA	1.79	1.75	1.71	1.67	- 3.1%
%ch	-2.37	-2.31	-2.25	-2.31	
U.S.	0.38	0.38	0.38	0.38	- 1.1%
%ch	-0.05	-0.13	-0.15	-0.05	
Other Non-Durable Goods					
Portland PMSA	15.86	15.81	15.76	15.71	- 0.6%
%ch	-0.37	-0.3	-0.35	-0.29	
U.S.	1.95	1.93	1.91	1.9	- 1.8%
%ch	-1.21	-1.04	-1.03	-0.88	

Annual Employment (Portland MSA and U.S.)

Nonmanufacturing employment sectors

	2000	2001	2002	2003	2004	2005	2006	2007
Total Non-Manufacturing								
Portland PMSA	699.4	698.6	686.5	682.7	697.6	722.5	749.8	766.6
%ch	2.6	-0.1	-1.7	-0.6	2.2	3.6	3.8	2.2
U.S. (millions)	93.8	94.4	93.7	94.0	95.6	97.7	100.0	101.5
%ch	2.6	0.6	-0.7	0.4	1.7	2.3	2.3	1.6
Natural Resources								
Portland PMSA	1.9	1.7	1.7	1.7	1.7	1.8	1.7	1.6
%ch	-9.9	-7.5	-4.6	0.7	0.8	5.5	-5.3	-2.9
U.S. (millions)	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7
%ch	0.1	1.1	-3.9	-1.8	3.2	6.2	9.1	5.7
Construction								
Portland PMSA	53.2	54.0	51.6	50.1	53.9	58.5	63.2	65.3
%ch	1.5	1.6	-4.5	-3.0	7.5	8.5	8.1	3.4
U.S. (millions)	6.8	6.8	6.7	6.7	7.0	7.3	7.7	7.6
%ch	3.72	0.57	-1.63	0.3	3.53	5.17	4.86	-0.81
Wholesale Trade								
Portland PMSA	55.58	56.29	54.63	54.79	55.11	56.29	57.47	58.13
%ch	3.6	1.28	-2.95	0.29	0.59	2.13	2.1	1.16
U.S. (millions)	5.93	5.77	5.65	5.61	5.66	5.76	5.9	6.02
%ch	0.68	-2.69	-2.08	-0.8	0.95	1.78	2.46	1.89
Retail Trade								
Portland PMSA	106.78	103.42	100.51	99.59	101.25	104.83	107.59	109.78
%ch	1.75	-3.14	-2.81	-0.91	1.67	3.53	2.63	2.04
U.S. (millions)	15.28	15.24	15.03	14.92	15.06	15.28	15.36	15.52
%ch	2.06	-0.26	-1.39	-0.73	0.96	1.46	0.49	1.05
Transportation, Warehousing and Utilities								
Portland PMSA	38.63	38.43	37.3	36.51	37.03	36.88	37.48	37.82
%ch	0.61	-0.53	-2.94	-2.1	1.4	-0.39	1.63	0.91
U.S. (millions)	5.01	4.97	4.82	4.76	4.81	4.92	5.02	5.1
%ch	2.18	-0.81	-3.07	-1.23	1.12	2.15	2.04	1.55
Information								
Portland PMSA	25.96	25.91	23.83	22.52	22.49	23.09	23.98	24.77
%ch	8.88	-0.18	-8.05	-5.5	-0.11	2.67	3.87	3.27
U.S. (millions)	2.59	2.61	2.43	2.26	2.21	2.16	2.14	2.13
%ch	7.52	0.51	-6.83	-6.84	-2.47	-2.3	-0.98	-0.25
Financial Activities								
Portland PMSA	64.85	65.05	65.58	66.43	66.07	68.22	70.63	70.37
%ch	-0.51	0.31	0.81	1.3	-0.55	3.26	3.53	-0.37
U.S. (millions)	7.78	7.9	7.96	8.08	8.11	8.2	8.37	8.35
%ch	0.42	1.5	0.69	1.52	0.35	1.13	2.06	-0.23

Annual Employment (Portland MSA and U.S.)

Nonmanufacturing employment sectors

	2008	2009	2010	2011	2012	2013	2014	2015
Total Non-Manufacturing								
Portland PMSA	764.2	716.8	714.4	731.0	747.4	766.1	798.2	827.7
%ch	-0.3	-6.2	-0.3	2.3	2.2	2.5	4.2	3.7
U.S. (millions)	100.9	96.5	95.9	97.7	99.9	102.1	103.9	106.0
%ch	-0.6	-4.4	-0.6	1.9	2.3	2.2	1.8	2.0
Natural Resources								
Portland PMSA	1.6	1.2	1.1	1.1	1.0	1.0	1.1	1.4
%ch	-5.1	-21.5	-12.3	-1.7	-9.4	1.8	16.4	27.6
U.S. (millions)	0.8	0.7	0.7	0.8	0.9	0.9	0.9	0.9
%ch	5.9	-9.4	1.5	11.8	8.0	3.0	2.7	0.9
Construction								
Portland PMSA	60.8	49.5	45.1	46.6	48.2	49.5	55.2	59.9
%ch	-6.9	-18.7	-8.9	3.4	3.5	2.8	11.3	8.6
U.S. (millions)	7.2	6.0	5.5	5.5	5.6	5.8	6.1	6.6
%ch	-6.1	-16.01	-8.27	0.26	1.99	2.93	4.23	9.14
Wholesale Trade								
Portland PMSA	57.83	54.35	53.23	54.62	55.86	57.48	58.96	60.22
%ch	-0.51	-6.02	-2.06	2.62	2.26	2.91	2.57	2.14
U.S. (millions)	5.94	5.59	5.45	5.54	5.67	5.76	5.82	5.93
%ch	-1.21	-6.01	-2.41	1.67	2.37	1.53	1.02	1.81
Retail Trade								
Portland PMSA	108.56	101.15	101.16	102.38	103.93	105.12	109.26	113.41
%ch	-1.11	-6.83	0.02	1.2	1.52	1.14	3.94	3.8
U.S. (millions)	15.28	14.52	14.44	14.67	14.87	15.18	15.38	15.4
%ch	-1.49	-5	-0.53	1.57	1.35	2.06	1.33	0.14
Transportation, Warehousing and Utilities								
Portland PMSA	37.58	34.19	33.28	33.67	33.77	35.01	36.61	37.84
%ch	-0.64	-9.02	-2.65	1.16	0.29	3.68	4.58	3.36
U.S. (millions)	5.07	4.8	4.74	4.85	4.97	5.03	5.11	5.26
%ch	-0.56	-5.32	-1.14	2.34	2.37	1.26	1.6	2.89
Information								
Portland PMSA	24.6	22.87	22.46	22.42	22.47	23.23	23.32	23.46
%ch	-0.68	-7.05	-1.79	-0.15	0.19	3.42	0.38	0.61
U.S. (millions)	2.1	2.01	1.95	1.93	1.94	1.96	1.97	1.98
%ch	-1.31	-4.58	-2.93	-1.16	0.78	1.19	0.2	0.67
Financial Activities								
Portland PMSA	67.77	63.81	61.92	61.6	62.2	63.25	64.11	65.66
%ch	-3.7	-5.84	-2.97	-0.51	0.97	1.69	1.36	2.42
U.S. (millions)	8.2	7.84	7.7	7.7	7.79	7.89	7.9	7.9
%ch	-1.72	-4.46	-1.81	0.01	1.15	1.28	0.16	0.04

Annual Employment (Portland MSA and U.S.)

Nonmanufacturing employment sectors

	2016	2017	2018	2019	2020	2021	2022	2023
Total Non-Manufacturing								
Portland PMSA	856.1	880.0	899.7	919.6	937.9	953.0	967.1	982.1
%ch	3.4	2.8	2.3	2.2	2.0	1.6	1.5	1.6
U.S. (millions)	108.4	110.4	111.9	112.9	113.6	114.3	114.9	115.6
%ch	2.2	1.9	1.3	0.9	0.7	0.6	0.6	0.6
Natural Resources								
Portland PMSA	1.7	1.8	1.8	1.8	1.7	1.7	1.6	1.6
%ch	18.9	5.9	-1.3	-1.8	-1.7	-3.3	-3.2	-2.6
U.S. (millions)	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0
%ch	3.2	1.3	1.0	-0.4	0.2	1.2	0.9	-0.5
Construction								
Portland PMSA	64.4	67.2	69.0	70.8	72.5	73.7	74.8	76.3
%ch	7.5	4.4	2.6	2.6	2.4	1.7	1.5	1.9
U.S. (millions)	7.2	7.7	7.9	8.0	8.1	8.1	8.2	8.3
%ch	9.53	5.89	2.44	1.52	1.16	0.73	0.73	1.12
Wholesale Trade								
Portland PMSA	61.47	62.87	64.2	65.48	66.67	67.69	68.56	69.45
%ch	2.07	2.27	2.13	1.98	1.82	1.54	1.29	1.29
U.S. (millions)	6.07	6.2	6.29	6.36	6.39	6.43	6.46	6.48
%ch	2.36	2.14	1.6	0.98	0.59	0.55	0.44	0.4
Retail Trade								
Portland PMSA	116.71	118.89	120.39	121.89	123.25	124.42	125.5	126.77
%ch	2.91	1.87	1.27	1.25	1.12	0.95	0.87	1.01
U.S. (millions)	15.46	15.52	15.53	15.5	15.43	15.33	15.23	15.12
%ch	0.37	0.42	0.06	-0.18	-0.46	-0.65	-0.67	-0.73
Transportation, Warehousing and Utilities								
Portland PMSA	39	39.95	40.57	41.05	41.44	41.68	41.84	42.03
%ch	3.04	2.44	1.55	1.18	0.96	0.57	0.39	0.46
U.S. (millions)	5.44	5.61	5.73	5.76	5.77	5.77	5.77	5.76
%ch	3.41	3.08	2.15	0.6	0.12	0.04	-0.05	-0.1
Information								
Portland PMSA	24.07	24.75	25.38	26.07	26.79	27.47	28.15	28.81
%ch	2.6	2.79	2.55	2.72	2.78	2.54	2.46	2.35
U.S. (millions)	2.04	2.11	2.16	2.21	2.27	2.32	2.39	2.45
%ch	3.14	3.53	2.02	2.44	2.55	2.56	2.77	2.75
Financial Activities								
Portland PMSA	66.78	67.05	67.29	67.75	68.26	68.61	68.97	69.35
%ch	1.7	0.41	0.35	0.69	0.76	0.51	0.52	0.55
U.S. (millions)	7.87	7.81	7.75	7.74	7.74	7.73	7.73	7.74
%ch	-0.35	-0.87	-0.67	-0.23	0.02	-0.13	0.03	0.1

Annual Employment (Portland MSA and U.S.)

Nonmanufacturing employment sectors

	2024	2025	2026	2027	2028	2029	2030	2031
Total Non-Manufacturing								
Portland PMSA	996.9	1,011.0	1,026.0	1,041.2	1,056.0	1,071.0	1,087.1	1,102.6
%ch	1.5	1.4	1.5	1.5	1.4	1.4	1.5	1.4
U.S. (millions)	116.3	117.1	118.1	119.1	120.2	121.3	122.4	123.4
%ch	0.6	0.7	0.8	0.9	0.9	0.9	0.9	0.8
Natural Resources								
Portland PMSA	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4
%ch	-3.1	-2.1	-0.8	-1.6	-2.5	-2.0	-0.5	-0.6
U.S. (millions)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9
%ch	-0.7	-0.6	-0.3	-0.4	-0.3	-0.2	-0.5	-0.5
Construction								
Portland PMSA	77.8	79.8	81.9	83.9	85.8	87.8	90.1	92.3
%ch	2.1	2.5	2.6	2.5	2.3	2.3	2.6	2.4
U.S. (millions)	8.4	8.5	8.7	8.9	9.0	9.2	9.4	9.5
%ch	1.38	1.83	2.14	1.94	1.64	1.65	2.03	1.68
Wholesale Trade								
Portland PMSA	70.37	71.15	71.94	72.84	73.71	74.57	75.45	76.38
%ch	1.33	1.1	1.12	1.25	1.2	1.16	1.18	1.24
U.S. (millions)	6.52	6.55	6.58	6.61	6.6	6.59	6.57	6.55
%ch	0.5	0.55	0.48	0.44	-0.14	-0.25	-0.25	-0.34
Retail Trade								
Portland PMSA	128.17	129.7	131.31	132.91	134.46	136.01	137.66	139.34
%ch	1.11	1.19	1.25	1.22	1.17	1.15	1.21	1.22
U.S. (millions)	15.07	15.08	15.1	15.14	15.21	15.27	15.33	15.39
%ch	-0.29	0.06	0.13	0.27	0.48	0.4	0.37	0.39
Transportation, Warehousing and Utilities								
Portland PMSA	42.25	42.44	42.7	43	43.29	43.56	43.86	44.18
%ch	0.51	0.45	0.61	0.71	0.66	0.63	0.7	0.72
U.S. (millions)	5.8	5.87	5.93	5.95	5.96	5.98	5.97	5.95
%ch	0.72	1.17	1	0.31	0.25	0.23	-0.11	-0.39
Information								
Portland PMSA	29.39	29.89	30.39	30.89	31.43	32.01	32.64	33.27
%ch	2.02	1.71	1.66	1.64	1.76	1.84	1.97	1.93
U.S. (millions)	2.49	2.5	2.51	2.53	2.55	2.58	2.61	2.66
%ch	1.3	0.6	0.49	0.51	0.89	1.08	1.44	1.64
Financial Activities								
Portland PMSA	69.75	70.15	70.48	70.91	71.41	71.98	72.6	73.16
%ch	0.57	0.58	0.47	0.61	0.7	0.8	0.86	0.78
U.S. (millions)	7.75	7.76	7.75	7.76	7.79	7.83	7.87	7.9
%ch	0.14	0.12	-0.1	0.13	0.35	0.51	0.52	0.44

Annual Employment (Portland MSA and U.S.)

Nonmanufacturing employment sectors

	2032	2033	2034	2035	2036	2037	2038	2039
Total Non-Manufacturing								
Portland PMSA	1,116.6	1,130.3	1,144.3	1,158.8	1,173.9	1,188.7	1,202.9	1,216.5
%ch	1.3	1.2	1.2	1.3	1.3	1.3	1.2	1.1
U.S. (millions)	124.4	125.5	126.5	127.5	128.7	129.8	131.0	132.1
%ch	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9
Natural Resources								
Portland PMSA	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
%ch	-3.3	-3.8	-1.2	0.7	0.7	-0.2	-0.6	-1.1
U.S. (millions)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
%ch	-0.3	-0.3	0.0	0.1	0.2	0.1	0.0	-0.2
Construction								
Portland PMSA	93.8	95.3	97.1	99.3	101.7	104.0	106.3	108.7
%ch	1.7	1.5	1.9	2.3	2.4	2.3	2.3	2.2
U.S. (millions)	9.6	9.7	9.7	9.9	10.1	10.2	10.4	10.6
%ch	0.75	0.48	0.96	1.59	1.81	1.64	1.65	1.56
Wholesale Trade								
Portland PMSA	77.21	77.99	78.76	79.55	80.35	81.1	81.75	82.3
%ch	1.08	1.01	1	1	1.01	0.93	0.81	0.67
U.S. (millions)	6.53	6.52	6.51	6.49	6.48	6.47	6.46	6.44
%ch	-0.26	-0.2	-0.15	-0.23	-0.19	-0.16	-0.19	-0.28
Retail Trade								
Portland PMSA	140.73	141.95	143.24	144.63	146.09	147.45	148.68	149.78
%ch	0.99	0.86	0.91	0.97	1.01	0.93	0.84	0.74
U.S. (millions)	15.46	15.53	15.6	15.67	15.73	15.82	15.9	15.97
%ch	0.43	0.45	0.47	0.42	0.42	0.55	0.5	0.48
Transportation, Warehousing and Utilities								
Portland PMSA	44.43	44.62	44.81	45.01	45.25	45.51	45.72	45.9
%ch	0.56	0.44	0.42	0.45	0.53	0.57	0.47	0.4
U.S. (millions)	5.93	5.9	5.88	5.85	5.81	5.77	5.74	5.69
%ch	-0.32	-0.4	-0.38	-0.6	-0.64	-0.62	-0.63	-0.73
Information								
Portland PMSA	33.89	34.43	35	35.56	36.12	36.69	37.29	37.86
%ch	1.85	1.61	1.65	1.61	1.56	1.6	1.63	1.52
U.S. (millions)	2.69	2.72	2.76	2.79	2.82	2.86	2.92	2.98
%ch	1.47	1.08	1.2	1.1	1.07	1.47	2.02	2.09
Financial Activities								
Portland PMSA	73.6	74.16	74.83	75.54	76.21	76.9	77.55	78.11
%ch	0.6	0.76	0.91	0.95	0.89	0.89	0.85	0.73
U.S. (millions)	7.92	7.96	8.02	8.09	8.14	8.2	8.25	8.29
%ch	0.24	0.54	0.77	0.81	0.67	0.67	0.64	0.47

Annual Employment (Portland MSA and U.S.)

Nonmanufacturing employment sectors	2040	2041	2042	2043	APR 2000-43
Total Non-Manufacturing					
Portland PMSA	1,229.7	1,241.5	1,251.7	1,260.1	1.4%
%ch	1.1	1.0	0.8	0.7	
U.S. (millions)	133.3	134.4	135.6	136.6	0.9%
%ch	0.9	0.9	0.9	0.8	
Natural Resources					
Portland PMSA	1.3	1.3	1.3	1.3	- 0.9%
%ch	-1.1	0.1	0.0	-0.3	
U.S. (millions)	0.9	0.9	0.9	0.9	1.0%
%ch	-0.1	0.0	-0.1	-0.2	
Construction					
Portland PMSA	110.9	113.2	115.5	117.8	1.9%
%ch	2.0	2.1	2.0	2.0	
U.S. (millions)	10.7	10.9	11.0	11.2	1.2%
%ch	1.32	1.48	1.41	1.4	
Wholesale Trade					
Portland PMSA	82.72	82.95	82.96	82.72	0.9%
%ch	0.5	0.28	0.01	-0.29	
U.S. (millions)	6.42	6.4	6.39	6.37	0.2%
%ch	-0.32	-0.28	-0.2	-0.27	
Retail Trade					
Portland PMSA	150.66	151.35	151.76	151.84	0.8%
%ch	0.59	0.46	0.27	0.05	
U.S. (millions)	16.05	16.11	16.16	16.18	0.1%
%ch	0.51	0.38	0.26	0.17	
Transportation, Warehousing and Utilities					
Portland PMSA	46.05	46.12	46.14	46.05	0.4%
%ch	0.32	0.17	0.03	-0.18	
U.S. (millions)	5.66	5.63	5.61	5.59	0.3%
%ch	-0.64	-0.47	-0.31	-0.35	
Information					
Portland PMSA	38.31	38.71	39.1	39.34	1.0%
%ch	1.18	1.07	0.98	0.63	
U.S. (millions)	3.01	3.06	3.12	3.18	0.5%
%ch	1.26	1.53	2	1.93	
Financial Activities					
Portland PMSA	78.74	79.35	79.89	80.37	0.5%
%ch	0.8	0.78	0.68	0.61	
U.S. (millions)	8.34	8.39	8.44	8.49	0.2%
%ch	0.62	0.65	0.58	0.56	

Annual Employment (Portland MSA and U.S.)

Nonmanufacturing employment sectors

	2000	2001	2002	2003	2004	2005	2006	2007
Professional Business Services								
Portland PMSA	130.45	127.48	121.67	117.89	122.09	128.5	134.82	136.43
%ch	5.36	-2.28	-4.56	-3.11	3.56	5.25	4.92	1.2
U.S. (millions)	16.67	16.48	15.97	15.98	16.39	16.95	17.57	17.95
%ch	4.49	-1.15	-3.07	0.06	2.52	3.44	3.66	2.13
Education & Health Services								
Portland PMSA	102.91	106.55	110.99	113.62	115.64	119.83	123.22	127.75
%ch	2.27	3.53	4.16	2.38	1.77	3.62	2.83	3.68
U.S. (millions)	15.11	15.64	16.2	16.59	16.95	17.37	17.82	18.32
%ch	2.13	3.53	3.57	2.39	2.18	2.48	2.62	2.79
Leisure & Hospitality								
Portland PMSA	85.78	85.47	84.82	85.59	87.64	90.08	94.09	97.96
%ch	1.5	-0.36	-0.76	0.9	2.4	2.79	4.45	4.12
U.S. (millions)	11.86	12.03	11.99	12.18	12.49	12.81	13.11	13.43
%ch	2.74	1.46	-0.39	1.58	2.6	2.57	2.31	2.43
Other Services								
Portland PMSA	33.42	34.18	33.89	33.98	34.74	34.51	35.65	36.62
%ch	3.13	2.28	-0.86	0.26	2.23	-0.67	3.31	2.72
U.S. (millions)	5.17	5.26	5.37	5.4	5.41	5.39	5.44	5.49
%ch	1.6	1.73	2.17	0.53	0.16	-0.27	0.79	1.02
Fed. Government, Civilian								
Portland PMSA	18.89	18.13	17.97	18.56	18.42	18.36	17.97	17.98
%ch	4	-4.05	-0.89	3.3	-0.78	-0.31	-2.13	0.07
U.S. (millions)	2.87	2.76	2.77	2.76	2.73	2.73	2.73	2.74
%ch	3.44	-3.55	0.08	-0.19	-1.06	0.02	0.04	0.1
State & Local Government								
Portland PMSA	111.61	113.33	115.77	114.95	117.86	119.28	120.98	124.29
%ch	2.2	1.54	2.16	-0.71	2.53	1.2	1.43	2.73
U.S. (millions)	17.93	18.36	18.74	18.82	18.89	19.07	19.24	19.48
%ch	2.18	2.41	2.11	0.41	0.36	0.98	0.89	1.26

Annual Employment (Portland MSA and U.S.)

Nonmanufacturing employment sectors

	2008	2009	2010	2011	2012	2013	2014	2015
Professional Business Services								
Portland PMSA	136.55	124.92	127.8	133.55	138.66	143.08	151.93	161.58
%ch	0.08	-8.52	2.3	4.5	3.83	3.19	6.19	6.35
U.S. (millions)	17.74	16.58	16.72	17.33	17.93	18.54	19.2	20.07
%ch	-1.15	-6.56	0.89	3.6	3.48	3.39	3.59	4.51
Education & Health Services								
Portland PMSA	132.57	135.16	139.38	143.08	145.2	147.29	151.78	155.44
%ch	3.77	1.96	3.12	2.66	1.48	1.44	3.05	2.41
U.S. (millions)	18.84	19.19	19.53	19.89	20.32	20.68	20.94	21.2
%ch	2.82	1.88	1.76	1.82	2.19	1.76	1.26	1.24
Leisure & Hospitality								
Portland PMSA	99.26	94.46	94.48	96.75	99.64	103.55	108.08	110.69
%ch	1.32	-4.84	0.01	2.41	2.98	3.92	4.38	2.41
U.S. (millions)	13.44	13.07	13.04	13.35	13.75	14.16	14.42	14.59
%ch	0.09	-2.74	-0.21	2.35	2.97	2.98	1.86	1.15
Other Services								
Portland PMSA	37.13	35.26	34.6	35.27	36.48	37.6	37.9	38.02
%ch	1.39	-5.04	-1.86	1.93	3.45	3.05	0.81	0.32
U.S. (millions)	5.51	5.37	5.33	5.36	5.44	5.48	5.51	5.47
%ch	0.4	-2.71	-0.66	0.56	1.42	0.89	0.41	-0.63
Fed. Government, Civilian								
Portland PMSA	18.32	18.56	18.58	18.01	17.51	17.43	17.72	17.58
%ch	1.91	1.27	0.11	-3.08	-2.75	-0.46	1.64	-0.78
U.S. (millions)	2.76	2.83	2.98	2.86	2.82	2.75	2.8	2.78
%ch	0.94	2.52	5.15	-3.93	-1.53	-2.5	1.95	-0.56
State & Local Government								
Portland PMSA	128.74	129.57	128.81	127.5	127.41	127.78	132.8	135.67
%ch	3.58	0.64	-0.58	-1.01	-0.07	0.29	3.93	2.16
U.S. (millions)	19.74	19.72	19.51	19.23	19.1	19.11	19.17	19.32
%ch	1.32	-0.1	-1.05	-1.45	-0.69	0.06	0.3	0.79

Annual Employment (Portland MSA and U.S.)

Nonmanufacturing employment sectors

	2016	2017	2018	2019	2020	2021	2022	2023
Professional Business Services								
Portland PMSA	170.26	177.69	184	190.51	196.35	201.1	205.69	210.29
%ch	5.37	4.36	3.55	3.54	3.07	2.42	2.28	2.24
U.S. (millions)	20.8	21.38	21.82	22.3	22.77	23.23	23.76	24.28
%ch	3.63	2.81	2.06	2.2	2.09	2.04	2.25	2.21
Education & Health Services								
Portland PMSA	159.91	164.58	168.9	173	176.68	180.09	183.35	186.68
%ch	2.87	2.92	2.63	2.42	2.13	1.93	1.81	1.82
U.S. (millions)	21.66	22.11	22.53	22.83	22.98	23.11	23.21	23.29
%ch	2.18	2.07	1.92	1.33	0.66	0.54	0.44	0.37
Leisure & Hospitality								
Portland PMSA	113.23	115.7	117.81	119.95	121.87	123.29	124.58	126.03
%ch	2.29	2.18	1.83	1.81	1.6	1.17	1.04	1.17
U.S. (millions)	14.71	14.91	15.06	15.14	15.17	15.17	15.16	15.13
%ch	0.84	1.36	1.02	0.54	0.2	-0.01	-0.08	-0.2
Other Services								
Portland PMSA	38.56	39.44	40.39	41.37	42.37	43.24	44.04	44.9
%ch	1.41	2.3	2.41	2.43	2.41	2.05	1.86	1.93
U.S. (millions)	5.45	5.46	5.47	5.44	5.42	5.41	5.4	5.39
%ch	-0.42	0.18	0.2	-0.48	-0.36	-0.24	-0.18	-0.29
Fed. Government, Civilian								
Portland PMSA	17.3	17.13	16.96	16.81	17.4	16.64	16.56	16.47
%ch	-1.57	-0.99	-1.02	-0.84	3.46	-4.36	-0.49	-0.55
U.S. (millions)	2.73	2.7	2.67	2.64	2.78	2.63	2.61	2.6
%ch	-1.9	-1.18	-1.21	-0.93	5.12	-5.45	-0.55	-0.42
State & Local Government								
Portland PMSA	139.2	142.13	144.91	147.47	149.75	151.93	154.09	156.22
%ch	2.6	2.1	1.96	1.77	1.55	1.45	1.42	1.38
U.S. (millions)	19.51	19.73	20	20.25	20.49	20.73	20.98	21.21
%ch	1.01	1.11	1.36	1.26	1.19	1.15	1.2	1.11

Annual Employment (Portland MSA and U.S.)

Nonmanufacturing employment sectors

	2024	2025	2026	2027	2028	2029	2030	2031
Professional Business Services								
Portland PMSA	214.15	217.42	221.22	224.91	228.25	231.55	235.18	238.57
%ch	1.84	1.52	1.75	1.67	1.49	1.45	1.57	1.44
U.S. (millions)	24.72	25.14	25.63	26.11	26.56	27	27.46	27.89
%ch	1.79	1.73	1.94	1.87	1.72	1.66	1.7	1.55
Education & Health Services								
Portland PMSA	190.13	193.55	196.95	200.42	203.93	207.47	211.05	214.43
%ch	1.85	1.79	1.76	1.76	1.75	1.73	1.73	1.6
U.S. (millions)	23.41	23.55	23.7	23.89	24.14	24.39	24.63	24.87
%ch	0.51	0.6	0.62	0.81	1.05	1.04	0.98	0.98
Leisure & Hospitality								
Portland PMSA	127.58	128.88	130.28	131.79	133.28	134.81	136.45	138.13
%ch	1.23	1.02	1.09	1.16	1.13	1.15	1.22	1.23
U.S. (millions)	15.11	15.08	15.08	15.14	15.23	15.33	15.43	15.52
%ch	-0.16	-0.17	0.03	0.35	0.6	0.68	0.63	0.63
Other Services								
Portland PMSA	45.78	46.57	47.36	48.18	48.98	49.8	50.66	51.51
%ch	1.97	1.73	1.71	1.72	1.67	1.66	1.73	1.67
U.S. (millions)	5.39	5.41	5.43	5.47	5.51	5.55	5.58	5.59
%ch	0.09	0.35	0.45	0.6	0.79	0.68	0.49	0.26
Fed. Government, Civilian								
Portland PMSA	16.51	16.6	16.7	16.79	16.88	16.96	17.66	17.16
%ch	0.25	0.6	0.56	0.54	0.53	0.53	4.1	-2.86
U.S. (millions)	2.62	2.65	2.69	2.73	2.76	2.8	2.98	2.88
%ch	0.71	1.38	1.36	1.34	1.33	1.31	6.31	-3.24
State & Local Government								
Portland PMSA	158.38	160.73	163.02	165.27	167.5	169.77	172.07	174.44
%ch	1.38	1.48	1.43	1.38	1.35	1.35	1.36	1.38
U.S. (millions)	21.39	21.52	21.64	21.77	21.89	22.01	22.12	22.2
%ch	0.84	0.62	0.58	0.57	0.56	0.57	0.47	0.36

Annual Employment (Portland MSA and U.S.)

Nonmanufacturing employment sectors

	2032	2033	2034	2035	2036	2037	2038	2039
Professional Business Services								
Portland PMSA	241.86	245.33	248.51	251.66	255.13	258.76	262.33	266.18
%ch	1.38	1.43	1.3	1.27	1.38	1.42	1.38	1.47
U.S. (millions)	28.34	28.81	29.24	29.66	30.12	30.59	31.05	31.54
%ch	1.62	1.65	1.52	1.44	1.53	1.55	1.51	1.6
Education & Health Services								
Portland PMSA	217.76	221.04	224.28	227.46	230.59	233.5	236.17	238.58
%ch	1.55	1.51	1.47	1.42	1.38	1.26	1.14	1.02
U.S. (millions)	25.14	25.4	25.67	25.91	26.16	26.42	26.66	26.87
%ch	1.06	1.07	1.04	0.93	0.98	0.98	0.91	0.78
Leisure & Hospitality								
Portland PMSA	139.63	141.15	142.64	144.1	145.62	147.12	148.5	149.78
%ch	1.09	1.09	1.06	1.03	1.05	1.03	0.94	0.86
U.S. (millions)	15.63	15.74	15.84	15.94	16.03	16.15	16.26	16.38
%ch	0.66	0.71	0.66	0.62	0.59	0.74	0.69	0.73
Other Services								
Portland PMSA	52.28	53.08	53.88	54.72	55.59	56.45	57.28	58.09
%ch	1.51	1.52	1.52	1.56	1.59	1.54	1.47	1.41
U.S. (millions)	5.6	5.62	5.64	5.65	5.67	5.68	5.71	5.73
%ch	0.27	0.32	0.31	0.22	0.27	0.29	0.39	0.39
Fed. Government, Civilian								
Portland PMSA	17.27	17.36	17.45	17.54	17.63	17.73	17.82	17.91
%ch	0.65	0.53	0.53	0.53	0.53	0.52	0.52	0.51
U.S. (millions)	2.92	2.95	2.99	3.03	3.06	3.1	3.14	3.17
%ch	1.27	1.25	1.24	1.23	1.21	1.2	1.19	1.18
State & Local Government								
Portland PMSA	176.77	179.07	181.4	183.77	186.19	188.6	191	193.43
%ch	1.34	1.3	1.3	1.3	1.32	1.3	1.27	1.27
U.S. (millions)	22.28	22.37	22.47	22.56	22.65	22.74	22.83	22.91
%ch	0.39	0.41	0.42	0.4	0.42	0.4	0.38	0.37

Annual Employment (Portland MSA and U.S.)

Nonmanufacturing employment sectors	2040	2041	2042	2043	APR 2000-43
Professional Business Services					
Portland PMSA	270.47	274.51	278.4	282.05	1.8%
%ch	1.61	1.49	1.42	1.31	
U.S. (millions)	32.1	32.66	33.22	33.77	1.7%
%ch	1.77	1.72	1.72	1.66	
Education & Health Services					
Portland PMSA	240.78	242.46	243.8	244.71	2.0%
%ch	0.92	0.7	0.55	0.37	
U.S. (millions)	27.08	27.26	27.44	27.6	1.4%
%ch	0.78	0.69	0.66	0.55	
Leisure & Hospitality					
Portland PMSA	151.01	152.01	152.67	153.05	1.4%
%ch	0.82	0.66	0.44	0.24	
U.S. (millions)	16.5	16.62	16.72	16.81	0.8%
%ch	0.71	0.72	0.64	0.55	
Other Services					
Portland PMSA	58.88	59.61	60.28	60.91	1.4%
%ch	1.37	1.24	1.12	1.05	
U.S. (millions)	5.75	5.77	5.79	5.81	0.3%
%ch	0.42	0.35	0.38	0.33	
Fed. Government, Civilian					
Portland PMSA	18.57	18.1	18.22	18.31	- 0.1%
%ch	3.67	-2.49	0.61	0.51	
U.S. (millions)	3.35	3.25	3.29	3.33	0.3%
%ch	5.59	-2.84	1.14	1.13	
State & Local Government					
Portland PMSA	195.83	198.29	200.79	203.33	1.4%
%ch	1.24	1.26	1.26	1.26	
U.S. (millions)	23	23.1	23.2	23.3	0.6%
%ch	0.39	0.41	0.43	0.44	

U.S. Population and Labor Force Measures

	1970	1975	1980	1985	1990	1995	2000
U.S. Population				(in millons)			
Population (U.S.)	205.4	216.2	228.0	238.7	250.6	267.0	282.8
Pct. Chg. (5-year avg.)	1.09	1.03	1.06	0.93	0.97	1.27	1.16
Annual Avg. Change	2.2	2.2	2.4	2.2	2.4	3.3	3.2
Population by Age				(in millons)			
0 to 4 years old	17.2	16.1	16.5	17.9	18.9	19.6	19.2
5 to 15 years old	44.8	42.5	38.8	37.4	38.7	42.6	45.2
16 to 21 years old	22.6	25.2	25.9	23.4	22.4	21.7	24.3
22 to 54 years old	82.0	89.6	99.3	109.4	118.2	127.9	134.5
55 to 64 years old	18.7	20.1	21.8	22.1	21.1	21.4	24.5
65 to 84 years old	18.7	20.9	23.5	25.8	28.2	30.1	30.8
85 years and older	1.4	1.8	2.3	2.7	3.1	3.7	4.3
Population Share by Age				(in percent)			
0 to 4 years old	8.37	7.42	7.24	7.48	7.54	7.34	6.79
5 to 16 years old	21.80	19.64	17.00	15.68	15.45	15.95	15.98
17 to 21 years old	10.99	11.67	11.36	9.82	8.94	8.14	8.58
22 to 54 years old	39.91	41.45	43.55	45.83	47.15	47.90	47.57
55 to 64 years old	9.11	9.29	9.55	9.26	8.42	8.00	8.66
65 to 84 years old	9.12	9.68	10.30	10.81	11.27	11.29	10.90
85 years and older	0.70	0.85	1.00	1.12	1.23	1.39	1.52
Population Change				(annual pct. change)			
0 to 4 years old	-2.71	-1.37	0.57	1.58	1.14	0.73	-0.41
5 to 16 years old	0.79	-1.06	-1.81	-0.69	0.67	1.93	1.19
17 to 21 years old	3.20	2.27	0.51	-1.97	-0.90	-0.61	2.22
22 to 54 years old	1.28	1.80	2.07	1.96	1.55	1.59	1.02
55 to 64 years old	1.80	1.42	1.62	0.31	-0.93	0.24	2.78
65 to 84 years old	1.49	2.25	2.32	1.91	1.82	1.30	0.46
85 years and older	5.66	4.99	4.53	3.24	2.84	3.73	3.01
Labor Force				(in millons)			
Population 16 years and older	143.4	157.7	172.7	183.4	193.0	204.8	218.4
Labor Force, total	82.8	93.8	107.0	115.9	125.9	133.1	142.6
16 to 64 years old	79.6	90.8	103.9	113.0	122.4	129.2	138.3
65 years and older	3.2	3.0	3.1	2.9	3.5	3.9	4.3
Participation Rate (in percent)							
Labor Force, total	57.7	59.5	61.9	63.2	65.2	65.0	65.3
16 to 64 years old	64.6	67.3	70.7	72.9	75.7	75.6	75.4
65 years and older	16.0	13.0	11.9	10.2	11.0	11.5	12.4
Employment & person-hour							
Nonfarm Empl. (millions)	71.0	77.1	90.5	97.5	109.5	117.3	131.9
Unempl. Rate (percent)	5.0	8.5	7.2	7.2	5.6	5.6	4.0
Average Weekly Hours	35.9	34.6	33.7	33.9	33.3	33.4	33.4
Mfg. Workweek (hours)	39.8	39.4	39.7	40.5	40.5	41.3	41.2
Durable Mfg.	40.5	40.0	40.3	41.3	41.2	42.1	41.8
Nondurable Mfg.	39.0	38.6	38.8	39.4	39.6	40.1	40.3
Productivity Measures				(annual pct. change)			
GDP / Employment	0.28	1.04	0.39	1.79	0.98	1.17	1.92
FRB Ind. Production, all	3.23	1.76	4.55	2.25	2.94	3.22	5.80
FRB Ind. Production, Mfg.	3.50	1.78	4.22	1.72	2.62	2.89	5.15
Employment Cost Index				(annual pct. change)			
Pvt. Sector wages & salaries			7.88	6.01	3.72	3.07	3.67

U.S. Population and Labor Force Measures

	2005	2010	2015	2020	2025	2030	2035	2040
U.S. Population				(in millons)				
Population (U.S.)	296.5	310.1	321.9	334.5	347.0	359.0	370.2	380.5
Pct. Chg. (5-year avg.)	0.95	0.9	0.75	0.77	0.74	0.68	0.61	0.55
Annual Avg. Change	2.7	2.7	2.4	2.5	2.5	2.4	2.2	2.1
Population by Age				(in millons)				
0 to 4 years old	19.9	20.2	20.9	21.6	21.9	22.1	22.3	22.8
5 to 15 years old	45.2	45.2	45.2	46.1	47.8	49.3	49.9	50.4
16 to 21 years old	25.3	26.8	25.5	25.4	25.5	26.2	27.6	28.1
22 to 54 years old	138.5	140.3	141.5	142.4	145.3	149.7	154.3	158.7
55 to 64 years old	30.8	37.0	40.9	42.7	41.1	38.8	38.6	40.7
65 to 84 years old	32.0	35.0	41.6	49.5	57.9	63.9	65.8	65.6
85 years and older	4.8	5.6	6.4	6.7	7.4	9.0	11.7	14.2
Population Share by Age				(in percent)				
0 to 4 years old	6.72	6.51	6.49	6.47	6.32	6.15	6.03	6.00
5 to 16 years old	15.23	14.59	14.03	13.79	13.78	13.73	13.49	13.25
17 to 21 years old	8.54	8.63	7.93	7.58	7.36	7.29	7.45	7.39
22 to 54 years old	46.71	45.25	43.95	42.56	41.88	41.70	41.68	41.69
55 to 64 years old	10.38	11.92	12.70	12.78	11.83	10.81	10.43	10.70
65 to 84 years old	10.80	11.30	12.92	14.80	16.68	17.81	17.77	17.23
85 years and older	1.61	1.80	1.97	2.01	2.15	2.51	3.15	3.73
Population Change				(annual pct. change)				
0 to 4 years old	0.74	0.28	0.69	0.69	0.28	0.12	0.24	0.44
5 to 16 years old	-0.02	0.04	-0.03	0.42	0.72	0.61	0.25	0.20
17 to 21 years old	0.87	1.10	-0.92	-0.14	0.13	0.49	1.05	0.40
22 to 54 years old	0.58	0.26	0.17	0.12	0.41	0.60	0.60	0.56
55 to 64 years old	4.66	3.75	2.04	0.88	-0.80	-1.12	-0.11	1.07
65 to 84 years old	0.76	1.81	3.48	3.55	3.17	2.02	0.57	-0.07
85 years and older	2.17	3.15	2.64	1.19	2.03	3.87	5.33	4.01
Labor Force				(in millons)				
Population 16 years and older	231.4	244.6	255.9	266.7	277.2	287.6	297.9	307.3
Labor Force, total	149.3	153.9	159.2	164.3	167.7	171.6	176.5	181.8
16 to 64 years old	144.0	147.2	150.2	153.3	154.7	157.2	161.7	167.1
65 years and older	5.3	6.7	8.9	11.0	12.9	14.4	14.8	14.7
Participation Rate (in percent)								
Labor Force, total	64.5	62.9	62.2	61.6	60.5	59.7	59.2	59.2
16 to 64 years old	74.0	72.1	72.3	72.8	73.0	73.2	73.4	73.5
65 years and older	14.3	16.5	18.6	19.6	19.8	19.8	19.1	18.4
Employment & person-hour								
Nonfarm Empl. (millions)	133.7	129.9	140.5	149.6	153.5	159.3	164.5	170.6
Unempl. Rate (percent)	5.1	9.6	6.4	5.1	5.1	4.9	4.9	5.0
Average Weekly Hours	32.6	32.3	32.7	32.5	32.5	32.5	32.5	32.5
Mfg. Workweek (hours)	40.6	41.1	41.5	41.2	41.0	41.0	41.0	41.0
Durable Mfg.	41.1	41.3	41.8	41.3	41.0	41.0	41.0	41.0
Nondurable Mfg.	39.9	40.8	41.0	41.0	41.0	41.0	41.0	40.9
Productivity Measures				(annual pct. change)				
GDP / Employment	2.24	1.34	0.78	1.62	1.85	1.65	1.75	1.64
FRB Ind. Production, all	0.81	-1.66	3.12	3.05	2.93	2.78	2.51	2.46
FRB Ind. Production, Mfg.	0.69	-1.04	3.12	2.84	2.38	2.15	1.99	1.89
Employment Cost Index				(annual pct. change)				
Pvt. Sector wages & salaries	3.00	2.49	1.96	2.61	2.57	2.57	2.50	2.47

Key U.S. Economic Forecast Indicators

	1975	1980	1985	1990	1995	2000	2005
Components of GDP			inflation adjusted (in pct. change)				
Gross Domesitc Product	2.7	3.7	3.3	3.4	2.6	4.3	2.5
Consumption	3.2	3.2	3.8	3.3	2.8	4.6	3.1
Durables	5.1	3.4	7.7	3.7	3.8	9.8	6.7
Computers			105.9	43.8	51.4	59.6	30.7
Software			103.5	49.6	51.9	42.2	29.5
Info. Processing Equipment	2.6	0.6	54.9	39.8	48.9	53.7	30.4
Nondurables	1.4	2.6	2.5	2.4	2.1	3.6	2.7
Food	1	2.1	1.7	2.4	0.9	2.1	2.2
Gasoline & other fuels	1.6	-0.7	1.1	1.9	1.8	1.2	0.2
Clothing & footwear	3.8	5.9	5.5	3.7	3.8	5.1	3.8
Gross Domestic Investments	1.3	7.2	5.6	1.4	4.6	8.9	2.4
Nonresidential Fixed Investments	2.4	7.9	5	2	4.7	9.9	0.8
Industrial Equipment	1.3	4	-0.2	0.5	4.3	3.9	-1.6
Computer Equipment	24.6	61.9	42.5	14.6	29.2	39.1	8.1
Transportation Equip.	3.3	5	3.7	-2.9	8.4	6.7	-0.6
Structures/Buildings	-0.8	7.8	3	-2.1	-2	4.9	-4.6
Residential Fixed Investments	0.8	3.6	4.6	0.1	3.4	5.2	6.5
Equipment	7.5	6.6	5.1	2.6	0.6	4.4	5.3
Structures/Buildings	0.4	3.9	4.4	0	3.5	6.4	6.5
Exports	6.9	7.5	0.4	11	7.2	7	1.8
Goods	7.4	8.1	-0.5	11	7.8	8.2	1.4
Services	5.6	5.4	3.4	11	5.7	4.1	2.6
Imports	1.3	6.5	8.6	5.3	7	11.6	4.3
Federal Spending	-2.4	2.3	5.2	2.4	-2.2	-0.1	4.8
State & Local Spending	3.1	1.2	1.7	3.8	2.2	3.4	1.2
Inflation Measures			inflation adjusted (in pct. change)				
GDP Deflator	6.6	7.2	5.2	3.1	2.4	1.7	2.4
Consumer Price Index	6.7	8.9	5.5	4	3.1	2.5	2.5
excluding Food & Energy	5.7	8.4	6.2	4.4	3.5	2.4	2.1
Producer Price Index	9.6	9	2.8	2.4	1.4	1.3	3.5
Employment Cost Index		7.9	6	3.7	3.1	3.7	3
Interest Rates			(in percents)				
Fed Funds	5.8	13.4	8.1	8.1	5.8	6.2	3.2
3-month Treasury Bill	5.8	11.4	7.5	7.5	5.5	5.8	3.1
30-Year Treasury Bond		11.3	10.8	8.6	6.9	5.9	4.6
30-Year Fixed Mortgage	9	13.8	12.4	10.1	8	8.1	5.9
Personal Income			inflation adjusted (in pct. change)				
Nominal	9.6	11.1	8.7	6.9	5.1	6.6	4.2
Inflation adjusted	2.7	2.1	3	2.8	1.9	4	1.6
Other Key U.S. Economic Measures							
Oil Prices (nominal $/barrel)							
W. Texas Intermediate			27.9	24.5	18.4	30.3	56.5
Refiners Acquistion Cost	10.4	28.2	26.7	22.3	17.2	28.2	50.3
Domestic Crude	8.4	24.2	26.7	22.4	17.3	29.1	53
Imported Crude	13.9	34	27	22.2	17.1	27.7	48.9
Exchange Rate Indexes (2009=1.0)			(weighted, inflation-adjusted)				
Major Trading Partners	1.225	1.088	1.47	1.083	1.04	1.303	1.075
Other Important Partners		1.025	1.488	1.404	1.265	1.283	1.181
Housing Starts (in millions)	1.16	1.3	1.741	1.203	1.361	1.573	2.073
Single-family	0.891	0.855	1.071	0.901	1.082	1.232	1.719
Multi-family	0.269	0.445	0.671	0.303	0.279	0.341	0.354
Consumer Sentiment (U. Mich.)	70.4	64.4	93.2	81.6	92.2	107.6	88.6

Key U.S. Economic Forecast Indicators

	2010	2015	2020	2025	2030	2035	2040
Components of GDP			inflation adjusted (in pct. change)				
Gross Domesitc Product	0.8	2.4	2.9	2.4	2.4	2.4	2.4
Consumption	1	2.4	2.6	2.2	2.3	2.3	2.3
Durables	0.7	6.7	4.5	4.3	4.7	4.7	4.9
Computers	17.5	17.1	14.9	13.9	14.3	14.2	14.2
Software	15	8.2	8	6.7	7.2	7.1	7.1
Info. Processing Equipment	16	12.8	11.7	10.6	11	10.9	11
Nondurables	0.8	1.9	2.1	2.1	2.3	2.5	2.6
Food	0.4	2	1.9	1.4	1.4	1.4	1.3
Gasoline & other fuels	-1.1	-0.5	-0.1	-0.7	-1	-1.1	-1.5
Clothing & footwear	1	2.4	3.3	3.1	4	3.8	3.7
Gross Domestic Investments	-4.5	6.7	3.8	2.5	2.3	2.3	2.6
Nonresidential Fixed Investments	-0.5	5.6	4.9	3	2.8	2.8	3
Industrial Equipment	-3.8	8.3	2.6	2.2	2.5	2.8	2.8
Computer Equipment	10.2	4.7	12.6	9.2	5.3	4.3	4.3
Transportation Equip.	-7.1	11.6	2.7	2.1	3.5	3.6	3.9
Structures/Buildings	-2.8	4.4	5.2	1.6	1.6	1.3	1.6
Residential Fixed Investments	-15.2	11.4	1.4	0.3	0.6	0.3	0.7
Equipment	-2.2	4.8	3.7	3.9	4.1	4.4	4.3
Structures/Buildings	-15.4	11.6	1.4	0.2	0.6	0.2	0.7
Exports	4.9	4.6	6.6	5.9	5.4	5.3	4.8
Goods	4.7	4.7	6.9	6.6	5.9	5.9	5.2
Services	5.6	4.3	5.9	4.3	4.3	4	3.7
Imports	0.6	3.9	3.7	3.6	3.9	4	4
Federal Spending	4.2	-1.8	-0.4	0.2	1.2	1.1	1.3
State & Local Spending	0.3	-0.8	1.1	1	1.1	1.1	1.3
Inflation Measures			inflation adjusted (in pct. change)				
GDP Deflator	1.9	1.7	1.7	1.7	1.8	1.9	2
Consumer Price Index	2.2	2	2	1.9	2	2.1	2.2
excluding Food & Energy	2	1.9	2	1.9	2	2.1	2.2
Producer Price Index	3.3	2.3	1.4	1.4	1.3	1.4	1.5
Employment Cost Index	2.5	2	2.6	2.6	2.6	2.5	2.5
Interest Rates			in percents				
Fed Funds	0.2	0.4	4	4	4	4	4
3-month Treasury Bill	0.1	0.4	3.7	3.7	3.7	3.7	3.7
30-Year Treasury Bond	4.3	4.2	4.8	4.8	4.8	4.8	4.8
30-Year Fixed Mortgage	4.7	4.9	6.6	6.6	6.6	6.6	6.6
Personal Income			inflation adjusted (in pct. change)				
Nominal	3.2	4.5	5	4.3	4.4	4.3	4.3
Inflation adjusted	1	2.5	3	2.3	2.4	2.2	2.1
Other Key U.S. Economic Measures							
Oil Prices (nominal $/barrel)							
W. Texas Intermediate	79.4	96.1	106.8	117.6	129.9	142.1	155.6
Refiners Acquistion Cost	76.7	94.3	106.6	118.3	130.6	142.8	156.3
Domestic Crude	77.9	95.6	109.1	121.3	133.6	145.8	159.3
Imported Crude	75.9	93.2	104.1	115.4	127.7	139.9	153.4
Exchange Rate Indexes (2009=1.0)			(weighted, inflation-adjusted)				
Major Trading Partners	0.994	1.016	0.978	0.955	0.936	0.921	0.908
Other Important Partners	0.948	0.804	0.695	0.647	0.621	0.605	0.591
Housing Starts (in millions)	0.586	1.472	1.609	1.557	1.557	1.515	1.498
Single-family	0.471	1.045	1.11	1.061	1.011	0.972	0.959
Multi-family	0.114	0.427	0.499	0.496	0.545	0.542	0.538
Consumer Sentiment (U. Mich.)	71.8	88.7	88.9	88.9	90.3	90.1	90.2

U.S. Industrial Productivity Measures for key industries

	1990	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
U.S. Manufacturing Productivity Measures (Federal Reserve Board)											
(annualized average percent change)											
Total Industrial Production	2.6	2.9	5.1	0.7	-1.0	3.1	2.8	2.4	2.2	2.0	1.9
Manufacturing, total	3.0	3.5	5.9	1.0	-1.4	3.4	3.2	3.0	2.8	2.6	2.5
Nondurable Goods	2.8	1.8	1.3	0.5	-2.0	1.0	2.4	2.0	2.0	2.2	2.3
Food Processing	1.9	1.9	1.6	1.2	0.0	1.7	2.1	1.6	1.7	1.6	1.6
Paper	2.5	1.9	-0.4	-1.3	-2.8	0.2	1.8	1.5	1.7	1.8	1.9
Durable Goods	3.3	4.8	9.4	1.5	-0.9	5.6	4.2	3.8	3.5	3.0	2.9
Wood Products	2.9	1.6	2.6	1.3	-8.6	8.2	1.4	-0.1	-0.1	-0.4	0.2
Primary Metals	2.6	1.9	1.0	-1.0	-0.9	3.2	3.6	2.3	0.2	-0.8	-1.1
Fabricated Metals	0.8	3.3	3.2	-1.2	-2.8	5.2	2.8	1.7	1.2	1.2	1.4
Machinery	2.3	3.3	2.9	-1.3	-1.6	6.1	3.5	2.5	2.1	1.8	2.0
Computer & Electronics	8.1	14.3	30.7	7.5	7.7	7.0	7.5	7.8	7.3	5.4	5.1
Transport Equipment	2.2	1.4	4.0	1.1	-1.8	6.6	3.5	2.8	3.2	3.3	2.5
U.S. Manufacturing Productivi											
(index 2002=100)											
Total Industrial Production	62.2	71.8	92.2	95.5	90.6	105.7	121.6	136.7	152.1	167.9	184.4
Manufacturing, total	56.8	67.3	89.8	94.4	87.9	103.7	121.4	140.6	161.7	183.5	207.9
Nondurable Goods	82.4	89.9	95.9	98.3	88.7	93.5	105.1	116.3	128.6	143.2	160.6
Food Processing	78.1	85.8	92.7	98.6	98.6	107.4	119.3	129.3	140.4	152.1	164.5
Paper	100.1	110.1	107.7	100.7	87.2	88.0	96.0	103.3	112.6	123.1	135.1
Durable Goods	42.7	54.0	84.8	91.2	87.3	114.9	140.8	169.4	201.6	234.1	270.1
Wood Products	80.7	87.3	99.3	105.9	67.6	100.5	107.7	107.2	106.9	104.9	105.7
Primary Metals	87.1	95.6	100.3	95.2	91.1	106.4	126.7	142.2	143.4	137.7	130.2
Fabricated Metals	70.0	82.5	96.6	90.9	79.0	101.6	116.7	127.3	135.1	143.7	154.0
Machinery	71.9	84.8	97.7	91.6	84.6	113.7	135.1	153.1	170.1	186.4	206.0
Computer & Electronics	7.2	14.0	53.6	76.9	111.6	156.5	225.3	328.1	466.0	606.3	778.5
Transport Equipment	67.7	72.7	88.3	93.0	85.0	117.3	139.4	160.4	187.8	220.4	249.9

U.S. Components of National Income

(Nominal billions of dollars unless otherwise noted)

	1975	1980	1985	1990	1995	2000	2005
U.S. National Income Accounts							
Total Personal Income	1,366.9	2,316.8	3,515.9	4,904.5	6,276.5	8,632.8	10,610.3
pct. chg. (annualized)	9.6	11.1	8.7	6.9	5.1	6.6	4.2
Inflation-adjusted	4,503.2	5,267.0	6,204.8	7,272.6	8,219.8	10,384.3	11,499.4
pct. chg. (annualized)	3.1	3.2	3.3	3.2	2.5	4.8	2.1
Wage & Salary Disbursements	814.9	1,373.4	1,982.6	2,741.2	3,418.0	4,825.9	5,692.9
Social Security Contributions	89.9	167.2	282.8	412.1	535.5	709.4	878.0
Transfer Payments to Persons	170.0	279.5	424.9	594.9	879.0	1,083.0	1,512.0
Other Labor Income	88.6	163.9	258.7	395.0	520.5	685.5	966.8
Proprietors, total	118.2	171.6	241.1	354.5	484.5	757.8	979.0
Farm	22.0	11.7	21.0	32.2	22.0	31.5	46.4
Businesses (nonfarm)	96.2	159.9	220.1	322.3	462.4	726.3	932.6
Dividends, Interest and Rent	220.2	411	748.9	1,030.40	1,252.00	1,651.90	1,920.60
(annualized percent change)							
Wage & Salary Disbursements	8.1	11	7.6	6.7	4.5	7.1	3.4
Social Security Contributions	14	13.2	11.1	7.8	5.4	5.8	4.4
Transfer Payments to Persons	17.9	10.5	8.7	7	8.1	4.3	6.9
Other Labor Income	12.2	13.1	9.6	8.8	5.7	5.7	7.1
Proprietors, total	8.7	7.7	7	8	6.4	9.4	5.3
Farm	11.2	-11.8	12.4	8.9	-7.3	7.4	8.1
Businesses (nonfarm)	8.2	10.7	6.6	7.9	7.5	9.4	5.1
Dividends, Interest and Rent	10.4	13.3	12.7	6.6	4	5.7	3.1

U.S. Components of National Income

(Nominal billions of dollars unless otherwise noted)

	2010	2015	2020	2025	2030	2035	2040
U.S. National Income Accounts							
Total Personal Income	12,435.2	15,494.0	19,790.4	24,453.6	30,314.9	37,452.1	46,332.2
pct. chg. (annualized)	3.2	4.5	5	4.3	4.4	4.3	4.3
Inflation-adjusted	12,232.4	14,048.6	16,411.0	18,561.0	20,997.6	23,545.3	26,344.0
pct. chg. (annualized)	1.2	2.8	3.2	2.5	2.5	2.3	2.3
Wage & Salary Disbursements	6,377.5	7,803.7	9,789.1	11,911.9	14,713.9	18,078.1	22,267.3
Social Security Contributions	989.0	1,247.7	1,625.9	2,008.6	2,480.7	3,047.1	3,751.9
Transfer Payments to Persons	2,276.9	2,686.2	3,402.2	4,412.0	5,740.9	7,330.5	9,251.6
Other Labor Income	1,120.4	1,279.6	1,608.3	1,936.8	2,353.8	2,868.3	3,523.2
Proprietors, total	1,032.7	1,457.3	1,801.4	2,238.2	2,839.4	3,576.0	4,462.1
Farm	46.0	100.4	94.9	85.0	76.1	64.7	49.5
Businesses (nonfarm)	986.7	1,356.9	1,706.5	2,153.2	2,763.3	3,511.4	4,412.5
Dividends, Interest and Rent	2,156.50	2,934.90	4,060.70	5,033.20	6,001.40	7,241.20	8,856.90
(annualized percent change)							
Wage & Salary Disbursements	2.3	4.1	4.6	4	4.3	4.2	4.3
Social Security Contributions	2.4	4.8	5.4	4.3	4.3	4.2	4.2
Transfer Payments to Persons	8.5	3.4	4.8	5.3	5.4	5	4.8
Other Labor Income	3	2.7	4.7	3.8	4	4	4.2
Proprietors, total	1.1	7.1	4.3	4.4	4.9	4.7	4.5
Farm	-0.2	16.9	-1.1	-2.2	-2.2	-3.2	-5.2
Businesses (nonfarm)	1.1	6.6	4.7	4.8	5.1	4.9	4.7
Dividends, Interest and Rent	2.3	6.4	6.7	4.4	3.6	3.8	4.1

Latest U.S. conditions and outlook

	2008	2009	2010	2011	2012	2013	2014	2015	2016
Real GDP (% change)	-0.3	-2.8	2.5	1.8	2.8	1.7	2.5	3.1	3.3
Payroll Employment (ch. in mil.)	-0.8	-6	-0.9	1.6	2.2	2.2	2.2	2.5	2.7
Federal Funds Rate (pct.)	1.93	0.16	0.18	0.1	0.14	0.11	0.14	0.37	2.15
10-yr. T-Note Yield (pct.)	3.7	3.3	3.2	2.8	1.8	2.3	2.9	3.2	3.8
Brent Crude Price ($/bbl)	97.9	61.6	79.8	111	111.8	107.7	103.9	99.2	97.9
CPI (% change)	3.8	-0.3	1.6	3.1	2.1	1.4	1.4	1.7	1.9
Housing Starts (mil.)	0.98	0.6	0.64	0.66	0.84	0.97	1.21	1.57	1.74
Consumer Sentiment	63.8	66.3	71.8	67.4	76.5	78.5	82.3	88.7	89.4
Unemployment Rate (percent)	5.8	9.3	9.6	8.9	8.1	7.5	6.9	6.4	5.9

source: IHS Global Insight, January 2014 U.S. Macroeconomic Outlook

Exhibit A to Resolution No. 14-4582

Appendix 1b

Frequently asked questions about population and employment forecasting

How does Metro develop its employment and population forecasts?

We rely on computer models to forecast and help foresee future trends (and ranges) in employment and population growth in the region. The region is the Portland-Vancouver-Hillsboro MSA (i.e., Portland MSA). Our computer model is a statistical, regression-based economic representation of the regional economy. The econometric model is integrated with a traditional cohort-component population model. The econometric portion of the model predicts regional employment, income and wage trends while the cohort model predicts regional population growth. (This econometric model also has tie-ins to MetroScope – an integrated land use distribution model – and a Transportation Demand Model (TDM) to complete Metro's suite of detailed socio-economic, land use and transportation models).

What counties make up the Portland-Vancouver-Hillsboro MSA?

The U.S. Office of Management and Budget (OMB) has the responsibility of delineation and periodically refreshing the counties that make up metropolitan statistical areas (MSA). The recent rendition of the Portland MSA includes the following counties in two states.

Oregon counties:

- Clackamas
- Columbia
- Multnomah
- Washington
- Yamhill

Washington counties:

- Clark
- Skamania

Metro updates its regional definition and associated models whenever there is an official change in MSA delineations.

Why does Metro produce a forecast for the larger metropolitan area instead of the urban growth boundary, counties and cities?

Eventually, in coordination with cities and counties, Metro does produce forecasts for smaller geographies. However, we start with the seven-county MSA for several reasons, including:

- The most current population and employment numbers from the federal government are for the MSA geography. We want to make sure we can tie our forecast to actual historic numbers.
- We need to understand the larger context of the economic region before forecasting greater detail.
- We're "showing our work" instead of jumping to forecasts for smaller geographies.

What are the key assumptions for the regional population forecast?
A population forecast is comprised of 3 primary components:

- Births
- Deaths
- (Net) Migration.

Demographers use the term "natural increase" to describe births and deaths added together. "Net migration" takes into account migration inflows minus migration outflows. The mechanics of any population model are simply adding together estimates of natural increases and net migration to arrive at a population forecast. Extrapolating natural increase and net migration into future years yields a population forecast.

The regional population forecast thus depends on projection rates for births, deaths and migration. The birth and death rate projections are assumptions derived from Census data and specifically adjusted for age. Race, ethnicity and sex are also major factors that affect birth and death rates. Differences caused by these factors are factored into the projections. The migration component derives from a regression analysis that considers economic trends with observed net migration data and is integrated with the Metro economic forecast. (The notion being that migration ebbs and flows with business cycles and economic trends.)

Birth rates – Metro relies on the U.S. Census Bureau to supply births rate assumption for future forecast years. These rates are age-adjusted according to the birth mother's age. Because these birth rates are for the U.S., Metro re-calibrates these birth rates so that they align with historical age-adjusted birth rates observed in the Portland MSA for the last 15 years.

Death rates – Metro relies on the U.S. Census Bureau and Centers for Disease Control (CDC) to supply death rate assumptions. These rates are adjusted according to age bracket. Because these death rates are for the U.S., Metro re-calibrates the death rates so that they align with historical regional age-adjusted rates observed for the last 15 years.

Net Migration – Metro bases its migration forecast on historical trends. The historical net-migration estimates are provided by Portland State University Population Research Center. The Metro migration forecast is tied into the regional econometric model and regional forecast. We have found statistically significant socio-economic relationship between annual migration rates and the pace of regional economic activity. We exploit this relationship within the Metro regional econometric model to predict net migration flows to the MSA region.

What data sources are used in preparing the population forecast?

- Portland State University Population Center – basic county population estimates, http://www.pdx.edu/prc/population-estimates-0
- Washington State Office of Financial Management, http://www.ofm.wa.gov/pop/

- U.S. Census Bureau, National Population Projections, http://www.census.gov/population/projections/data/national/index.html
- Oregon county vital statistics, http://public.health.oregon.gov/BirthDeathCertificates/VitalStatistics/annualreports/CountyDataBook/Pages/cdb.aspx
- Washington State county vital statistics, http://www.doh.wa.gov/DataandStatisticalReports/VitalStatisticsData.aspx

What are the main economic drivers for the regional employment forecast?

The Metro regional employment forecast is based on projections from a structural econometric model. What this means is that for each key regional industry, we use statistics – i.e., regression analysis – to forecast what direction we think the employment in the industry will grow. The focus is to define an econometric or statistical relationship between the dependent variable (industry employment) and a set of one or more independent variables. This statistical relationship typically describes how we understand regional employment will grow over time with expected variations in the independent variable(s). Metro keeps this regional econometric model up to date with the most recent data available as it prepares the regional forecast.

For us to forecast regional employment trends, we need to have assumptions about future values for the independent variables in each regression equation. As we have done so in previous regional employment forecasts, we get future estimates for these independent variables from IHS Global Insight. IHS is the leading provider of diverse global market and economic information. IHS is a global information company with world-class experts in the pivotal areas shaping today's business landscape, including energy, economics, geopolitical risk, sustainability and supply chain management.

The Global Insight 30-year Long-term U.S. macroeconomic outlook serves up the economic drivers that are the cornerstone for the Metro regional forecast. The economic drivers (or variables) include:

- forecasts of GDP and its components (e.g., consumption, investments, imports/exports and government spending)
- interest and inflation rates
- foreign exchange rates
- production and productivity
- demographics

What data sources go into preparing the employment forecast?

- IHS Global Insight - U.S. macro-economic drivers (variables include GDP components, interest rates, foreign exchange rates, inflation rates, production and productivity, etc.), http://www.ihs.com/index.aspx (data are proprietary and on paid subscription)
- U.S. Census, http://www.census.gov/
- Bureau of Labor Statistics, http://www.bls.gov/home.htm

- Bureau of Economic Analysis, http://www.bea.gov/
- Oregon Employment Department, http://www.qualityinfo.org/olmisj/CEW

How are the "range forecasts" created by Metro?

To recognize that forecasts carry an element of uncertainty, Metro generates a forecast range for total regional population and employment by industry sector and sums the industry ranges for total regional employment. The ranges represent a 90% confidence interval that future employment and population for the region will fall within this growth band. Another way of saying is that 10% of the time we might expect growth to be faster or slower so that population and employment growth in these instances will fall outside of the confidence interval.

Since the methodology for creating the population and employment forecasts are different, the approach for creating ranges plays to the strengths of each methodology.

Population Range Methodology – The regional population forecast employs a standard cohort-component approach for projecting future population growth. Recall that the cohort-component relies on a set of assumptions for age-adjusted birth and death rates and net migration. Since these are assumptions, it's not much of a stretch to imagine that these assumptions could be wrong or have some standard error to them. Further, if we imagine that each of these assumptions is in actuality a continuous random variable, then it is possible to assign a probability density function that describes the expected value of the population component rate assumptions and to then ascribe a standard forecast error that is akin to a standard deviation to account for some uncertainty in these assumptions.

Having no prior knowledge of what the true shape of the probability density function is for the population components, we assert that the error distribution for each population component is normally distributed. A normal distribution is useful and a unique error distribution can be defined by a mean and a standard deviation. We assume that the expected values in the baseline forecast assumptions represent the mean of the normal distribution while the standard deviation is represented by estimating the standard error of the forecast for each birth and death rate component.

Applying a monte carlo computation method, each population component is randomized 10,000 times and each time a new alternative population simulation is calculated. Because of the properties of a normal distribution, the chance of one of the alternative population forecasts is more likely to fall closer to the expected or mean value represented by the baseline population forecast than near the tail ends. By tabulating all 10,000 alternative population simulations into a crosstab, we end up having a population forecast range or interval. Within in this interval, we can easily infer from the tabulation what percentage of forecast alternatives fall within 1, 2 or more standard deviations from the forecast baseline (or mean). By repeating the simulations many times and tabulating these results, we may infer from these random draws a confidence interval that is "bell-shaped".

Employment Range Methodology – The regional employment forecast is computed from a regional econometric model that is rooted in regression analysis. This means that for each equation there is a

forecast standard error calculated from the regression. From here, it is straight forward to infer a 1- or 2-standard deviation forecast range for each industry sector. The range is computed by taking the baseline forecast as an anchor point and adding/subtracting twice the value of the forecast error. This range represents a 90% confidence interval or 2 standard deviations.

What importance is attributed to the Metro baseline forecast for population and employment?
The baseline population (and employment) forecast serves as an anchor point for the range forecast. The range represents statistically a confidence interval (typically 2 standard deviations or equal to 90%) for the uncertainty the forecaster has over the forecast. The confidence bands usually grow wider over time as the forecast years increase away from the forecast base year. Typically, the base year for demographic data is a decennial census year (e.g., 2010) and the employment and other economic variables will vary with most base years set in the case of this forecast as 2013 (part year).

Why doesn't Metro use the population estimates from PSU's Population Research Center (PRC)?
Population estimates aren't the same as a population forecast or projection. As the PRC says on its website, population estimates are annual population estimates prepared by the center as current year estimates for the years in the decade between the most recent decennial census and the next decennial census. (source: http://www.pdx.edu/prc/population-estimates-0)

Why doesn't Metro use the population forecasts from PSU's Population Research Center (PRC)?
The timing of PRC's population forecast for the Metro area is out of sync with when Metro needs this information for the analysis to go into the 2014 Urban Growth Report.

PSU and DLCD are now working together to come up with a schedule to forecast population growth of the State and its counties and cities. But an agreement for this work has not yet been hammered out and forecast work has not yet begun. Meanwhile, Metro has need for this information now in order stay on schedule with meeting its 5-year mandate to review the region's capacity for accommodating a future 20-year growth expectation.

Is the Metro population forecast coordinated with PSU's Population Research Center (PRC)?
Yes. Metro and PRC formally reviewed and shared component assumptions for population growth of the region. Metro shared its forecast methodology with PRC and had them scrutinize the approach, component assumptions and review the forecast results for the baseline and range. PRC staff also participated in Metro's regional forecast review panel (see next question).

Was the regional forecast peer reviewed?
Yes. Metro convened a panel of experts from the region to review the veracity of the 2014 regional forecast (and range). The panel met twice. The first time was to discuss the U.S. macro-economic outlook (IHS Global Insight), review the model's structure and to provide preliminary feedback on the general tone and direction of the forecast assumptions. The second meeting was to confirm the veracity of the baseline and discuss factors and assumptions that could influence the direction and magnitude of a high and low growth forecast scenarios.

Members of the peer review panel included staffs from Portland State University (PSU) Population Research Center, PSU center for sustainability, PSU Northwest Economic Research Center (panel chaired by Dr. Thomas Potiowsky), NW Natural, Johnson Economics and EcoNorthwest Consulting. A summary of the panel's discussions is included in the Urban Growth Report's appendices.

Has the 2014 regional forecast been coordinated with local governments?
As yet, no. The regional forecast will be reviewed and coordinated with local jurisdictions in the context of Metro's growth distribution process depicted in Figure 1. This step takes place after state acknowledgement of the Metro Council's decision to adopt a regional forecast. When the time comes, the regional forecast will be distributed to traffic analysis zones (TAZ) for households and employment. In turn, TAZ estimates (which are smaller than census tracts) may be subtotaled to approximate population (or employment) by city limits. This work requires detailed coordination with cities and counties.

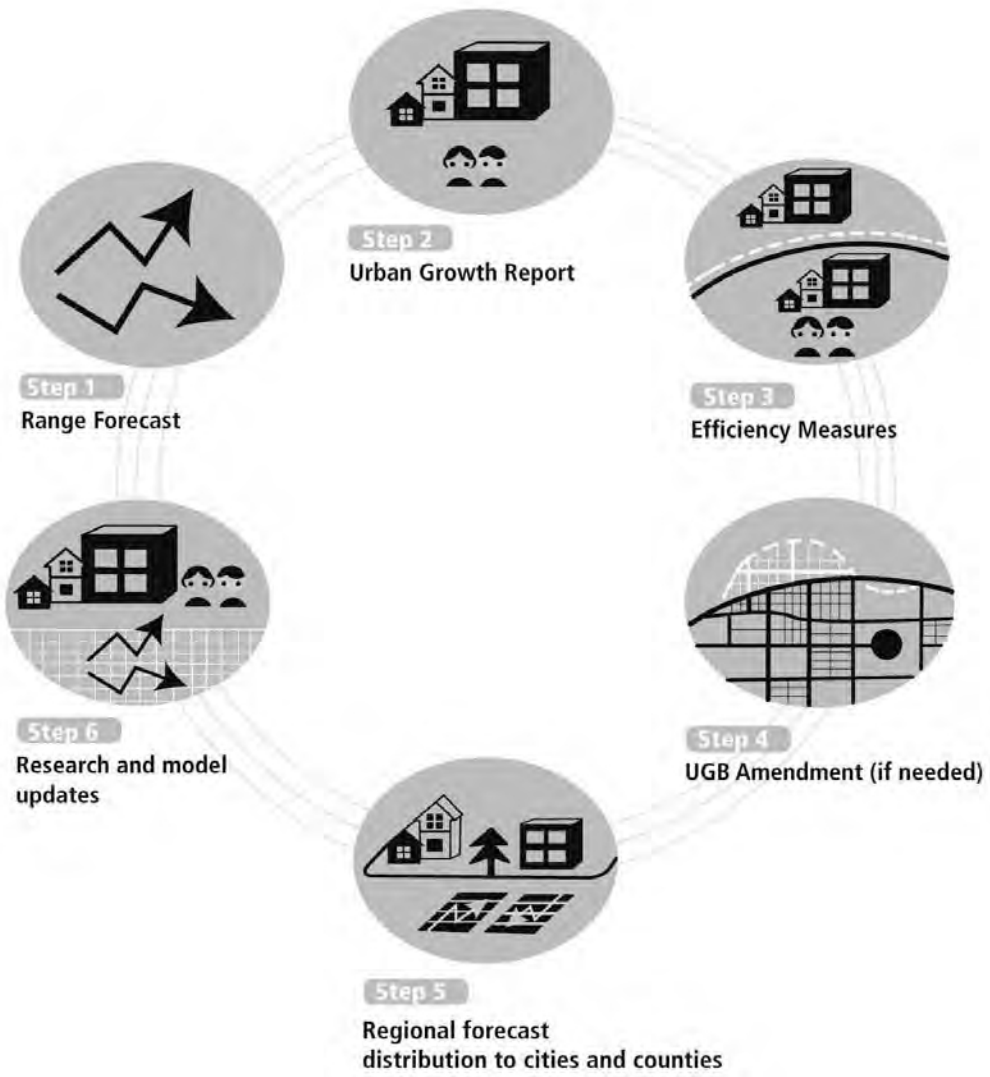


Figure 1: Illustration of Forecast, Legislative & Growth Coordination Cycle

What's different about regional vs. county forecasts (or other smaller geographies)?
Smaller geographies – even counties – historically experience broader growth trend fluctuations than regional or state forecasts. Bigger areas benefit from larger numbers that tend to smooth out local variations that are hard to predict or near impossible to expect. We see the regional and county differences play out in the forecast because of specific geographic disparities and advantages. For example, why did the high tech economy sprout in Silicon Forest in Washington County and not Clackamas or Multnomah? This historical idiosyncrasy creates regional and subregional growth rate differences that show up in the county-level job forecasts. Migration and differences in housing preferences and the mix of housing supply in each county played a role in bolstering suburban population growth during the 1980's and 90's. This too led to variations between county vs. regional growth rates.

What modeling tools does Metro use to prepare forecasts areas smaller than the Portland-Vancouver-Hillsboro metropolitan statistical area? Why?
MetroScope, which is a mathematical economic model developed to analyze and simulate urban growth and predict future development patterns. It is what scientists call an integrated land use and transportation model. It is state-of-the-art market equilibrium model which is capable of forecasting where population and employment will locate in the future. It is a model that explicitly considers where people live and work in the future after taking into account regulatory, market trends, and socio-economic factors that could impact the ease of future transportation and commuting, the price of real estate, and the availability of land supply for housing and industry growth. These are factors that a traditional cohort-component population model is not capable of assessing.

The smallest geography for which Metro produces forecasts is the Transportation Analysis Zone (TAZ). The TAZ forecast is primarily used by Metro and local area transportation forecasters and modelers. TAZ are pretty small areas – about ¼ the size of a typical census tract. There are over 2,100 TAZ geographic units in the Portland region. This data is used as inputs in modeling congestion, transit, and traffic flows for transportation and corridor planning projects. Examples of recent uses include the Columbia River Crossing (CRC) Study, Southwest Corridor Planning Project (SWCP0, East Metro Connections Plan (EMCP), and updates to the Regional Transportation Plan (RTP).

Why are forecasts sometimes incorrect?
Creating a forecast requires us to make assumptions or guesses about events that have not yet occurred, and if those future actual events don't match our assumptions about them, the forecast can be incorrect. Forecasts are not always correct – whether the models are founded on statistical relationships or cognitive – because the models we use are necessarily simplifications of the real world. If events in the real world drift away from the theoretical and practical underpinnings of our models, the forecast results from our model will look very different from the events that unfold in the future.

Forecasts are often not always correct due to unforeseen fluctuations in the inputs we use to make the forecast. And even when we are able to predict these fluctuations, we may be wrong about the

magnitude of change in these factors. Sometimes these fluctuations are simply measurement errors which are eventually revised or re-benchmarked according to better and more full accounting by federal and state statistical agencies. Regardless of the type of error – whether it's measurement error or a judgment error about how input assumptions will impact the forecast – these discrepancies in what we call inputs are partly to blame for forecasts that are not always correct.

The models we use are mathematical constructs of reality based on statistical relationships and observed over many years. If these statistical correlations break down in the future, regardless of how accurately we predict the input assumptions, the relationships between the input drivers and the forecasts are likely to be led astray from actual future events.

In sum, error sources include:

1. Historical estimates could be wrong (re-benchmarked/revised in later years when more/better data become available)
2. Socio-economic drivers / assumptions could be wrong (independent variables used in the forecasting of employment are themselves forecasts and likely based on other forecast assumptions)
3. Unanticipated and very large economic shocks are unanticipated
4. Theoretical basis for the forecast could be wrong
5. Statistical relationships assumed from econometric analysis do not carry forward into the future and therefore could lead to wrong conclusions.

Why do population forecasts seem more accurate than employment forecasts?
Population forecasts generally reveal themselves to be closer to actual trends because the factors / input assumptions that drive the forecast are more predictable. We have to rely on future assumptions about mortality and birth rates and future migration levels in order to forecast regional population growth.

Mortality and birth rates vary over time, but generally these variations happen slowly and in relatively predictable patterns. Additionally, the differences between national rates and regional rates are generally similar so we can very reasonably rely on national data sets to predict regional natural population increases.

Predicting migration is a more difficult problem and suffers from greater historical deviations. Moreover, past migration trends may not be directly comparable to future levels because of the potential for sweeping economic fluctuations that could swing the migration level wildly up or down according to regional business cycles.

Why do employment forecasts have greater uncertainty?
Employment (and economic) forecasts are generally less accurate because there are so many more variables involved that we are able to consider only part of the economic picture. There is a much

higher degree of uncertainty in the variables we use to predict regional employment. Besides more uncertainty in the input variables, the economic relationship between the regional economy and national/global economy is also subject to wider economic shifts. In other words, past performance is no guarantee of future results.

How do Metro's past Metro forecasts hold up when compared with actual growth?
Metro has looked back at three forecasts: 1985, 2000, and 2010 vintage forecasts. There's not enough history gone by to make a legitimate comparison of the 2010 regional forecast. This leaves the 1985 and 2000 forecasts for comparison.

1985 vintage regional forecast
The 1985 regional forecast shows a -9.4 percent forecast error in population. This is a pretty accurate forecast given that it has a less than 1% annual error rate (-9.4% / 15 years = -0.62%). The negative sign indicates population grew faster than projected. This is not surprising since the region experienced an unexpected higher level of migration in the late 80's and early 90's as "equity migrants" cashed out of lucrative homes in southern California and settled here in the Portland area due to its milder climate and attractive real estate opportunities.

The 1985 regional forecast showed a miniscule percent forecast error in employment of -3.3 percent by the end of its 20 year forecast horizon in 2005. This forecast was remarkably accurate despite the economic turmoil (positive and negative) that played out during the 20 year time frame.

Lastly, in terms of business cycle comparisons, both 1985 and 2005 are roughly at the same stage of the business cycle – i.e., both are trending up and somewhere in the middle of the peak and trough of their respective recessions. For trend analysis point of view, this is a fair comparison.

2000 vintage regional forecast
The 2000 regional forecast shows a 3.2 percent forecast error in population. Averaged over 10 years, this represents a pretty close difference between the forecast and actual events.

The 2000 regional forecast shows a very wide error margin in employment of 22.1% (or a difference of 211,688 jobs by 2010). The mitigating reason for this wide margin was of course the Great Recession. In terms of trend comparison purposes, this is the worst comparison to make because the 2000 base year was a peak business cycle year while 2010 is trough business cycle year. Without the recession (or comparing peak to peak in the trend) the regional economy would have yielded about 200,000 more jobs on a trend basis, but the unforeseen Great Recession caused instead a loss of 70,000 annual jobs (2008-10).

A Regional Population & Employment Forecast to 1990 & 2005

Portland Metropolitan Area : July 1985

A service of the Intergovernmental Resource Center, Metropolitan Service District

	Forecast Population		Actual Population (Census or PSU)					1990		2005	
	1990	2005	1980	1990	2000	2005	2010	Difference	%Difference	Difference	%Difference
7-county MSA	N/A	N/A	1,341,542	1,523,741	1,928,339	2,067,325	2,226,009				
4-county region	1,410,500	1,739,572	1,242,645	1,412,344	1,789,915	1,919,220	2,066,399	-1,844	-0.1%	-179,648	-9.4%
3-county region	1,177,373	1,424,264	1,050,418	1,174,191	1,444,677	1,524,943	1,641,036	3,182	0.3%	-100,679	-6.6%
Clackamas County	284,067	362,477	241,911	278,850	338,391	359,308	375,992	5,217	1.9%	3,169	0.9%
Multnomah County	597,728	652,510	562,647	583,887	660,486	674,862	735,334	13,841	2.4%	-22,352	-3.3%
Washington County	295,578	409,277	245,860	311,554	445,800	490,773	529,710	-15,976	-5.1%	-81,496	-16.6%

	Forecast Employment		Actual Employment (BLS)					1990		2005	
	1990	2005	1980	1990	2000	2005	2010	Difference	%Difference	Difference	%Difference
7-county MSA	N/A	N/A	582,700	730,400	973,300	983,600	968,800				
4-county region	686,900	910,010	556,210	698,430	933,310	941,481	927,532	-11,530	-1.7%	-31,471	-3.3%
3-county region	595,400	780,010	491,131	607,167	810,325	807,118	793,019	-11,767	-1.9%	-27,108	-3.4%
Clackamas County	84,400	120,000	62,102	92,268	133,056	143,621	136,805	-7,868	-8.5%	-23,621	-16.4%
Multnomah County	370,400	433,000	334,766	375,768	453,254	428,305	421,452	-5,368	-1.4%	4,695	1.1%
Washington County	140,600	227,010	94,263	139,131	224,015	235,192	234,762	1,469	1.1%	-8,182	-3.5%

7-county MSA: Oregon: Clackamas, Columbia, Multnomah, Washington & Yamhill.
Washington: Clark & Skamania

4-county: Clackamas, Multnomah, Washington & Clark
3-county: Clackamas, Multnomah & Washington

forecast source: Metro Data Resource Center

Economic Report to the Metro Council: 2000-2030 Regional Forecast

Proposed Final DRAFT; Released March 2002, Revised September 2002
Metro Data Resource Center, Gen 2.3 TAZ forecast allocation, final draft circa 2006

	Forecast Population							Actual Population (Census)				2000		2010	
	2000	2005	2010	2015	2020	2025	2030	1980	1990	2000	2010	Difference	%Difference	Difference	%Difference
7-county MSA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,341,542	1,523,741	1,928,339	2,226,009				
5-county PMSA	1,874,450	2,049,190	2,233,890	2,394,100	2,571,100	2,768,200	2,955,300	1,297,977	1,477,895	1,874,449	2,165,592	1	0.0%	68,298	3.2%
4-county region	1,789,460	1,956,300	2,134,300	2,287,000	2,455,700	2,643,700	2,821,000	1,242,645	1,412,344	1,789,915	2,066,399	-455	0.0%	67,901	3.3%
3-county region	1,422,316	1,543,528	1,697,006	1,775,618	N/A	N/A	2,177,840	1,050,418	1,174,191	1,444,677	1,641,036	-22,361	-1.5%	55,970	3.4%
Clackamas County	336,413	365,035	404,278	447,794	N/A	N/A	618,779	241,911	278,850	338,391	375,992	-1,978	-0.6%	28,286	7.5%
Multnomah County	643,962	683,949	734,980	744,632	N/A	N/A	863,170	562,647	583,887	660,486	735,334	-16,524	-2.5%	-354	0.0%
Washington County	441,941	494,545	557,748	583,192	N/A	N/A	695,890	245,860	311,554	445,800	529,710	-3,859	-0.9%	28,038	5.3%

	Forecast Employment							Actual Employment (BLS, OR & WA Labor Dept.)				2000		2010	
	2000	2005	2010	2015	2020	2025	2030	1980	1990	2000	2010	Difference	%Difference	Difference	%Difference
7-county MSA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	582,700	730,400	973,300	968,800				
5-county PMSA	958,020	1,043,490	1,168,680	1,273,200	1,387,700	1,515,500	1,641,500	572,600	718,770	960,910	956,992	-2,890	-0.3%	211,688	22.1%
4-county region	930,900	1,011,860	1,134,000	1,234,900	1,345,600	1,469,000	1,590,100	556,210	698,430	933,310	927,532	-2,410	-0.3%	206,468	22.3%
3-county region	832,841	903,459	1,009,987	1,086,224	N/A	N/A	1,407,999	491,131	607,167	810,325	793,019	22,516	2.8%	216,968	27.4%
Clackamas County	134,639	146,256	166,060	188,964	N/A	N/A	251,284	62,102	92,268	133,056	136,805	1,583	1.2%	29,255	21.4%
Multnomah County	461,867	492,507	542,434	572,849	N/A	N/A	705,729	334,766	375,768	453,254	421,452	8,612	1.9%	120,982	28.7%
Washington County	236,335	264,697	301,492	324,411	N/A	N/A	450,986	94,263	139,131	224,015	234,762				

7-county MSA: Oregon: Clackamas, Columbia, Multnomah, Washington & Yamhill.
Washington: Clark & Skamania

5-county PMSA Oregon State: Clackamas, Columbia, Multnomah, Washington & Yamhill; Washington State: Clark

4-county: Clackamas, Multnomah, Washington & Clark
3-county: Clackamas, Multnomah & Washington

2010-2040 Regional Forecast and Growth Distribution (GAMMA TAZ Forecast Distribution)

Final Draft, December 2012 (Metro ordinance #`12-1292A)

Metro Research Center - Economic Land Use Forecasting

	Forecast Population				Actual Population (Census)				2010	
	2010	2025	2035	2040	1980	1990	2000	2010	Difference	%Difference
7-county MSA	2,226,009	2,851,368	3,147,270	3,285,704	1,341,542	1,523,741	1,928,339	2,226,009	0	0%
4-county region	2,066,399	2,571,052	2,847,551	2,983,520	1,242,645	1,412,344	1,789,915	2,066,399	0	0%
3-county region	1,641,036	2,003,860	2,239,603	2,363,327	1,050,418	1,174,191	1,444,677	1,641,036	0	0%
Clackamas County	375,992	504,085	557,174	587,514	241,911	278,850	338,391	375,992	0	0%
Multnomah County	735,334	875,555	970,639	1,027,702	562,647	583,887	660,486	735,334	0	0%
Washington County	529,710	624,220	711,790	748,111	245,860	311,554	445,800	529,710	0	0%

	Forecast Employment				Actual Employment (BLS, OR & WA Labor Dept.)				2010	
	2010	2025	2035	2040	1980	1990	2000	2010	Difference	%Difference
7-county MSA	970,033	1,297,930	1,491,091	1,594,151	582,700	730,400	973,300	968,800	1,233	0.1%
4-county region	916,396	1,229,810	1,412,607	1,513,840	556,210	698,430	933,310	927,532	-11,136	-1.2%
3-county region	789,129	1,042,390	1,190,587	1,276,429	491,131	607,167	810,325	793,019	-3,890	-0.5%
Clackamas County	137,946	183,230	210,444	227,483	62,102	92,268	133,056	136,805	1,141	0.8%
Multnomah County	419,164	533,818	597,331	626,710	334,766	375,768	453,254	421,452	-2,288	-0.5%
Washington County	232,019	325,342	382,812	422,236	94,263	139,131	224,015	234,762	-2,743	-1.2%

7-county MSA: Oregon: Clackamas, Columbia, Multnomah, Washington & Yamhill.
Washington: Clark & Skamania

5-county PMSA: Oregon State: Clackamas, Columbia, Multnomah, Washington & Yamhill; Washington State: Clark

4-county: Clackamas, Multnomah, Washington & Clark
3-county: Clackamas, Multnomah & Washington

Appendix 1c

Summary of Regional Forecast Advisory Panel Discussions and Conclusions

See attached memo from Dr. Tom Potiowsky (PSU) to Ted Reid (Metro)

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To: **Ted Reid, Senior Regional Planner, METRO**
From: **Dr. Tom Potiowsky - Director, Northwest Economic Research Center**
Janai Kessi, Research Associate, Northwest Economic Research Center
RE: **Summary of Metro Forecast Advisory Panel Discussions and Conclusions**

Metro Regional Forecast Advisory Panel Summary Report

Composition of the advisory panel

Advisory board members have professional backgrounds in economics, demographics or a closely related field. The panel will be chaired by Dr. Tom Potiowsky. Members include:

Dr. Tom Potiowsky, Chair (Director, Northwest Economic Research Center, PSU)
Dr. Jennifer Allen (Director, Institute for Sustainable Solutions, PSU)
Jerry Johnson, (Principal, Johnson Economics)
Dr. Jason Jurjevich (Assistant Director of the Population Research Center, PSU)
Dave Lenar (Business Operations Analyst, NW Natural)
Dr. Randall Pozdena (Managing Director, Senior Economist, ECONorthwest)
Steve Storm (Program Manager of Economic Research and Financial Analysis, NW Natural)
Dennis Yee (Chief Economist, Metro)

The Metro Regional Forecast Advisory Panel met two times over a three month period to review the methodology and outputs of Metro's forecast. Each of these meetings had specific objectives.

Objectives of the first meeting on December 13, 2013:

- "Panel members have a shared understanding of their group charge"
- "Metro staff have the benefit of the panel's advice on the input assumptions that should be incorporated into the upcoming regional population, employment, and household forecast"

Objectives of the second meeting on February 19, 2014:

- "The preliminary results of the regional population, employment, and household forecast"
- "The proposed probabilistic approach to establishing the range forecast"
- "Possible scenarios that could lead to high or low growth within the range forecast"

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This summary report outlines the results of the panel discussion at each of these meetings and concludes with a summary of key points that were raised by advisory panel members. The discussion can be characterized as falling into four main topics:

- First, panel members discussed input assumptions for the forecast model
- Second, panel members reviewed and critiqued the preliminary forecast
- Third, panel members provided insight into potential scenarios that could influence high or low growth within the range forecast
- Fourth, panel members stated their opinions on the reasonableness of the preliminary forecast

Input Assumptions for the Metro Forecast Model

Metro's forecast is primarily used for regional growth management decisions. The forecast is an input for the decision areas such as comprehensive plans, transportation planning, land use planning, and job growth. The Metro Forecast is part of a five year cycle and uses a range forecast to capture uncertainty. The baseline forecast is grounded in the most recent IHS Global Insight forecast.

Discussion of State and National Trends

The first advisory panel meeting began with several presentations covering two main topic areas, population and employment growth. The presenters discussed both observed and expected trends in these topic areas.

Some key discussion points that arose from these presentations and the ensuing discussions were as follows:

- **Job polarization** - The hollowing out of the middle wage jobs is a real issue both nationally and in Oregon.
    - One possible response to this issue could be to direct more policy toward fostering job training and growth in NAICS 54 – Professional, Scientific, and Technical Services
- **Fertility rates** - There was mention that the decline in fertility rates could significantly affect population forecasts if the rates fell below what was anticipated.
    - Predicting fertility rates is challenging due to various factors such in migration of Hispanic populations and other ethnicities with traditionally higher fertility rates than the majority population – i.e., White, Non-Hispanic.
    - However, in recent years Mexico has seen a decline in fertility rates and this is affecting the degree to which Mexican immigrants offset the U.S. fertility rate.

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  - It is very challenging to capture the variability in fertility rates at the sub regional level. For instance within the Portland Metro region there are pockets of high and low fertility rates, but clearly delineating these sub regions is challenging.
- **Shifts in housing Starts** - Housing start estimates should be revised. This is due to "overhang" – excess supply from foreclosures and pre-recession buildup. Also there is variability in the types of housing starts.
  - There is a trend toward lower cost apartment units in multi-family.
  - Also there is a trend toward larger single family units being built. More square feet per single family start.
- **Shifting live/work decisions** - Commuting patterns seem to suggest that people are living in the city and commuting to the suburbs. This may indicate a shift in preferences.

Discussion of Input Assumptions to Incorporate into the Forecast Model

The first meeting concluded with a discussion of key variables to consider including in the forecast model. Many of these variables are not easily quantified making it difficult to incorporate them in the model. The advisory panel recognized this and considered alternative ways to use proxy variables or to simply develop a more qualitative discussion around certain topics that may introduce uncertainty into the model's outputs.

The key points of discussion are as follows:

- **Global trade and other macroeconomic effects**
  - Consideration should be given to variables, such as exchange rates and currency data.
  - Offshoring, re-shoring, and on-shoring could influence industry mix and economic growth, therefore they should be considered in the model assumption conversation.
- **Climate change and related legislative measures**
  - Legislation, such as a carbon tax, could result in shifts in economic activity and land use patterns. These potential effects should be included in the forecast model.
  - Climate change may affect population migration patterns. These potential effects should be considered in the model.
    - A statement was made that climate change effects could already be embedded in the migration data due to migration forecasts being based in historical trends. This is barring a catastrophic event of course.
- **Fertility rates, specifically the uncertainty of future rates**

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- There was a suggestion that the model be run for super low fertility rates. But there was mention that a natural decrease in fertility rates are expected to occur anyway.
    - There was a suggestion that consideration be made for those counties that have high concentrations of foreign born residents relative to other counties.

- **Compare forecast outputs with past forecasts**
    - A general consensus was that current forecast outputs should be compared to outputs of previous forecasts. This would provide some narrative around how well the forecasts are matching the reality of what plays out over time.

Review and Critique of the Preliminary Forecast

The review of the preliminary forecast outputs began with a statement that Global Insight's words in their most recent forecast are more optimistic than their numbers. This narrative carried over into the discussion of Metro's preliminary forecast outputs. Key points that emerged were related to what many on the panel perceived to be a conservative population growth estimate. There was minimal discussion regarding the employment forecast. Some key points of this discussion are highlighted below:

- **Death trend for preliminary forecast is higher than the 2000 forecast**
    - A note was made that the death trends are a bit higher for the preliminary forecast than the 2000 forecast. This is a little unexpected given the assumption that life expectancy should increase over time.
    - A note was made to check the data and underlying assumptions
- **Stability of migration data**
    - A question was raised regarding the stability of migration data used in the forecast model
        - The answer was that yes migration data in Oregon has been quite stable for more than 20 years.
- **Inclusion of Housing data**
    - A question was asked whether housing data is included in the forecast model. The answer was that no, there is no housing price data included in the model inputs.
    - A suggestion was made that there may be a market balancing of population. The response to this suggestion was that MetroScope usually shows a 60/40 split in single family/multifamily builds. But more recently it has shifted more toward a 50/50 split. Metro is currently conducting a study on this particular shift in housing demand.

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- **Age breakout of forecasted population**
  - Recent trends indicate that Oregon is retaining more of its older residents. These residents are not fleeing to the SW (i.e., Arizona) as they have in the past. Knowing how well the forecast outputs are capturing this trend would be important.
- **Declining population growth rate**
  - A question was asked regarding what the compounded population growth rate estimates were for the 2008 five year forecast and now the most recent forecast. The answer was 1.3% (2008) and 1.0% (Preliminary). More discussion followed regarding the national shift down in population growth. The Census Bureau is adopting a structural view of this downward shift.
  - In regard to the downward shift, a statement was made that low fertility rates as well as declining immigration are underappreciated as a major driver of this trend.
  - A question was asked regarding how much of the population growth shift is due to structural changes v. business cycle effects. Several panel members suggested that it may be more structural due to generational changes, such as delayed family formation due to student loan debt and rising cost of living. But this also is due to shifts in fertility rates, though this variable is a puzzle due to the unknowns within racial and ethnic sub populations (e.g., Hispanic) and also changing immigration policies. A statement was made that if the surprisingly high forecasted death rates are adjusted to be more in line with what is expected the population growth rate may bump up a bit.
- **Potential issues with applying forecast model distributions to rates**
  - A technical question was raised regarding the statistical ramifications of applying distributions to rates. The ensuing discussion concluded with the decision to utilize the log normal assumption.
- **Fertility and death rate variables should not be weighted equally**
  - A suggestion was made that it would be wise to not use equal probability for population forecast variables. For example death rates tend to be more stable over time and hence easier to predict than fertility rates, which depend on harder to predict issues (e.g., immigration patterns, family formation)
- **Employment growth trends near population growth**
  - The panel members agreed that it seems plausible that employment growth should trend near to population growth rates. That being said there was a suggestion that the growth rate may actually be higher if people are working two jobs.

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Potential Scenarios for High or Low Growth within the Range Forecast

The final advisory panel meeting closed with a discussion of "game changers" (e.g., climate change, declining mobility). These "game changers" could serve as points of discussion regarding the justification of high or low estimates for the forecast range. The results of this discussion are outlined below:

- **Climate change**
  - The panel agreed that the upside rage for the population growth forecast should be greater than the downside range due to climate change and the potential for mass migration to Oregon with its more temperate and abundant climate.
  - Climate change could also affect population migration through shifts in economic activity. For example if national defense spending declines due to energy independence, there may be fewer defense contracts, shifting employment from the defense industry to other industries. Given Oregon's position as a good spot for alternative energy development we may see migration of workers from other locales.
- **Declining mobility**
  - A statement was made that there has been a drop in mobility rates since the 1980s. This decline in mobility definitely affects migration patterns.
- **The rise of "new Portlands"**
  - Attention should be given to the implications of the rise of other "new Portlands", especially in the rust belt. Pittsburgh was given as an example.
- **Technical issues of "range" forecast**
  - Forecast Error Bands. Taking the first or second standard deviations about the expected path to find forecast ranges.
  - Alternative Policy Combos. High and low scenarios of policy assumptions (taxes, productivity, …) and taking the expected path then applying forecast error bands
  - Monte Carlo Simulation. Using the probability distribution of policy or event variables to forecast a range of results.

Reasonableness of the Preliminary Forecast Numbers

In general the panel members agreed that the population growth rate seemed conservative. Some members thought it was more conservative than others, but they all agreed that if certain issues, such as the surprisingly high death rates, were addressed and adjusted the forecast outputs may be more in alignment with what they deemed as reasonable. The panel members agreed that the employment growth rate seemed plausible.

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Another general agreement among panel members was that the up and downside forecast ranges should not be evenly split. In other words there may be more of a chance for population growth to be higher than expected and the model should seek to incorporate this greater likelihood.

Appendix 1d

A brief description of Metro's population forecast model

Forecast Method

Metro utilizes the cohort component method to project the total population size of the Portland-Vancouver-Hillsboro, OR-WA MSA (Portland MSA) as well as each 5-year age group for a future forecast horizon of at least 20 years. The cohort component technique uses the components of demographic change to project population growth. The technique projects the population by age groups, but unlike other standard population models the demographic attributes of sex and race are blended. This projection method is based on the components of demographic change including births, deaths, and migration. Recognizing that vital statistics differ significantly across race and sex, the Metro model uses weighted averages for the components of demographic change.

Implementation

The cohort component equation simply projects the total population size – in 5-year age groups – by estimating the number of residents who survive or are expected to be alive in the future. Add to this survived population number, the number births that take place and the number of net migrants in order to arrive at the total future population size.

Assumptions

When the cohort component method is used as a projection method, it assumes the components of demographic change for **mortality, fertility, and migration.** The Metro cohort population model arrays fertility rates in 5 year age groups for the population between ages 10 to 49. Age specific fertility rates are calculated from census of population and vital birth statistics for the Portland MSA. Similarly age specific mortality rates are calculated from the same sources for each 5-year age group.

The base year is pegged to the 2010 Census.

Future year annual estimates for mortality and fertility are assumed to change over time to reflect observed on-going demographic trends including improvements in life expectancy, delays in pregnancy in the age of the mother and overall lowering total fertility rate. The changes in the vital assumptions mirror the latest assumptions adopted in the 2012 U.S. Census national population projection. The Metro model implicitly considers differences in birth and death rates by race and sex in a blend of these vital rates for the forecast of future population. A blended rate – each for births and deaths – in which the weights are based on the 2010 share of Portland MSA population by race and sex.

The total fertility rate (TFR) assumed falls to 1.81 in 2040 as compared to the 2010 estimated TFR of 1.86, representing a modest decrease in fertility rates projected for the next 30 years. Life expectancies

are expected to improve; this is reflected in a modest decrease in the age specific mortality rates for each age group. The largest improvement in the survival rate is seen in retirement-age cohorts.

Net migration for the Portland MSA is calculated from Metro's in-house economic model. This model assumes regional net migration is tied into the relative economic performance between our region and neighboring economies and the U.S. For example, migration rates increase when Washington State employment grows faster and conversely, when California employment grows relatively slower, regional migration surges ahead. In contrast, the relationship between the region and the U.S. is found to be correlated with relative payroll wages. The estimated relationship predicts that when regional wages surge faster than the U.S., migration into the region increases. The Metro migration equation ties in the economic projections of employment and wages from Metro's economic model directly with the cohort population model.

Net migration from the Metro migration equation is split into age groups consistent with the cohort population model. The shares for splitting migration into 5-year age groups are assumed to remain constant through the projection period. The initial shares are derived from decennial Census data.

The cohort component approach produces a "baseline" projection of future population size. The demographic assumptions for each component of population is assumed to be based on values that will generate a growth scenario that represents the forecasters best guess using available information.

Probability model and the range population projection

Metro requires a population range forecast for its planning purposes. This is represented by 5 growth scenarios: high, medium-high, baseline, medium-low, and low. The basis for these alternatives is a monte carlo simulation approach that perturbs the population components for births, deaths and migration within the historical variance or a perceived standard forecast error of each population component.

Appendix 2

Methodology for determining the 2014 Urban Growth Report's buildable land inventory

Background

Under state land use regulations, Metro is required to ensure an adequate supply of buildable land inside the urban growth boundary (UGB) to accommodate 20 years of population and employment growth. Metro conducts this analysis every five years in its Urban Growth Report (UGR). The UGR is the basis for the Metro Council's growth management decision. One of the underpinnings of this report is a buildable land inventory (BLI) that includes vacant and redevelopable land supply estimates. This document provides a summary of the assumptions and methods developed for the 2014 UGR's regional BLI. During the fall of 2013, all jurisdictions in the region were provided with an opportunity to review the draft BLI and to suggest revisions to the results that reflect local knowledge about specific properties.

The Urban Growth Report goes through subsequent steps to determine how much of this buildable land inventory may be market feasible in the 20-year planning timeframe. Additional detail about market feasibility can be found in the residential and employment demand analysis appendices.

Peer review of methods

During the spring and summer of 2013, Metro staff worked closely with a technical working group that included about 25 developers, engineers, brokers, economic consultants, and planners from jurisdictions around the region to develop a regional BLI methodology. This work built on efforts undertaken to develop a BLI that was an input assumption for the 2035/40 Growth Distribution, which was adopted by the Metro Council in the fall of 2012. The BLI benefited from extensive engagement with local jurisdiction planners over the course of two years. In many instances, these advisory groups discussed the ambiguity inherent in developing 20-year capacity estimates, particularly on a regional scale. On several topics, the group advised Metro that there was not a clear "right" or "wrong" answer, but helped Metro staff to arrive at methods that are, on the whole, reasonable for a regional analysis, and that use the best available information.

Measurement Uncertainty in the BLI

The land supply and capacity estimates prepared using the procedures and methods reflected in this paper are intended to reflect up to a 40 to 50 year land supply. The rationale for this derives from being consistent with trying to model future real estate development for a 20 year span and holding up to a mandate in keeping with a 20 year land supply in the 1st and the 20th year. We say the estimate

approximates a 40 to 50 year supply because some sensitivity analysis – particularly with key factor such as redevelopment assumptions, future residential densities, right of way allowances, environmental assumptions and a host of other complex capacity calculation assumptions – indicates some uncertainty in the statistical factors to arrive at a buildable land inventory measurement. The margin of error for redevelopment and infill is greater than the vacant part of the buildable land inventory, but both categories are subject to a degree of measurement uncertainty.

General methodology

Step 1: Identify vacant tax lots (and complement developed tax lots) by zoning class

Step 2: Remove tax lots from the BLI that don't have the potential to provide residential or employment growth capacity (e.g., parks)

Step 3: Calculate deductions for environmental resources[1]

Step 4: Calculate deductions for "future streets"[2]

Step 5: Calculate BLI estimates (BLI includes capacity estimates for vacant and redevelopment)

a) Single Family Residential (SFR)
b) Multifamily residential (MFR) and Mixed Use Residential Capacity (MUR)
c) Employment (industrial[3] and commercial)

Identify vacant and developed land by zoning (or comp plan)

Issue:
Previous iterations of the BLI focused only on vacant land, and capacity for redevelopment was treated separately using a refill rate[4]. The current BLI methodology treats vacant and redevelopment as separate categories for clarity and to avoid any double counting of capacity on the partially vacant lots. However, Metro's vacant lands inventory (a basis for the BLI) includes some "partially vacant" land.

Solution:
The region's buildable land inventory is sorted into *redevelopment* and *vacant* capacity (the identification screens / filters are inherently different). Tax lots that were previously categorized as

[1] Environmental resources considered include Metro's Title 3, Title 13, FEMA flood way and steep slopes over 25%.
[2] The BLI accounts for future streets on a tax lot-by-tax lot basis. The buildable area of each tax lot is reduced on the basis of individual tax lot size.
[3] Large industrial sites (25 or more net buildable acres) were inventoried in a separate process that relied on work done as part of the 2011/2012 Regional Industrial Site Readiness Project, which was a partnership between Metro, the Port of Portland, Business Oregon, the Portland Business Alliance, NAIOP, and local jurisdictions. The inventory of large industrial sites will be completed in the spring of 2014.
[4] The refill rate is the share of the region's future growth that is expected to be accommodated through infill and redevelopment. However, the refill rate does not identify the locations where infill and redevelopment may occur.

"partially vacant" are categorized into one or the other condition (i.e., vacant or developed for purposes of counting regional capacity). Developed tax lots are subjected to economic screens (described in this document) to determine whether they should be counted as **potential** redevelopment capacity.

Vacant land definition[5]:

- Any tax lot that is fully vacant (Metro aerial photo)
- Tax lot with less than 2,000 sq. ft. developed AND developed part is under 10% of entire tax lot
- Tax lots that are 95% or more "vacant" from the GIS vacant land inventory[6]

Developed land definition:

- Part vacant / part developed tax lots are considered developed and will be treated in the redevelopment filter

Rationale:
Categorizing tax lots as vacant or developed (and potentially redevelopable) more closely aligns the inventory approach with that of other local governments and state administrative rules, which refer to vacant and redevelopable land. Lands previously defined as "partially vacant" are still inventoried, but are simply redefined to fit into the vacant or developed categories. Tax lots with fewer than 2,000 sq. ft. developed and a developed part that is less than 10% of the entire tax lot are considered completely vacant with the understanding that tax lots with this condition resemble a fully vacant tax lot. The developed portion would minimally impact new development. In case of tax lots in employment zones that do not pass through various redevelopment filters, for relatively large tax lots greater than 1 acre, we apply a final screen to include "land banked" parcels into the BLI.

Addendum (5/14):
Oregon law requires Metro to periodically – in 5 year cycles – review and take action to ensure that the current UGB has the capacity to absorb 20 years of residential development and economic growth. It follows then that for modeling and forecasting future land development that we try to mimic to the best of current knowledge a rational expectation for UGB capacities and replenishment in each 5 year interval. We model a rolling 20-year capacity of the BLI by metering in additional redevelopment, infill and vacant capacity for each 5-year interval. To simulate this, we have to have at the outset a reasonable estimate of redevelopment for at least 40 years (20 years to begin with and another 20+ years estimated for the last year of the forecast horizon year), which we in subsequent 5-year periods

[5]Small inconsistencies in the alignment of the tax lot GIS layer and the vacant/developed GIS layer create slivers along property boundaries. In order to deal with this issue, any tax lot that is 95% or more vacant is considered "fully vacant".

[6] GIS taxlot layers change over time as the counties update their parcel base. Because of this, over time, the vacant land layer may develop inconsistencies, resulting in slivers of vacant or developed land that intrude on adjacent taxlots. Setting a 95% threshold prevents full vacant taxlots from being categorized as "developed".

meter in more. Urban reserves serve as additional vacant land that is also metered in at 5 year intervals to simulate future UGB expansions and so forth (though it should be noted that urban reserves are not counted in the UGR analysis).

Looking at the redevelopment (and infill) inventories in this BLI, we don't have information to tell us which tax lot(s) will redevelop and which ones won't during the next 20 years. Our recourse is to utilize a simulation approach that can identify how much of the potential inventory of redevelopment may be expected to redevelop in 20 years. We opt to use MetroScope in order to estimate redevelopment absorption and apply this scenario information to the BLI for the 20-year estimate of redevelopment.

Remove tax-exempt lots, parks, and major utility easements

Issue:
Some vacant tax lots (e.g., parks) should not be recognized as carrying capacity for employment and/or housing going into the future.

Solution:
Remove the following types of tax lots from the residential (and employment) BLI based on Assessor PCA code designations, owner names, assessed values and other data sources:

- Tax exempt with property codes for city, state, federal and Native American designations
- Schools
- Churches and social organizations[7]
- Private[8] "streets"
- Rail properties[9]
- Tax lots under 1,000 sq. ft. (0.023 gross acres)
- Parks, open spaces and where possible private residential common areas

Use the best available GIS data to remove parks, rail yards and railroad properties, major petroleum, natural gas lines and BPA power line right of ways. The area defined as "utility easements" is a GIS data layer that identifies major trunk lines for petroleum, natural gas and BPA's high voltage electric lines, and excludes all else. Parks is a data layer maintained by Metro that includes all parks in the region (e.g., community parks, regional parks, open space areas, golf courses, private common areas, and cemeteries).

<u>EXCEPTIONS:</u>
Included in Residential Capacity Calculations the following list of exemptions:

[7] Based solely on tax exempt codes.
[8] This was used for SFR, MFR and MUR zoning only. It proved problematic for COM and IND zoning
[9] The Metro Data Resource Center finished collecting and compiling together a comprehensive rail yards and railroad properties geodatabase. For the UGR study, we utilize this brand new database to filter out unbuildable tax lots from the BLI data.

- Housing Authorities (not just Portland)

Included in Employment Capacity Calculations the following list of exemptions:

- Port of Portland
- Portland Development Commission

Rationale:
Tax lots that are not capable of supporting future employment and/or housing because of use restrictions should be removed from the BLI.

Calculate Environmental Constraints

Issue:
Local governments vary in how they implement environmental regulations found in Urban Growth Management Functional Plan Title 3 (Water Quality and Flood Management) and Title 13 (Nature in Neighborhoods). Moreover, estimation of residential housing capacity of tax lots (TL) with environmental impact may vary substantially on a case by case basis. Typically, ***density transfers*** from the environmentally impacted portion of a tax lot to the unconstrained part of the tax lot may vary significantly depending on the environmental impact and city regulations.

The capacity calculations for environmentally constrained tax lots recognize residential density transfers and Title 13's more flexible protections, which are applied on a site-by-site basis during the development review process. Generally, under Title 13, development is to avoid, minimize, or mitigate (in that order) designated habitat areas. Typically, precise delineations of habitat conservation areas are identified during the site development process. Therefore, the data and BLI calculation methods are more appropriate at a higher geographic scale than individual tax lots. The residential capacity computation (though accurate at a regional or subregional scale) may **NOT** accurately portray the precision needed to calculate the environmental deduction for each tax lot. This may also affect the calculation for the transfer of density from the environmentally constrained area to the unconstrained part for individual tax lots, but we believe that on balance, the variance in the calculation of net density and net residential capacity offset each other over the entire region.

The BLI technical working group was asked to provide advice on how to handle capacity assumptions in Title 13 areas. The group agreed that counting full residential capacity was not appropriate, but that discounting all capacity was not appropriate either. Metro staff then sent an e-mail inquiry out to all local jurisdictions in the region to determine their jurisdictions' historic development experience in Title 13 areas. Metro staff received varied responses with many caveats that preclude meaningful summarization. In the end, this inquiry did not produce a clear answer. Aside from the fact that Title 13 gets interpreted on a site-by-site basis, another challenge is that local implementation of Title 13 is fairly recent, which means that there is not a lot of development experience from which to draw (particularly in light of the Great Recession). Given this ambiguity and the fact that Title 13 areas comprise a

relatively small portion of the region's single-family zoned vacant land (approximately 5.5%) and even less of its multi-family zoned vacant land (approximately 0.5%), Metro staff determined that the most reasonable approach was to rely on percentages found in the Title 13 Model Ordinance. This is the best available information and is being used on the advice of the BLI technical working group.

Solution:
Most areas that are considered environmentally sensitive fall into multiple categories of overlap including Titles 3 and 13, or are in a floodway or flood prone soils, or include steep slopes or some other ecosystem feature. Metro employs an environmental hierarchy to classify the environmental features to avoid double counting the capacity deduction for the BLI. BLI reductions will reflect the higher assumed protections when environmental features are overlapping.

Methods differ for single-family, multi-family, and employment lands. Generally, using the best available GIS data:

- Remove 100% of the area of floodways
- Recognize environmental constraints such as slopes over 25% and as defined by cities and counties under Title 3 and Title 13. In many instances, the delineation of the environmental buffers are GIS modeled data; where available we utilize environmental buffers from local government GIS data
- By assumption, permit 1 dwelling unit (DU) per residentially-zoned (SFR, MFR, MUR) tax lot if environmental encumbrances would limit development such that by internal calculations no (zero) dwelling units would otherwise be permitted ("essentially avoid takings")

As a result, we define the following land area calculations (used in formulas below):
Vacant buildable = Calculated area of TL – utility easements – parks – railroads – tax exempt sites
Net unconstrained[10] = vacant buildable – environmental constraints

The "calculated area of TL" is the GIS calculation of area (sq. ft.) of the tax lot as defined in Metro's GIS tax lot data layer. (Generally, individual tax lots are not affected by utility easements, parks, railroads or other tax exempt uses, but on a regional scale, these factors add up to be somewhat significant and therefore handled in the regional BLI calculations for the UGR capacity estimates.) Environmental constraints are handled as follows (by land use type):

<u>Single-family residential</u>

1. Floodways: 100% removed
2. Slopes > 25% and Title 3 treated the same way: 100% removed

[10] This is the calculation for SFR, MFR and MUR. The calculation for COM and IND is a 100% deduction of environmental constraints.

   a. If tax lot > (or equal to) 50% constrained, follow the "maximum capacity rule" (defined below) to add back units[11]
   b. If tax lot is <50% constrained, assume 90% of unconstrained area is in BLI (i.e., apply 10% discount to vacant buildable acres)[12]
3. Title 13: 50% of Title 13 constrained acres removed from BLI (consistent with Title 13 model Ordinance).
4. Assume at least one unit per tax lot, even if fully constrained

Multi-family residential

1. Floodways: 100% removed
2. Slopes > 25%: 100% removed
3. Title 3: remove 50% of the constrained land with the other 50% considered buildable
4. Title 13: 15% of Title 13 constrained acres removed from BLI (consistent with Title 13 Model Ordinance)
5. Assume at least one unit per tax lot, even if fully constrained

Industrial and commercial

Employment zoned land applies a simple approach of netting out all constrained land. This is based on the input of the BLI technical working group, which indicated that constrained areas are typically avoided altogether by new commercial or industrial employment uses.

1. Floodways: 100% removed
2. Slopes >25%: 100% removed
3. Title 3: 100% removed with the exception of the Portland Harbor Access Land where a 70% discount rate is applied[13]
4. Title 13: 100% removed

Calculate deductions for "future streets"

This BLI methodology sets aside a portion of the vacant land supply (not redevelopment supply) in order to accommodate future streets and sidewalks. This assumption is calculated on a per tax lot basis:

- Tax lots under 3/8 acre assume 0% set aside for future streets
- Tax lots between 3/8 acre and 1 acre assume a 10% set aside for future streets
- Tax lots greater than an acre assume an 18.5% set aside for future streets
- Industrial (IND) zoning assumes a 10% set aside regardless of size.

[11] This add back represents Metro's approach for estimating / calculating the density transfer to mitigate the loss of potential development productivity for dwelling units.

[12] Based on feedback from BLI working group, including local experience.

[13] Based on input from City of Portland staff.

The basis for these net street deduction ratios derive from previous research completed by the Data Resource Center and local jurisdictions for the the 2002 UGR.

Calculate single-family residential capacity

Single-family residential vacant land methods:

Rationale: A multi-step approach has been developed that accounts for environmental impacts and provides a means for explicitly estimating potential transfer of density from the constrained portion of a tax lot to the unconstrained portion. The approach corrects for over estimation of partial single-family (SF) capacity by rounding down capacity estimates to a whole number.

If a vacant tax lot is unconstrained by environmental impacts, the formula is simply to compute the maximum number of whole dwelling units permitted by the zoning district.

Example: 10,500 sq. ft. tax lot and zoning district allows a minimum lot size of 5,000 sq. ft. ➔ (10,500 / 5,000) = 2.1 dwelling unit capacity rounded down to 2.0 DU

Our approach for both redevelopment and vacant tax lots otherwise considers the potential to achieve transfer of density from areas in a tax lot constrained by environmental considerations. Two (2) different capacity calculations are made on vacant SF tax lots to account for environmental constraints. The DU capacity for each tax lot is the *minimum* calculated by the two methods, with a floor of at least 1 SF unit per tax lot[14]. The floor is an allowance for any vacant and fully constrained tax lot in order to recognize the development potential of 1 DU capacity in the BLI.

Calculations:
The *maximum capacity rule* is applied to single-family tax lots with environmental constraints (slopes greater than 25% and/or Title 3 constraints and/or Title 13 constraints). The rule would take the ***minimum*** number of units based on these guidelines:

1. Tax lot size / minimum zoned lot size; or
2. Unconstrained portion of lot / 2000 sq. ft. (1000 sq. ft. in Portland) [15]

Example of environmental conditions of two typical tax lots:

- 11,000 sq ft lot
- 5,000 sq ft minimum lot size zoning

[14] Note: This only applies to vacant tax lots. If a tax lot is already developed and environmental constraints would not allow any additional units to be built, it can have a minimum capacity of zero additional units.

[15] Assuming 2,000 sq. ft. in the above calculations was a recommendation of the 2035 Growth Distribution subcommittee (and 1,000 sq. ft. for areas in Portland), which was based in part on a review of regulation, physical dimensions (i.e., building footprint) of a prototypical higher density SFR development form, and practical development knowledge.

Scenario A:

- 6,500 sq ft unconstrained
- 4,500 sq ft environmentally constrained
- If unconstrained: 11,000/5,000 = 2 units maximum
- With constraint: 6,500/2,000 = 3 units possible
- Applying maximum capacity rule: 2 units (zoning maximum takes precedence)

Scenario B:

- 2,500 sq ft unconstrained
- 8,500 sq ft environmentally constrained
- If unconstrained: 11,000/5,000 = 2 units maximum
- With constraint: 2,500/2,000 = 1 unit possible
- Applying maximum capacity rule: 1 unit possible (constraint overrides zoning maximum)

Single-family residential developed land methods (infill):

Rationale: There are a finite number of single-family tax lots in the region. As a result, over the next 20-year period, it may become increasingly attractive for homeowners of oversized SF tax lots to subdivide. Any single family zoned tax lot with a developed SF home was subjected to 1) an oversize tax lot screen to determine if the tax lot exceeded today's zoned minimum lot size (per Metro's regionalized zoning crosswalk table); 2) if the ratio of entire tax lot square footage to the minimum zoned lot size is between 2.5 and 5, an additional economic-based filter is used to remove from the BLI any lots with high-valued SF homes meeting this criteria. A $300,000 building value is assumed as an appropriate threshold for removal from the SF infill supply. The intent is to recognize that owners of large tax lots with relatively expensive homes are not likely to subdivide their tax lot.

SF Infill Filters:

- Must have single family zoning (per Metro's standardized regional zone class)
- If the tax lot is zoned SFR and classified by Metro as developed, it was assumed that one (1) SF unit presently exists on the tax lot regardless of what's indicated on the assessor's land use code. The one exception to this rule is for tax lots in SFR zoning that have current land use for an apartment (according to Metro's MF database), and these parcels were not considered in calculating infill potential for single family infill supply (Rationale for this was that any infill of such land use would by zoning yield a SFR unit with the concomitant loss of the MFR units, which we believed unlikely).
- Lot size threshold > 2.5 times the minimum zoned lot size (2.2 for City of Portland only); lots greater than 2.5 times (or 2.2 for Portland) would be added to the SF infill supply, except:
- Lots that meet the size thresholds are run through an additional economic eligibility filter before being included in the SF infill supply. In addition to meeting the size threshold, the assessor's real market building value must be below $300,000 to be counted in the SF infill supply. Rationale: lots with really expensive homes would be excluded from the SF infill supply.

- Tax lots with an oversize threshold exceeding 5 (anywhere in region) are passed through into the infill supply regardless of building value. Rationale is that the remaining buildable area is close to an acre or more and real estate economics being what we expect would very likely see significant infill pressures.

Example: an existing developed SF tax lot that's 13,000 sq. ft. and a minimum lot size for the zone class of 5,000 sq. ft. ➔ 13,000 / 5,000 = 2.6; this TL is eligible for infill with the capacity for 1 more DU (2.6 – 1 = 1.6 ➔ rounded down yields 1 more infill unit).

Calculations of eligible infill tax lots and the additional net DU added:
The net additional infill SF DU is the minimum of calculated by the following 2 computations. Many SF tax lots end up with zero additional infill units.

1. Additional DU infill= (Calculated area of TL – max lot size) / min lot size (rounded down to a whole number); can equal 0

2. Additional DU infill = (net unconstrained sq. ft. / 2,000 sq. ft. (1000 sq. ft. in Portland)), rounded down to a whole number; can equal 0

Calculated area of TL = GIS calculation of the tax lot
Max lot size = in the GIS tax lot layer database, each single family zone class has, by definition, a top-end value for lots to be classified for each SF residential category
Min lot size = in the GIS tax lot layer database, each single family zone class has, by definition, a low-end value for lots to be classified for each SF residential category (please refer to the Metro "Standardized Regional Zone Class" table.

Net unconstrained[16] = vacant buildable – environmental constraints

Calculate multi-family residential capacity (including mixed-use residential)

Method for Vacant and Redevelopment Capacity Calculation (MFR and MUR)

If the tax lot is zoned MF (or MUR) and vacant, the BLI capacity estimate is simply the number of units per acre permitted by the zoning class multiplied by the vacant buildable acres, which in the case of the unconstrained tax lot is the area of the tax lot.

If the tax lot is zoned MF and vacant, but it is partly constrained by an identified environmental set aside (such as local ordinances implementing Title 3 or Title 13), the formula for estimating the BLI capacity tests the available size of the unconstrained part of tax lot to determine how much *theoretically* permissible density could be transferred to the unconstrained half. (See formula in this section.)

[16] This is the calculation for SFR, MFR and MUR. The calculation for COM and IND is a 100% deduction of environmental constraints.

Redevelopment Rationale: The following redevelopment filters are first applied to each developed tax lot within a regional MF or MUR zone class. In order to be added to the multifamily redevelopment BLI, redevelopment would have to add at least 50% more units over the number of units which already exist, or produce at least 3 units total. The rationale is that developers would not tear down and redevelop an apartment or condo units unless he could yield a significant gain in rents and dwelling units. A threshold of 50% was recommended by the subcommittee that advised Metro staff on the BLI assumptions for the 2035/40 growth distribution.

- Redevelopment of multi-family structure must add at least 50% more units; if it doesn't, the tax lot is not eligible for redevelopment
- If the structure is a commercial (or industrial) building or single family dwelling unit (in an MFR or MUR zone), the redevelopment must yield at least 3 or more dwelling units
- Redevelopment must pass through an economic filter first before evaluation of additional DU through redevelopment (see below for economic filter thresholds)

Different economic redevelopment thresholds are assumed to determine which sites in today's MUR or MFR zone classes might be eligible for adding to the redevelopment portion of the BLI. These economic filter thresholds are described next.

Multifamily and Mixed Use Residential Redevelopment filter:
The economic screen for determining which tax lots could potentially be candidates for redevelopment is based on a ratio of total real market value[17] (land and improvements) to area of the tax lot (square feet). If the real market value per square foot is less than the strike price, the tax lot is assumed eligible for redevelopment. The rationale for the strike price thresholds is that developers have a profit motive. For the purposes of this BLI, it is assumed that developers may want to redevelop a property if the potential profit justifies property acquisition costs. Strike price values were developed in consultation with economic consultants and the BLI technical working group, which included developers with market knowledge. The strike prices are based on current market conditions, but are pushed to a modest degree to acknowledge that demand (and willingness to pay) will increase over the 20-year timeframe. As depicted in Table 1 and Figure 1 below, strike prices vary by market subarea. Additional analysis was completed on historic redevelopment to determine whether these strike prices are reasonable. The analysis found in the addendum at the end of this document indicates that the strike prices used for completing the BLI are reasonable given what has been observed with actual redevelopment.

[17] Source: county tax assessors

Table 1: Residential redevelopment strike prices by market subarea (for MFR and MUR zone classes)

	Redevelopment strike price per square foot (land and improvements)	
Market Subarea[18]	**Multi-family zoning**	**Mixed-use residential zoning**
Central City	$130	$130
N/NE Portland central corridors	$70	$80
Eastside urban	$70	$80
Suburban	$10	$12

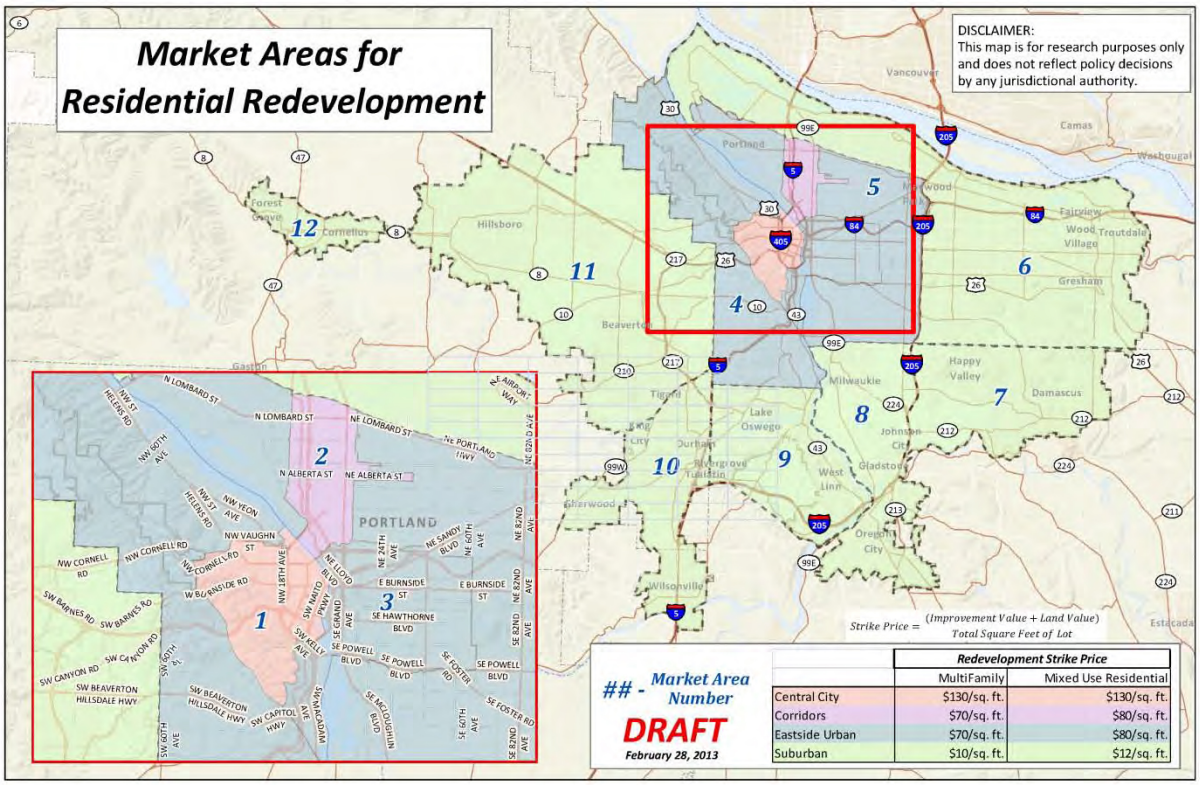


Figure 1: Mixed-Use Residential and Multi-Family Residential redevelopment market subarea analysis geographies

These economic filters define the BLI's supply of tax lots that <u>may</u> redevelop over a 20-year timeframe. The UGR goes through a separate step of using land use and transportation modeling to estimate what portion of that redevelopment supply is <u>likely</u> to redevelop over the 20-year timeframe. Using these numbers, this redevelopment supply is then expressed as a range in the UGR.

[18] During Local Review, the City of Portland identified the Gateway district as an area that did not fit these general rules for redevelopment. Therefore, a strike price of $24/sq. ft. was applied in Gateway based on several real-world redevelopments that have recently occurred in Gateway.

Formula for calculating density transfers on environmentally constrained tax lots (for MFR and MUR Redevelopment and Vacant tax lots):

The formulas below make a distinction between low density vs. high density zoning for MFR and MUR categories of zoning. In Metro's standardized zone class designations, high density zoning refers to classes: MFR 7 and MUR 8 to MUR 10. Both sets of calculations consider how much additional BLI capacity can be gained with respect to tax lots that have identified environmental constraints.

1. Low Density (LD) MFR or MUR zoning capacity calculation formula:

LD => if (1,000 sq. ft < unconstrained part < 5000 sq. ft.) => min (allowed by zoning or 1 DU / 1000 sq. ft.)
LD => if (unconstrained part > 5,000 sq. ft.) => apply zoning density to entire tax lot.

2. High Density (HD) MFR or MUR zoning capacity calculation formula:

HD => if (unconstrained part <10,000 sq. ft.) => 1 DU/1000 sq. ft. of unconstrained area.
HD => if (unconstrained part >10,000 sq. ft.) => apply zoning density to entire tax lot.

Net unconstrained = Vacant buildable – env. constraints

Note: the deduction for environmental constraints is defined in previous sections of this report.

For a tax lot with low density MFR or MUR zoning, if the unconstrained portion of the lot is at least 5,000 sq. ft., then the DU capacity for that lot is calculated by simply applying zoning density to the entire buildable area of the tax lot (net of utility and park areas and other allowed easements). This approach assumes a full density transfer from any constrained portions of the lot to the unconstrained portion of the lot would theoretically be achievable if the unconstrained area is at least 5,000 sq. ft. The same applies for high density MFR and MUR zoning, except that the unconstrained area must be at least 10,000 sq. ft. to achieve a full density transfer. If the unconstrained portion of the tax lot is under the specified limits (5,000 or 10,000 sq. ft. – these thresholds were suggested by the TAZ subcommittee as a reasonable threshold), the number of dwelling units theoretically buildable is the minimum of: 1) the number of DU permissible based on zoning multiplied by the number of buildable of acres (*buildable = Calculated area of TL – utility easements – parks*); or 2) net unconstrained sq. ft. / 1000 sq. ft. (*net unconstrained = TL sq. ft. – utility – parks – env. constraints*).

Employment Capacity Calculations for Commercial and Industrial

Method for Vacant and Redevelopment Capacity Calculation

The vacant land supply is identified using Metro's vacant land inventory, which is derived annually from aerial photo information. Capacity to accommodate employment is determined by zoning (i.e., industrial, commercial, multiple use employment and mixed use residential zone classes). Similar to the residential BLI, the employment BLI estimate includes capacity from vacant land and potential redevelopment.

The employment BLI removes a select set of tax lots (vacant and developed) that for a variety of reasons should not receive any capacity calculations (e.g., parks and open spaces and other defined easements). These tax lots are removed from the employment inventory much like the residential inventory. They receive no carrying capacity for employment (or residential) uses.

The supply of employment land is measured in acres. All tax lots with commercial and industrial zoning were subjected to a series of preliminary screens first, as for residential, to exclude the following types of properties, for example:

- Tax exempt properties (except for Port and PDC codes)
- Schools[19]
- Rail properties
- Parks and open spaces[20]

The unconstrained buildable area, net of environmental and other constraints was calculated as follows:

Vacant buildable = Calculated area of TL – utility easements – parks
Net unconstrained = Vacant buildable –100% of environmentally constrained area

Tax lots that have been identified as part vacant (at least ½ an acre undeveloped) are considered developed and go through a set of redevelopment screens/filters in order to identify which tax lots have the potential to redevelop during the next 20-year time horizon.

Because "part vacant" land is now being classed as "developed" in this approach, there remain some tax lots with large vacant pieces that do not get through the economic filters and into the redevelopment supply. The assumed economic threshold values which identify which tax lots have potential to be redeveloped are not well suited and calibrated to identify partially developed tax lots with significant amounts of undeveloped real estate. A final screen for these so called "land banked" parcels was applied by adding back into the redevelopment supply the *net unconstrained* vacant portion of any lot with at least 1 acre of unconstrained vacant land.

In these cases, these two steps, the preliminary screening calculation of unconstrained area, are sufficient to identify the employment capacity on vacant land. For the redevelopment supply, the developed tax lots are subjected to a set of economic criteria shown in Table 2 and Table 3. Tax lots must meet both criteria (size and strike price) to be considered eligible for the redevelopment supply in the BLI. To be included in the BLI, the unconstrained area of a tax lot must be larger than the threshold acreage AND it must have a square foot value less than the applicable strike price.

[19] Metro maintains a school GIS data layer which will be used in screening out land for the BLI. Note: abandoned school properties or school sites that are no longer actively used as a school (and considered surplus) will be included in the BLI.

[20] Metro maintains a parks and open spaces GIS data layer (i.e., ORCA = open recreation and conservation area) which will be the data source used in screening out land for the BLI.

The rationale for the tax lot size thresholds is that a developer would be less likely to redevelop a small tax lot because there are likely to be higher construction costs associated with fitting the development on a small parcel. Additionally, by their very nature, small parcels are not likely to produce redevelopment supply that is significant in the context of a regional BLI.

The rationale for the strike price thresholds is that developers have a profit motive. They may redevelop a property if the potential profit justifies property acquisition costs. Redevelopment strike prices were developed with the assistance of economic consultants and the BLI technical working group.

Table 2: Commercial redevelopment economic filter by market subarea

COMMERCIAL LAND			
		Redevelopment strike price ($/sq ft for land and improvements)	
Zone class	**Tax lot size (acres) greater than**	**Regional Centers, Town Centers, Station Communities[21]**	**Everywhere else in UGB**
Central Commercial (CC)	.249	$15	$12
General Commercial (CG)	.249	$15	$12
Commercial Neighborhood (CN)	.249	$15	$12
Commercial Office (CO)	.249	$15	$12

Note: Downtown Portland is zoned MUR, so is handled with the residential redevelopment methods. Real market value from county assessors is used for calculating values

[21] Officially adopted center boundaries were used where possible. In other cases, analysis geographies were used. In the case of Station Communities, the Station Community buffers, as depicted on the 2040 Map, were used.

Table 3: Industrial redevelopment economic filter by market subarea

INDUSTRIAL LAND				
		Redevelopment strike price ($/sq ft for land and improvements)		
Zone class	**Tax lot size (acres) greater than**	**Entire UGB**	**Subarea #3**[22]	**Everywhere else in UGB**
Light Industrial (IL)	.99	$5	-	-
Heavy Industrial (IH)	.99	$5	-	-
Office Industrial (IO)	.99	-	$10	$7
Campus (business park) Industrial (IC)	.99	-	$10	$7

Note: Real market value from county assessors is used for calculating values

These economic filters define the BLI's supply of tax lots that may redevelop over a 20-year timeframe. The UGR goes through a separate step of using land use and transportation modeling and historic data to estimate what portion of that redevelopment supply is likely to redevelop over the 20-year timeframe. Using these numbers, this redevelopment supply is then expressed as a range in the UGR.

Mixed Use capacity estimates (splitting residential and commercial capacity on MUR zoned tax lots)

More and more tax lots in the region are designated in mixed use residential (MUR) zones. Predicting whether MUR-zoned areas throughout the region will be developed as residential or commercial (or what mix of the two) is a challenge. MUR districts in the Metro region almost universally do not require *vertical mixed use*, which is to say ground floor retail/service or office uses with above floor apartments (or condos). Horizontal mixed use, on the other hand, are a mix of retail, service, office and residential apartments – a mix then of employment and residential land uses usually on separate tax lots.

Issue: In past modeling and forecasting efforts, Metro assumed that all MUR zones were 100% vertical mixed use. This meant that for purposes of counting employment BLI and residential BLI, the equivalent of one story of capacity would be counted in the employment BLI and the remaining capacity would be counted in the residential BLI. This is the theoretical maximum capacity for each MUR district. However, over the last 10 to 15 years, there have been few examples of vertical mixed use occurring in suburban MUR districts. Anecdotal evidence suggests that at most 5% residential and 95% employment was more the norm in some suburban mixed-use development in recent years.

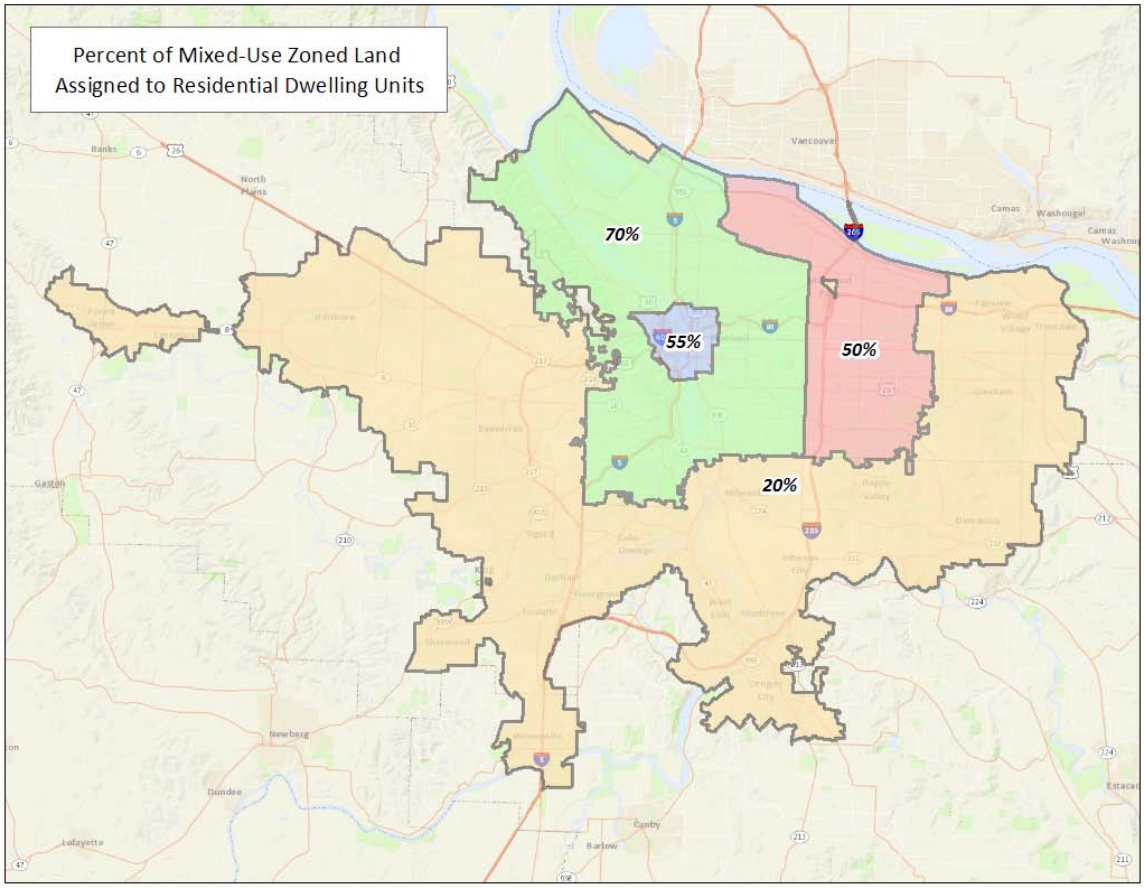
[22] As depicted in Figure 1.

MUR residential/non-residential capacity split formula:
Employment capacity in mixed use residential areas, measured in acres, is calculated from the dwelling unit capacity determined in the residential supply. For tax lots with MUR zoning:

- Total effective acres = Total additional units allowed if 100% of lot is used for residential * acres per unit required at maximum zoned density
- Residential effective acres = ResSplit * Total effective acres
- Employment effective acres = EmpSplit * Total effective acres

Assume: Residential split = 20% (Portland**: see map)[23]
Non-residential split = 80% (Portland**: see map)

** The split in Portland's mixed use residential zone classes varied by area based on evidence from historic and on-going development trends. A map below depicts these locations and the individualized split formula for each subarea of the city.



[23] In the event that applying a split factor reduces the number of available residential units below 1 (i.e. 2 units x 20% = 0.4 units) the number of residential units is rounded up to 1.

Rationale: For purposes of modeling and forecasting, we opt for a greater suburban residential split of 20% to foreshadow the possibility that future market trends may drive more residential development than present trends would otherwise suggest. If projected market demand forces do not materialize during the forecast, this oversupply will not materially skew projections.

New urban area capacity

"New urban areas" are those areas that have been added to the UGB in recent years that do not yet have urban zoning or adopted comprehensive plans[24]. Consequently, planning documents, rather than GIS analysis, are typically the basis for how capacity in new urban areas is handled in the BLI. Possible sources of information include:

- Draft comprehensive plans
- Adopted concept plans
- Draft concept plans
- Conditions of approval that were attached to the UGB expansion.

The UGR goes through a subsequent step of determining, in consultation with local jurisdictions, what portion of the region's capacity is likely to be developed in the 20-year timeframe. Examples of sources of information that can inform those determinations are local staff knowledge, status of planning and infrastructure provisions, market-based modeling, and the 2035 Growth Distribution. Please refer to the GIS shapefile for case-by-case capacity estimates when comprehensive plans or zoning plans were not used in calculations (i.e., in deference to other local input).

[24] This marks a change from the 2009 UGR, which asserted that any area that was added to the UGB from 1998 onward was a new urban area, even if zoning ordinances had been adopted. The new method considers a narrower set of areas to be new urban areas. All other areas are handled according to the standard BLI methods described in this paper.

Addendum: assessment of historic multifamily redevelopment strike prices

Multifamily housing accounts for about half of the new residential units that were constructed in the Portland region from 2007 to 2012. More than 60% of multifamily development over this period came through redevelopment and infill on previously developed parcels, so this segment of the housing supply is a critical component in determining residential land needs over the next 20 years. The buildable lands inventory (BLI) that has been developed for the current UGR includes a redevelopment component in order to account for this trend in the growth forecast. This analysis reviews the criteria that were selected as "filters" for including tax lots in the redevelopment supply by examining the multifamily redevelopment and infill that have actually occurred in recent years.

Building permit and assessor data, as well as Metro's multifamily housing inventory, were used to identify new multifamily construction over the study period and determine the previous state of the land before the most recent development. Developments were broadly divided into vacant, redevelopment and infill. If there was no evidence of an existing structure on the tax lot going back to the year 2003, the lot was considered vacant prior to the new development. If an existing structure was torn down to make way for the new development, this is considered redevelopment. If the existing structure was not torn down and new development was added, with or without subdividing the tax lot, this is considered infill.

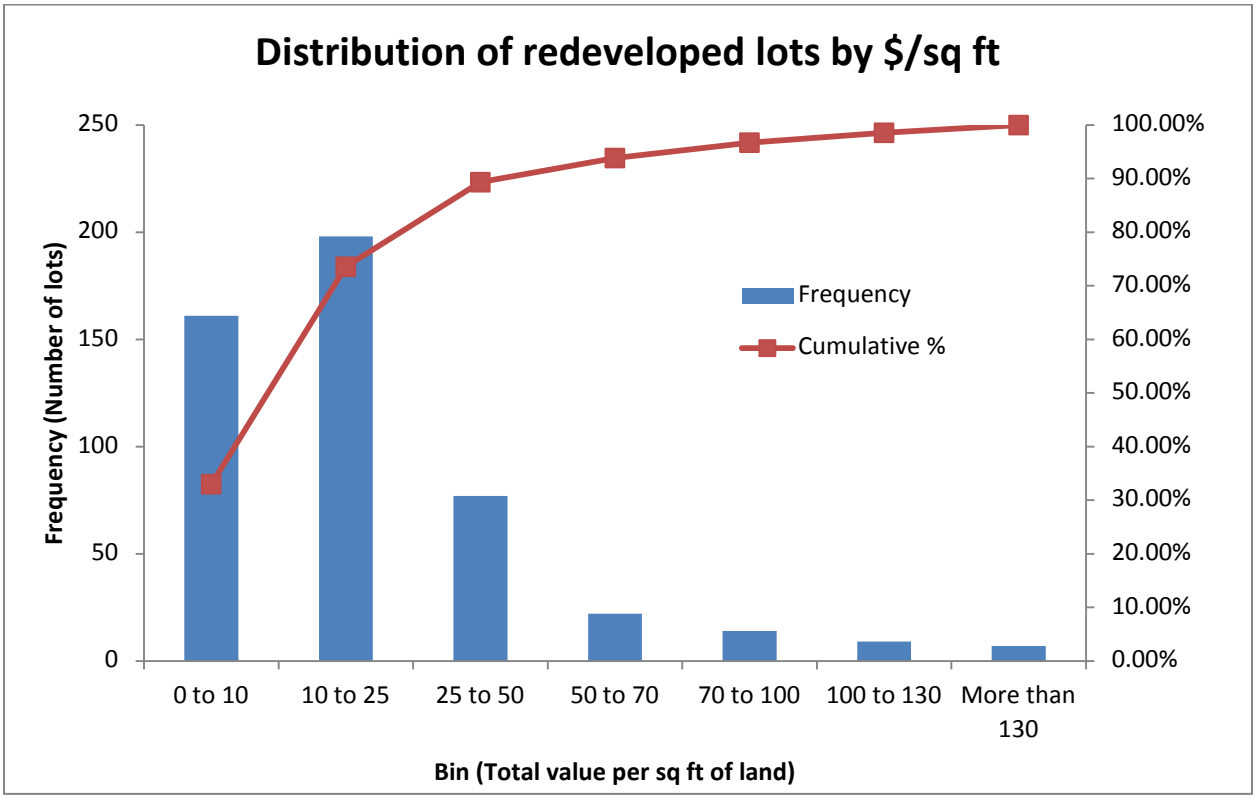
For developments that were identified as redevelopment and infill, the tax lot information from prior years was joined to look at the assessed values, land use and other attributes of the lots before they were redeveloped. In order to look at the land before any transactions or subdivisions toward redevelopment took place, the 2003 tax lots were chosen as the "pre-redevelopment" state of the land. For developments where the tax lots were not reconfigured during the redevelopment, it is fairly straightforward to directly join the old data to the new development. For developments where tax lots were assembled for the new development, it is also fairly straightforward to add up the values of the underlying land, however some developments had multiple uses prior to redevelopment. However, for the case where large lots were subdivided into multiple uses during redevelopment, it is harder to quantify the attributes of the land that was redeveloped and what portion should be assigned to any individual development on the property.

So instead of looking backward from the perspective of the new developments, tax lots that redeveloped from the 2003 data were selected and joined with forward-looking data from the new developments. The only information that could be consistently used from the new development data was the year of redevelopment and whether it was redevelopment or infill. The primary economic filter for inclusion in the redevelopment supply is total assessed value per square foot of land. Other attributes of interest may include lot size, previous land use, year built and building value. The following

statistics are based on the 2003 tax lots that were converted to multifamily residential use through infill and redevelopment over the period 2007 to 2012. Values in 2003$ were converted to 2013$ using the CPI factor 1.266, so 2013$ = 1.266 * 2003$.

The following histogram displays the distribution of the redeveloped (and infilled) lots by the total assessed value per square foot of land. It is important to note that more expensive lots are typically developed at much higher densities and therefore produce more than their share of residential units compared to the number of lots that are redeveloped. The table of strike prices used for the redevelopment supply in the BLI is included following the histogram.

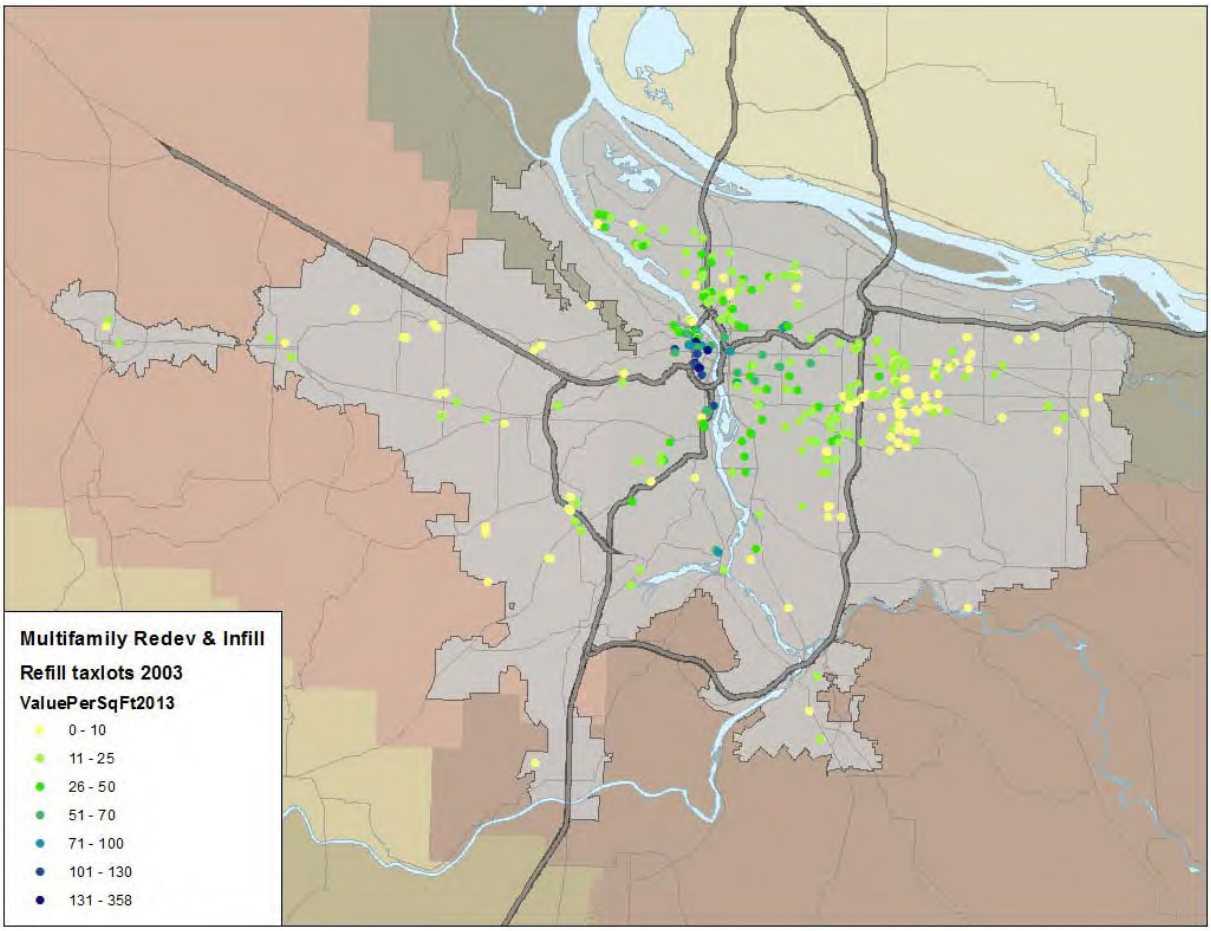
Bin	*Frequency*	*Cumulative %*
10	161	32.99%
25	198	73.57%
50	77	89.34%
70	22	93.85%
100	14	96.72%
130	9	98.57%
More	7	100.00%



	Redevelopment strike price per square foot (land and

	improvements)	
Market Subarea[25]	**Multi-family zoning**	**Mixed-use residential zoning**
Central City	$130	$130
N/NE Portland central corridors	$70	$80
Eastside urban	$70	$80
Suburban	$10	$12

The spatial distribution of the lot values is as expected, with the highest values in downtown Portland, intermediate values in inner Portland and Lake Oswego, and lower values in outer Portland and the suburbs. The City of Portland also experienced the greatest overall level of multifamily redevelopment.



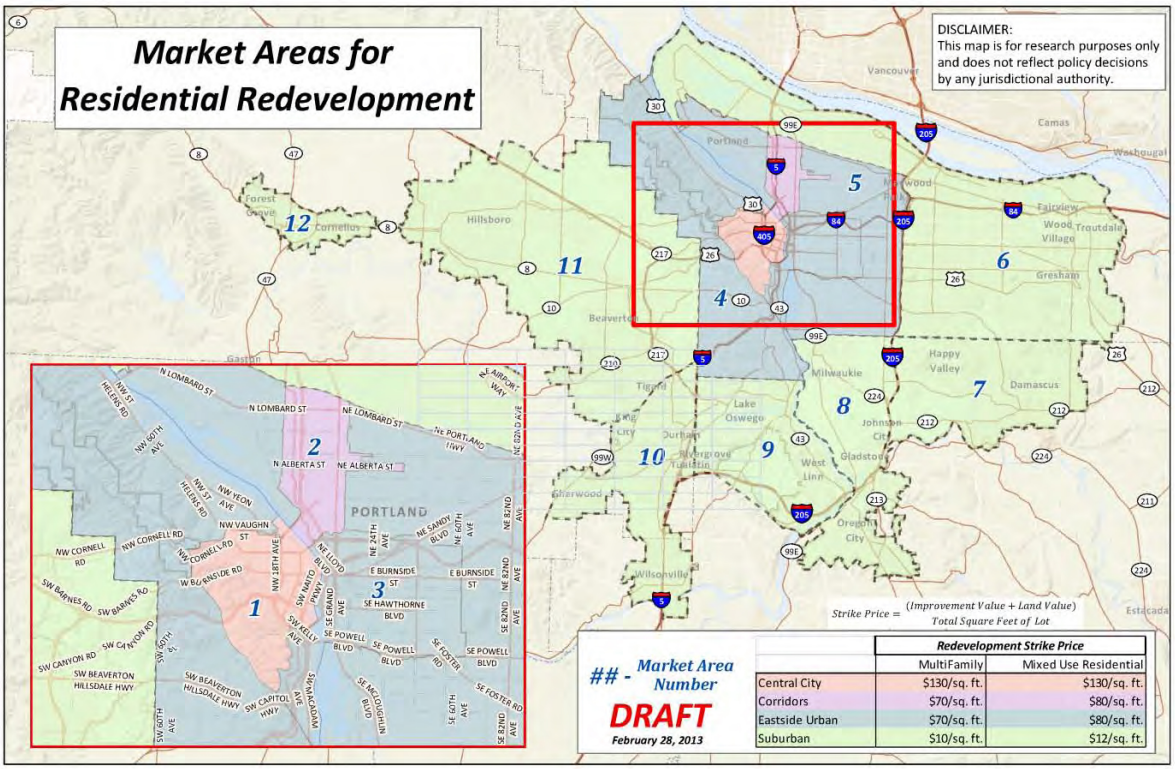
[25] During Local Review, the City of Portland identified the Gateway district as an area that did not fit these general rules for redevelopment. Therefore, a strike price of $24/sq. ft. was applied in Gateway based on several real-world redevelopments that have recently occurred in Gateway.

The following tables show the number of redeveloped tax lots and the average value per square foot by the jurisdiction and the year of redevelopment.

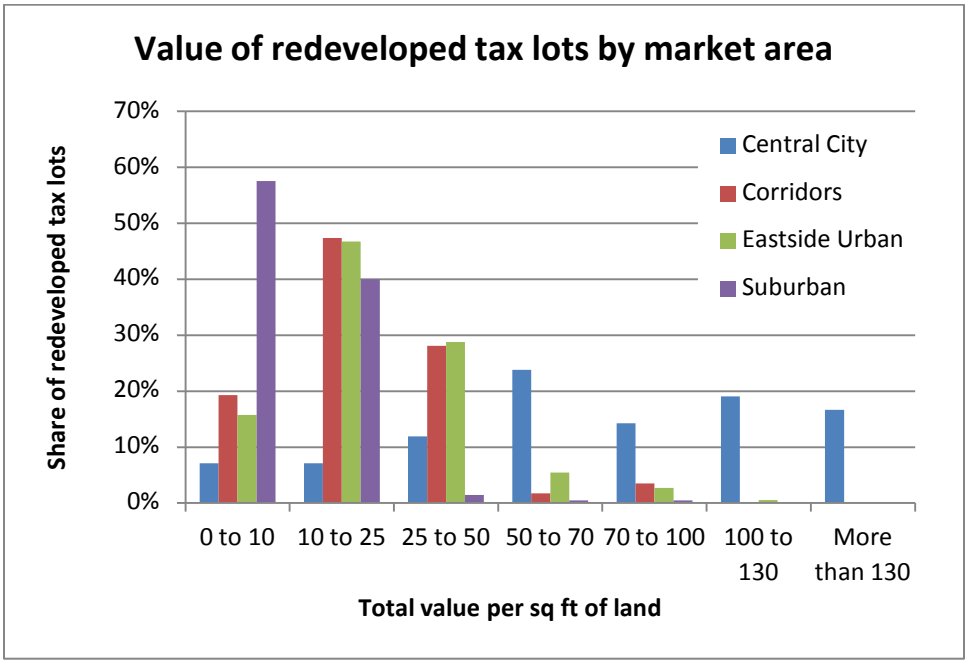
Jurisdiction	Number of lots			Average value per sq ft of land		
	Infill	Redev	Total	Infill	Redev	Total
CLACKAMAS	2		2	3.43		3.43
FAIRVIEW	1	1	2	7.14	9.81	8.48
GRESHAM	4	11	15	9.36	9.44	9.42
LAKE OSWEGO	2	4	6	13.67	45.55	34.92
MILWAUKIE	2	9	11	10.07	9.76	9.81
OREGON CITY	3	1	4	9.90	20.63	12.59
PORTLAND	70	328	398	19.95	29.59	27.89
Unincorp Washington County	8	41	49	12.33	8.55	9.16
WILSONVILLE		1	1		0.02	0.02
Total	92	396	488	17.65	26.42	24.76

Year built	Number of lots			Average value per sq ft of land		
	Infill	Redev	Total	Infill	Redev	Total
2007	20	101	121	18.83	21.59	21.13
2008	30	119	149	14.18	21.16	19.75
2009	11	75	86	13.17	43.05	39.23
2010	9	25	34	14.85	16.16	15.81
2011	7	39	46	19.64	21.48	21.20
2012	15	37	52	27.03	34.92	32.65
Total	92	396	488	17.65	26.42	24.76

The market subareas for the redevelopment thresholds are defined in the following map. These geographies were joined to the redeveloped tax lots to generate a histogram of values for each market area. The table shows the total number of redeveloped tax lots in each value bin, while the chart shows the percentage distribution among value bins.

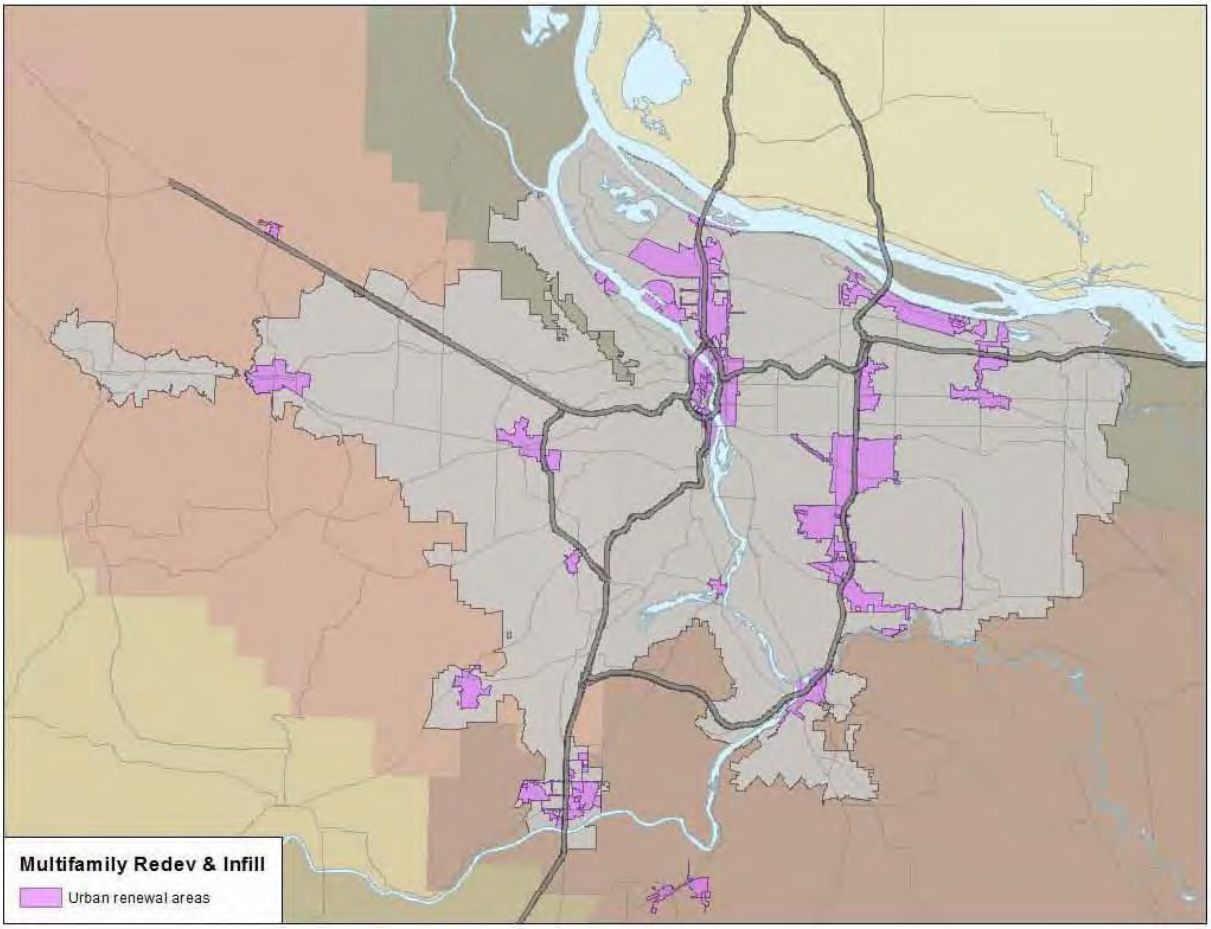


Bin	*Central City*	*Corridors*	*Eastside Urban*	*Suburban*
0 to 10	3	11	29	118
10 to 25	3	27	86	82
25 to 50	5	16	53	3
50 to 70	10	1	10	1
70 to 100	6	2	5	1
100 to 130	8	0	1	0
More than 130	7	0	0	0
Total	42	57	184	205



Urban renewal and other development incentives also contribute to redevelopment through direct subsidies, tax abatement, neighborhood improvements that increase achievable rents, and other mechanisms. The following table shows the distribution of multifamily redevelopment in urban renewal areas using three different measures. 28.5% of the 2003 tax lots that redeveloped over the period 2007-2012, and 27.3% of the new multifamily developments, fell within urban renewal areas. These developments are typically higher density than multifamily units elsewhere in the region, so they accounted for 47.1% of the multifamily units that were added over the study period.

Share in urban renewal areas	
2003 taxlots redeveloped	28.5%
MF developments	27.3%
MF units added	47.1%

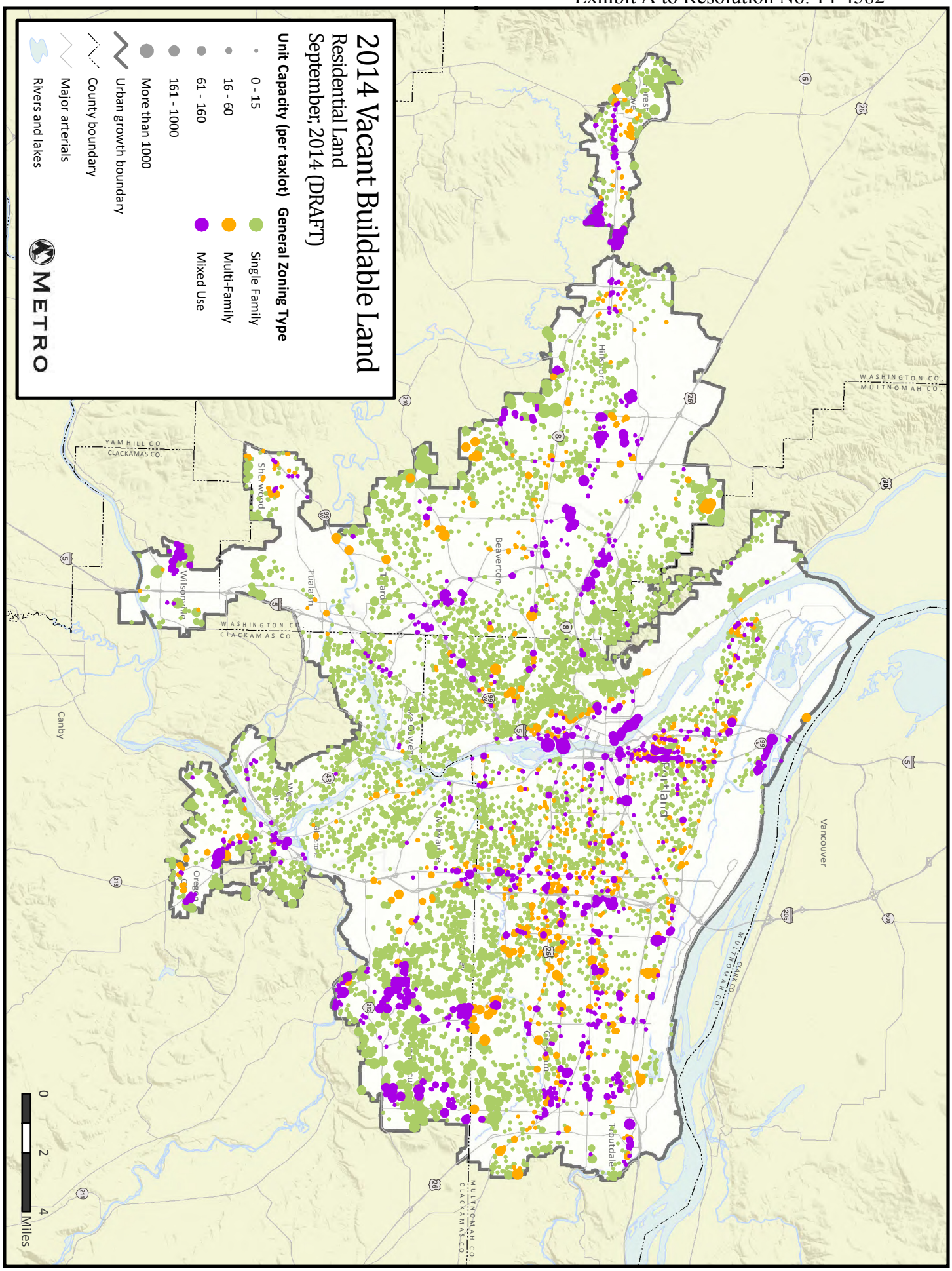

Multifamily Redev & Infill
Urban renewal areas

Appendix 3

Buildable land inventory results (revised as of 9/23/14)

This appendix describes the results of the buildable land inventory methods described in Appendix 2. All cities and counties in the region were given over two months to review a preliminary inventory in the fall of 2013. This inventory incorporates edits submitted by local jurisdictions. This buildable land inventory should be understood as a first cut at understanding the growth capacity of the Metro UGB. As described in the 2014 UGR summary and appendices 4 (Housing Needs Analysis) and 6 (Employment Demand Analysis), not all of this inventory may be feasible in the 20-year planning horizon. Additional market feasibility considerations are incorporated into the analyses found in those documents.

This revised draft incorporates a correction. This correction relates to lands added to the urban growth boundary by the Oregon Legislature in March 2014 under House Bill 4078. At the request of city of Forest Grove staff, this revised report counts lands added near Forest Grove as industrial rather than residential with a small amount of commercial. When the revised regional numbers are rounded at regional scale, this amounts to 200 additional acres of industrial land and 100 fewer acres of commercial land in the employment buildable land inventory. A second, minor correction affects only the detailed maps and tables in this appendix, but had already been incorporated into the remainder of the draft Urban Growth Report's analysis. This second correction does not change the report's analysis or conclusions.



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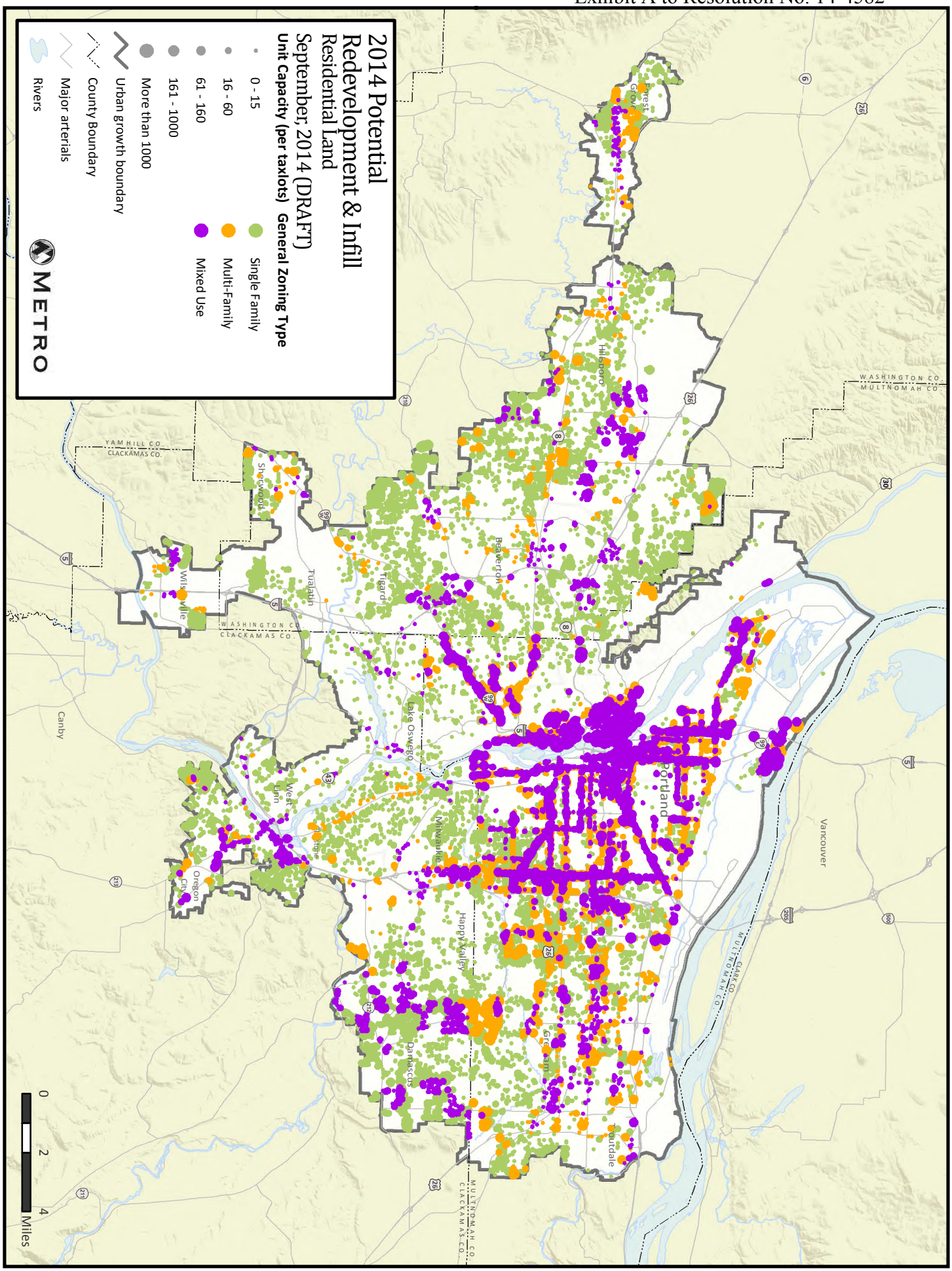

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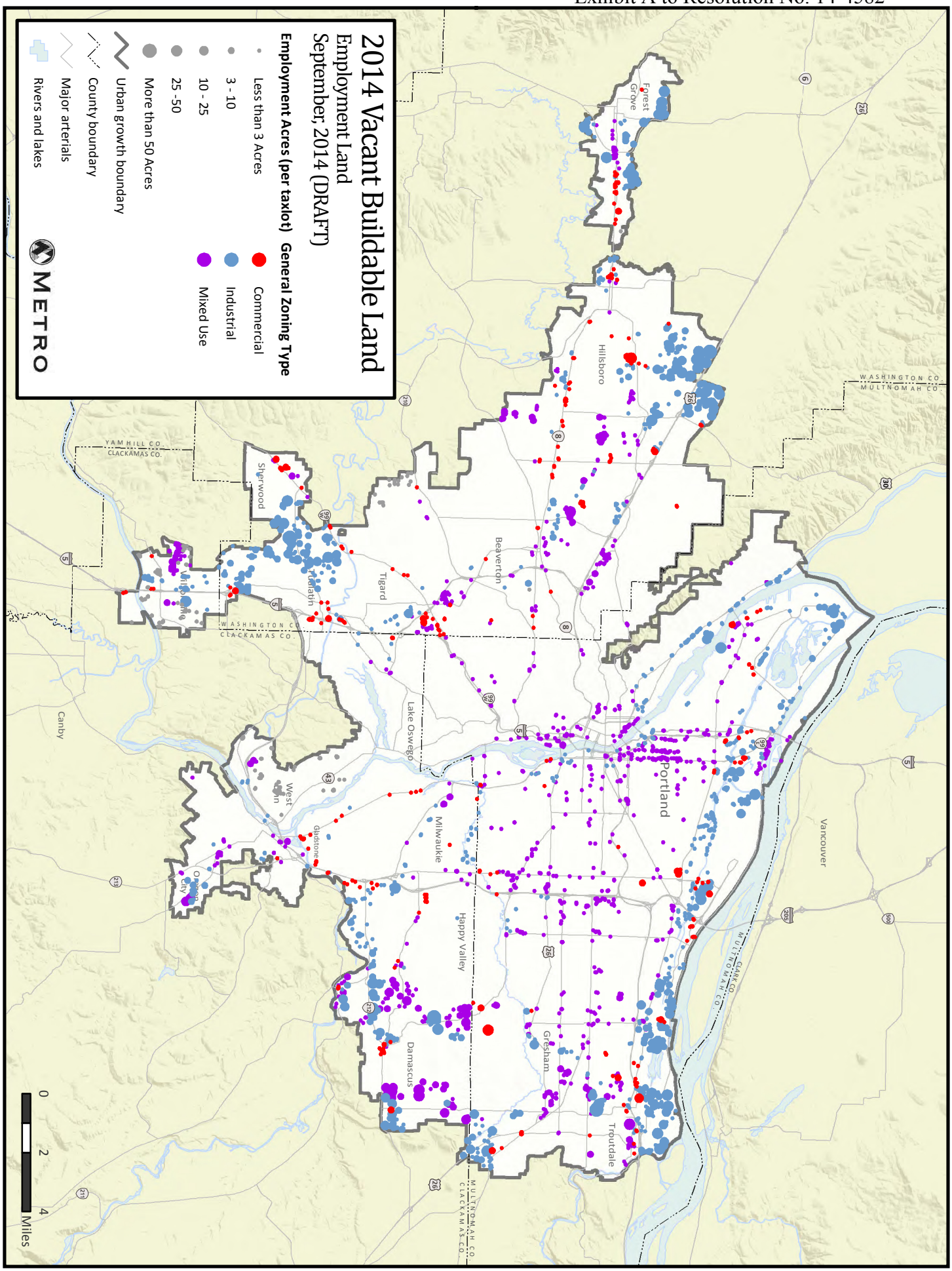

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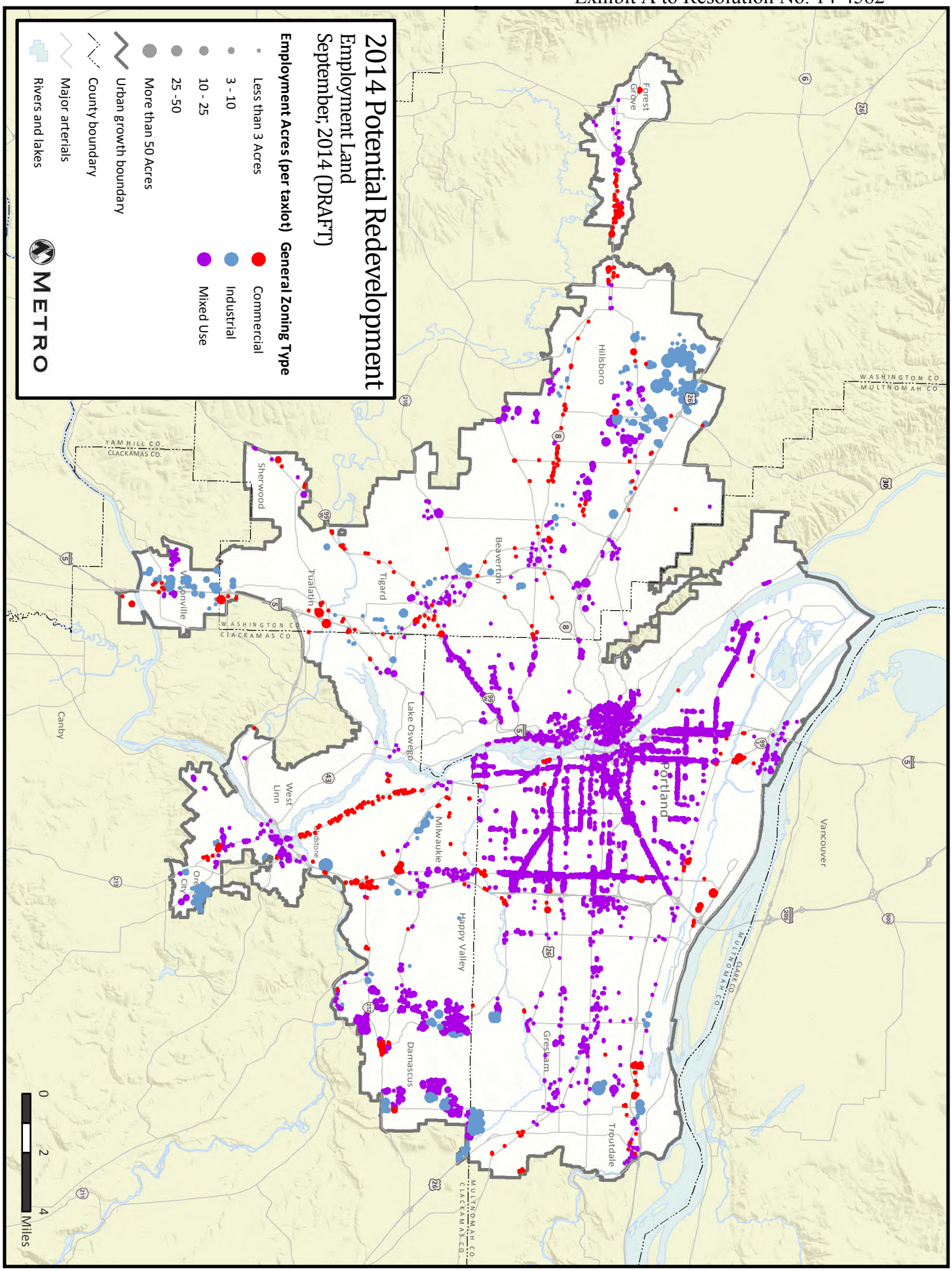
2014 Potential Redevelopment
Employment Land
September, 2014 (DRAFT)
Employment Acres (per taxlot)
Less than 3 Acres
3 - 10
10 - 25
25 -50
More than 50 Acres
Urban growth boundary
County boundary
Major arterials
Rivers and lakes
General Zoning Type
Commercial
Industrial
Mixed Use
METRO
Forest Grove
Hillsboro
Beaverton
Tigard
Tualatin
Sherwood
Wilsonville
Canby
Lake Oswego
West Linn
Oregon City
Milwaukie
Happy Valley
Damascus
Gresham
Troutdale
Portland
Vancouver
WASHINGTON CO
MULTNOMAH CO
YAMHILL CO
CLACKAMAS CO
CLARK CO
0
2
4
Miles
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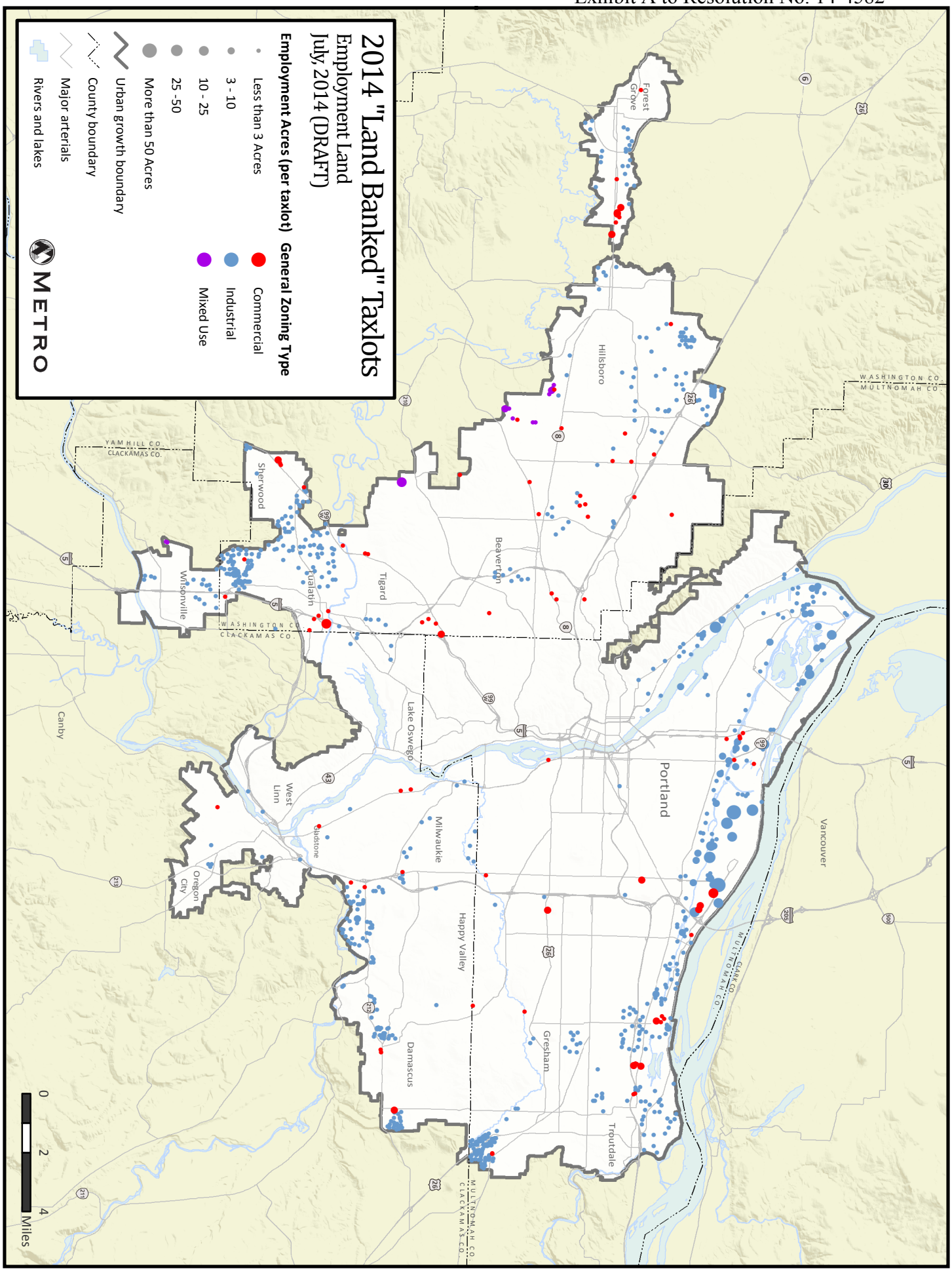
2014 "Land Banked" Taxlots
Employment Land
July, 2014 (DRAFT)
Employment Acres (per taxlot)
Less than 3 Acres
3 - 10
10 - 25
25 -50
More than 50 Acres
Urban growth boundary
County boundary
Major arterials
Rivers and lakes
General Zoning Type
Commercial
Industrial
Mixed Use
METRO
Forest Grove
Hillsboro
Beaverton
Tigard
Sherwood
Tualatin
Wilsonville
Lake Oswego
West Linn
Milwaukie
Oregon City
Happy Valley
Damascus
Gresham
Troutdale
Portland
Vancouver
Canby
WASHINGTON CO
MULTNOMAH CO
YAMHILL CO
CLACKAMAS CO
CLARK CO
0
2
4
Miles
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2014 Buildable Land Inventory (BLI) -- Employment Capacity Assumption (Reviewed by Local Jurisdictions)
Capacity Summary by City, Source, and Type
Metro Research Center DRAFT 9/23/2014

Does not include the Hillsboro industrial land added to the UGB by HB 4078
COM capacity includes capacity in COM and MUR zone classes
"Unincorp" = unincorporated areas inside Metro UGB

		Industrial		Commercial		Commercial on COM		Commercial on MUR		Total Capacity by Land Type			Percent of Capacity by Land Type						
Local Government	TOTAL ACRES	Vacant	Redev	Vacant	Redev	Vacant	Redev	Vacant	Redev	IND	COM	MUR	% IND	% COM	% MUR	Vacant Total	Redev Total	% Vacant	% Redev
Clackamas Total	**3,060**	**666**	**737**	**566**	**1,091**	**53**	**188**	**513**	**903**	**1,403**	**241**	**1,416**	**46%**	**8%**	**46%**	**1,232**	**1,828**	**40%**	**60%**
DAMASCUS	**1,375**	340	200	305	531	15	29	290	502	539	44	792	39%	3%	58%	645	730	47%	53%
GLADSTONE	**68**	1	57	3	7	3	7	0	0	58	10	0	85%	15%	0%	4	64	5%	95%
HAPPY VALLEY	**489**	127	16	154	191	15	0	140	191	143	15	331	29%	3%	68%	281	207	58%	42%
JOHNSON CITY	**0**	0	0	0	0	0	0	0	0	0	0	0	0%	0%	0%	0	0	0%	0%
LAKE OSWEGO	**28**	2	9	4	13	0	0	4	13	10	1	17	37%	3%	60%	6	22	21%	79%
MILWAUKIE	**60**	1	42	8	9	0	6	8	2	43	7	10	72%	11%	17%	10	50	16%	84%
OREGON CITY	**308**	43	101	50	113	0	19	50	94	145	19	144	47%	6%	47%	93	215	30%	70%
RIVERGROVE	**0**	0	0	0	0	0	0	0	0	0	0	0	0%	0%	0%	0	0	0%	0%
WEST LINN	**14**	1	0	9	4	0	1	9	3	1	1	12	6%	8%	87%	10	4	68%	32%
WILSONVILLE	**279**	57	171	18	33	11	26	7	8	228	36	15	82%	13%	5%	75	204	27%	73%
UNINCORP-CLACK	**441**	95	142	15	189	9	100	6	90	237	108	96	54%	25%	22%	110	331	25%	75%
Multnomah Total	**4,315**	**1,507**	**1,342**	**329**	**1,137**	**132**	**212**	**197**	**925**	**2,849**	**344**	**1,122**	**66%**	**8%**	**26%**	**1,837**	**2,479**	**43%**	**57%**
FAIRVIEW	**165**	102	0	32	32	21	28	11	4	102	49	15	62%	29%	9%	134	32	81%	19%
GRESHAM	**666**	364	97	96	108	32	7	65	101	462	39	166	69%	6%	25%	461	205	69%	31%
MAYWOOD PARK	**0**	0	0	0	0	0	0	0	0	0	0	0	0%	0%	0%	0	0	0%	0%
PORTLAND	**2,434**	649	753	131	901	64	161	67	740	1,402	225	807	58%	9%	33%	780	1,655	32%	68%
TROUTDALE	**328**	247	6	42	32	4	6	38	26	253	11	64	77%	3%	20%	290	38	88%	12%
WOOD VILLAGE	**69**	5	31	8	25	1	3	7	22	35	4	29	51%	7%	42%	13	56	19%	81%
UNINCORP-MULT	**653**	140	454	20	39	10	7	10	32	594	17	42	91%	3%	6%	160	493	24%	76%
Washington Total	**4,139**	**1,887**	**1,132**	**448**	**672**	**157**	**219**	**290**	**453**	**3,019**	**376**	**743**	**73%**	**9%**	**18%**	**2,335**	**1,803**	**56%**	**44%**
BEAVERTON	**335**	32	72	121	109	3	12	119	98	105	14	216	31%	4%	64%	154	182	46%	54%
CORNELIUS	**109**	35	1	18	54	18	54	0	0	36	72	0	33%	66%	0%	54	55	49%	51%
DURHAM	**6**	5	1	0	0	0	0	0	0	6	0	0	100%	0%	0%	5	1	84%	16%
FOREST GROVE	**163**	95	0	14	53	1	4	14	49	95	5	63	59%	3%	38%	110	53	67%	33%
HILLSBORO	**1,623**	570	847	107	98	72	31	35	67	1,417	103	102	87%	6%	6%	677	945	42%	58%
KING CITY	**4**	0	0	0	4	0	4	0	0	0	4	0	0%	0%	0%	0	4	0%	0%
SHERWOOD	**121**	83	0	19	19	11	9	8	10	83	20	18	68%	17%	15%	102	19	84%	16%
TIGARD	**178**	25	28	40	84	18	25	22	58	54	44	80	30%	25%	45%	66	112	37%	63%
TUALATIN	**272**	210	7	15	40	15	40	0	0	216	56	0	79%	21%	0%	225	47	83%	17%
UNINCORP-WASH	**1,328**	831	176	112	209	19	39	93	170	1,007	58	263	76%	4%	20%	943	385	71%	29%
UGB TOTAL	**11,514**	**4,061**	**3,210**	**1,343**	**2,900**	**343**	**619**	**1,000**	**2,281**	**7,271**	**961**	**3,282**	**63%**	**8%**	**29%**	**5,404**	**6,110**	**47%**	**53%**

This table reflects a necessary correction identified by Metro staff in September 2014. The correction relates to lands added to the urban growth boundary by the Oregon Legislature in March 2014 under House Bill 4078. At the request of the city of Forest Grove, this revised report counts lands added near Forest Grove as industrial, rather than residential with a small amount of commercial. Since these lands are not yet annexed to the city, they appear as unincorporated Washington County.

2014 Buildable Land Inventory (BLI) -- Residential Capacity Assumption (Reviewed by Local Jurisdictions)

Capacity Summary by City, Source, and Type

Metro Research Center DRAFT 9/23/2014

MF capacity includes capacity in MFR and MUR zone classes

"Unincorp" = unincorporated areas inside Metro UGB

		Single Family (SF)		Multi-Family (MF)		MF - Low (< 75 DU/acre)		MF - High (> 75 DU/acre)		Total Capacity by Building Type			Percent of Capacity by Building Type						
Local Government	**TOTAL DU**	**Vacant**	**Infill**	**Vacant**	**Redev**	**Vacant**	**Redev**	**Vacant**	**Redev**	**SF**	**MF - Low**	**MF - High**	**% SF**	**% MF - Low**	**% MF - High**	**Vacant Total**	**Redev Total**	**% Vacant**	**% Redev**
Clackamas Total	**60,614**	**17,220**	**23,106**	**7,178**	**13,110**	**5,957**	**11,019**	**1,221**	**2,091**	**40,326**	**16,976**	**3,312**	**67%**	**28%**	**5%**	**24,398**	**36,216**	**40%**	**60%**
DAMASCUS	**19,557**	6,654	8,900	1,765	2,238	1,765	2,238	0	0	15,554	4,003	0	80%	20%	0%	8,419	11,138	43%	57%
GLADSTONE	**567**	37	199	41	290	41	290	0	0	236	331	0	42%	58%	0%	78	489	14%	86%
HAPPY VALLEY	**10,004**	2,615	3,043	2,266	2,080	2,137	2,042	129	38	5,658	4,179	167	57%	42%	2%	4,881	5,123	49%	51%
JOHNSON CITY	**0**	0	0	0	0	0	0	0	0	0	0	0	0%	0%	0%	0	0	--	--
LAKE OSWEGO	**1,475**	513	497	44	421	44	421	0	0	1,010	465	0	68%	32%	0%	557	918	38%	62%
MILWAUKIE	**1,236**	244	933	23	36	23	28	0	8	1,177	51	8	95%	4%	1%	267	969	22%	78%
OREGON CITY	**7,330**	1,462	1,173	1,791	2,904	835	1,832	956	1,072	2,635	2,667	2,028	36%	36%	28%	3,253	4,077	44%	56%
RIVERGROVE	**36**	31	5	0	0	0	0	0	0	36	0	0	100%	0%	0%	31	5	86%	14%
WEST LINN	**1,048**	511	413	51	73	51	73	0	0	924	124	0	88%	12%	0%	562	486	54%	46%
WILSONVILLE	**3,852**	1,275	1,485	531	561	531	561	0	0	2,760	1,092	0	72%	28%	0%	1,806	2,046	47%	53%
UNINCORP-CLACK	**15,509**	3,878	6,458	666	4,507	530	3,534	136	973	10,336	4,064	1,109	67%	26%	7%	4,544	10,965	29%	71%
				0	0														
Multnomah Total	**255,834**	**9,823**	**14,709**	**23,775**	**207,527**	**8,678**	**50,815**	**15,097**	**156,712**	**24,532**	**59,493**	**171,809**	**10%**	**23%**	**67%**	**33,598**	**222,236**	**13%**	**87%**
FAIRVIEW	**1,124**	212	209	367	336	367	336	0	0	421	703	0	37%	63%	0%	579	545	52%	48%
GRESHAM	**15,322**	1,774	3,034	3,032	7,482	2,863	6,945	169	537	4,808	9,808	706	31%	64%	5%	4,806	10,516	31%	69%
MAYWOOD PARK	**32**	15	17	0	0	0	0	0	0	32	0	0	100%	0%	0%	15	17	47%	53%
PORTLAND	**228,426**	5,760	9,420	19,037	194,209	4,109	38,034	14,928	156,175	15,180	42,143	171,103	7%	18%	75%	24,797	203,629	11%	89%
TROUTDALE	**1,515**	269	277	433	536	433	536	0	0	546	969	0	36%	64%	0%	702	813	46%	54%
WOOD VILLAGE	**620**	24	15	64	517	64	517	0	0	39	581	0	6%	94%	0%	88	532	14%	86%
UNINCORP-MULT	**8,795**	1,769	1,737	842	4,447	842	4,447	0	0	3,506	5,289	0	40%	60%	0%	2,611	6,184	30%	70%
				0	0														
Washington Total	**74,880**	**20,870**	**32,295**	**9,224**	**12,491**	**8,664**	**11,563**	**560**	**928**	**53,165**	**20,227**	**1,488**	**71%**	**27%**	**2%**	**31,451**	**44,786**	**41%**	**59%**
BEAVERTON	**8,016**	2,010	2,737	2,172	1,097	1,994	1,035	178	62	4,747	3,029	240	59%	38%	3%	4,182	3,834	52%	48%
CORNELIUS	**241**	23	65	31	122	31	122	0	0	88	153	0	37%	63%	0%	54	187	22%	78%
DURHAM	**42**	25	17	0	0	0	0	0	0	42	0	0	100%	0%	0%	25	17	60%	40%
FOREST GROVE	**5,429**	1,473	1,966	532	1,458	532	1,458	0	0	3,439	1,990	0	63%	37%	0%	2,005	3,424	37%	63%
HILLSBORO	**9,972**	1,736	2,925	1,385	3,926	1,385	3,926	0	0	4,661	5,311	0	47%	53%	0%	3,121	6,851	31%	69%
KING CITY	**392**	154	69	146	23	146	23	0	0	223	169	0	57%	43%	0%	300	92	77%	23%
SHERWOOD	**991**	75	392	218	306	218	306	0	0	467	524	0	47%	53%	0%	293	698	30%	70%
TIGARD	**8,513**	1,892	4,351	955	1,315	952	995	3	320	6,243	1,947	323	73%	23%	4%	2,847	5,666	33%	67%
TUALATIN	**539**	37	314	136	52	136	52	0	0	351	188	0	65%	35%	0%	173	366	32%	68%
UNINCORP-WASH	**40,745**	13,445	19,459	3,649	4,192	3,270	3,646	379	546	32,904	6,916	925	81%	17%	2%	18,451	23,651	44%	56%
UGB TOTAL	**391,328**	**47,913**	**70,110**	**40,177**	**233,128**	**23,299**	**73,397**	**16,878**	**159,731**	**118,023**	**96,696**	**176,609**	**30%**	**25%**	**45%**	**89,447**	**303,238**	**23%**	**77%**

This table reflects a necessary correction identified by Metro staff in September 2014. The correction relates to lands added to the urban growth boundary by the Oregon Legislature in March 2014 under House Bill 4078. At the request of the city of Forest Grove, this revised report counts lands added near Forest Grove as industrial, rather than residential with a small amount of commercial. Since these lands are not yet annexed to the city, they appear as unincorporated Washington County.

Appendix 4

Housing Needs Analysis (revised as of 9/23/14)

This revised draft incorporates two corrections described on the final page of this appendix.

Introduction

Metro is required under state law to complete a buildable land inventory (includes vacant, infill and redevelopment capacity) and an assessment of housing need at least every 5 years. The buildable land inventory methods and results are summarized in appendices 2 and 3, respectively. This report summarizes relevant Census data, key forecast assumptions, forecast results (derived from MetroScope scenarios[1]) and compares likely housing demand to the residential growth capacity of the current urban growth boundary.

This analysis uses a range forecast. Once the Metro Council makes a growth management decision and chooses a point in the range forecast for which to plan, this Housing Needs Analysis will be updated to reflect that decision. A final Housing Needs Analysis will then be submitted for consideration by the state Land Conservation and Development Commission.

What's new in the 2014 Urban Growth Report housing needs analysis?

- Eliminated the "residential refill rate[2]" in the calculation of housing need.
- Replaced refill rate with direct measures of residential infill and redevelopment supply estimates; now included in the single family buildable land inventory (BLI) as *infill* capacity and the multifamily BLI as *redevelopment* capacity. The methodology for how Metro estimated single family infill and multifamily redevelopment is spelled out in the *BLI methodology* whitepaper (see Appendix 2).
- Synchronized the BLI database with MetroScope Urban Growth Report (UGR) scenario(s) – thus enabling a tightly integrated MetroScope scenario(s) to fit with the UGR framework.[3] This will

[1] 3 scenarios: high growth forecast, medium-baseline growth forecast, and a low growth forecast scenario

[2] Previous Urban Growth Reports used a refill rate to describe the share of future residential growth that would be accommodated through redevelopment and infill. The refill rate was expressed as a percent share of demand and was not tied to the buildable land inventory.

[3] The integration of MetroScope within the analysis framework of the UGR provides a more substantial economic planning basis to: 1) improve the inventory of buildable lands, 2) accurately compare how the distribution of households by income bracket, age bracket and household size distributes to available housing supplies, 3) determine housing need by rent and price, 4) document the housing inventory by densities and types of residence by local jurisdiction, 5) and include infill and redevelopment in the evaluation of housing need. Utilizing MetroScope provides a stronger planning basis to test the likely market response/outcome and socio-economic impacts and tradeoffs of ordinances and incentives to increase population densities in urban areas while taking into account 1) key facilities [e.g., transportation infrastructure], 2) ESEE consequences of development [e.g., future settlement patterns after considering economic, social and environmental growth factors], 3) projected use of urban land [i.e., redevelopment].

lead to better coordination between the UGR and subsequent forecast allocation work. The MetroScope scenarios used for this analysis are intended to represent a continuation of currently adopted policies[4].

- Used the capture rate (i.e., the future share of residential growth and development in the Metro UGB relative to the MSA total) that is an output of a MetroScope scenario for making housing needs calculations (instead of using historically observed capture rate figures as with past UGRs). The capture rates used in this analysis are somewhat higher than historic observations (around 70% depending on scenario vs. 62.8% historical reading).
- Required data on historic residential development trends are reported in a separate report (Appendix 5).

What key aspects are the same in this housing needs analysis?

- Using a range forecast to acknowledge uncertainty in the regional forecast.
- Assuming no changes to currently adopted plans and zoning designations.
- Buildable lands for residential uses are inventoried by housing location, type and density.
- Only a portion of the buildable land inventory is expected to be market feasible in the 20-year planning timeframe. This report describes how 20-year estimates were made.
- Number of needed (i.e., demanded) housing units are reported by price / rent ranges and average density.
- The analysis reflects varied housing demand for different household sizes, incomes, and ages.
- Manufactured homes (a construction technique, not a housing type) are assumed to be available to be placed in any jurisdiction in Metro which allows/permits for appropriate residential development densities.
- Mimicking how real markets function, redevelopment and infill supply are linked to household demand (redevelopment and infill become more likely with higher market demand). At the higher end of the forecast demand range, there is increased redevelopment or infill supply.

Data, Forecast and Methods

Prospective Buildable Land Inventory (BLI)

- The BLI is considered a year 2014 estimate of residential and non-residential (employment) supply. The inventory has been reviewed and accepted by local jurisdictions. Data are individual tax lots and stored in a master geodatabase capable of being queried for the UGR and suitable for a MetroScope scenario.
- BLI consists of identified vacant tax lots plus infill and redevelopment tax lots deemed capable of potential of supporting residential development in the future under existing plans and zone designations.

[4] As an example, current policies include but not limited to: 1) current zoning and comprehensive plans, 2) urban / rural reserves, 3) regional transportation plans (RTP), 4) system development charges (SDC), and 5) urban renewal areas (and/or development subsidies).

- The BLI has parts that are deemed prospective because redevelopment and infill are not certainties. At this point, it is just as likely that a tax lot "eligible[5]" for redevelopment (or infill) does or does not actually redevelop. To the extent we can forecast where redevelopment happens, we utilize MetroScope – an integrated land use model – to make future estimates of the amount of realizable redevelopment and infill to count in the UGR inventory.
- The infill and redevelopment supply inventory was designed to be ahead of the 20-year market for MetroScope modeling purposes. The rationale for this is to assume for the model a 20-year land supply on hand at the end of the 20-year forecast horizon.
- For purposes of evaluating the Metro UGB, the geography of the supply inventory is clipped to the current UGB and the timeframe for the supply has to be estimated for a 20-year inventory, particularly for infill and redevelopment supply.
- For MetroScope modeling, we utilize the longer time frame and additional BLI data estimates which include Clark County, rural and neighboring city capacity estimates. We necessarily include this information so that we can model the Metro UGB capture rate forecast from a seven-county MSA (Clackamas, Columbia, Multnomah, Washington and Yamhill counties in Oregon and Clark and Skamania counties in Clark).
- In summary, MetroScope, a market-based land use and integrated with a transportation model, is used to estimate how much of the infill and redevelopment capacity can be counted on as market feasible in the next 20 years. We count 100 percent of identified vacant land in the BLI, but will only count a fraction of the infill and redevelopment capacity in the BLI for the UGR need analysis in accord with forecast information derived from a MetroScope Scenario[6].

Forecast[7]

- Regional range forecast (high, baseline and low growth scenarios) for population and employment, 2015 to 2035. Housing demands are derived from these growth range scenarios represented by the population and employment drivers for each forecast range and interval.
- The population forecast is integrated with the employment forecast so that economic trends affect the migration component of population. Natural population increases (births – deaths) are estimated from birth and death rates found in the 2012 National Population Projections (source: Census data). Rates are adjusted so that they calibrate with birth and death rates of the last 10 years for the region.
- Population forecast is converted into households by income bracket, age bracket (age is of the head of household), and household size (we call this distribution of household characteristics/ profile: an HIA matrix)
- HIA households are converted into types of housing demand (i.e., needed housing by tenure and structure type).

[5] Eligibility requirements for infill and redevelopment are spelled out in Appendix 2.
[6] Additional MetroScope details may be found in Appendix 11.
[7] Regional forecast details may be found in Appendix 1a.

Housing needs general methodology

1. Determine the portion of households in the regional MSA household forecast that may choose to locate in the Metro UGB. A MetroScope scenario predicts the outcome of residential capture rate. The capture rate measures the proportion of future housing development (i.e., growth) in the Metro UGB relative to growth in the MSA for years 2015 to 2035. Other things being equal, the capture rate varies according to the demand forecast.
2. Sort year 2015 and 2035 projected households in the Metro UGB into socio-economic classes by: a) household size, b) income bracket, c) age bracket. This is a "3 dimensional matrix" of household size-income-age. Household size has 5 attribute levels. There are 8 income brackets and 5 age brackets. (We call this the 5 x 8 x 5 HIA matrix.)
3. Estimate the growth by HIA class for 2015 to 2035 to array the 20 year growth in households in size, household income and age brackets. An HIA class in the matrix represents households in the same socio-economic strata based on household size, income and age bracket characteristics.
4. Relate a set of residential housing preferences to each HIA class for tenure (own or rent) and housing structure type (single family or multi-family). Residential preference patterns for each HIA class are based on findings from a MetroScope scenario. Each HIA class is found to have proportional affinities to OSF (owner single family), OMF (owner multi-family), RSF (renter single family), and RMF (renter multifamily). These affinities are preferences used going forward to predict – by tenure and structure type – the Metro UGB housing demand forecast.
5. Tally this housing need forecast by OSF, RSF, OMF and RMF (see: Table 3)
6. Complete a gap analysis of projected housing need by type (SF – single family and MF – multi-family) against the BLI (sorted by SF and MF), shown in Figure 9 to 11.

Methodology step by step

Step 1: Capture rate and Metro UGB job forecast

From the regional MSA jobs forecast, we compute how much population (i.e., number of households) growth will locate inside the Metro UGB. A MetroScope UGR scenario provides residential location choice projections for population and households so we can compute Metro UGB household shares. Table 1 presents the MSA and UGB household estimates and projections for the baseline growth forecast.

Table 1: Regional Household Forecast - baseline scenario (source: 2014-2040 Regional Range Forecast – Scen. #1462)

	Metro UGB	MSA Forecast (7 counties)	percent share (UGB / MSA)
2015 (base year) Households	613,000	898,700	68.2%
2035 Households	820,100	1,185,800	69.2%
2015 Housing Units (6.9 % vacancy rate)	655,500		
2035 Housing Units (4.0 % vacancy rate)	852,900		
2015-35 Housing Growth Difference	197,400		

- Total projected housing demand for the Metro UGB (2015 to 2035) is *197,400* dwelling units.
- Percentage of Metro UGB growth was determined from MetroScope Scen. #1462 (baseline scenario)
- MSA forecast for 7 counties includes Columbia, Clackamas, Multnomah, Washington and Yamhill counties in Oregon plus Clark and Skamania counties in Washington State.
- 6.9 percent vacancy rate (source: U.S. Census, 2010)
- 4.0 percent vacancy rate (source: 2009 UGR assumption)
- Implied captured is 72 percent for years 2015 to 2035 (baseline - medium growth scenario)

Step 2: Sort Metro UGB housing forecast into HIA classes

For the sake of brevity, we do not show the year 2015 and year 2035 HIA matrices as they are 3-way tables that are each 5 by 8 by 5 in size (which equals a total of 200 cells), which do not lend themselves well to reporting in written form.

Step 3: Estimate the growth in households by HIA[8]

Instead, we summarize in Figure 1 the marginal summations of the HIA matrix for illustrative purposes for the change in households between 2015 and 2035. (The actual forecast projections by HIA class are available upon request.)

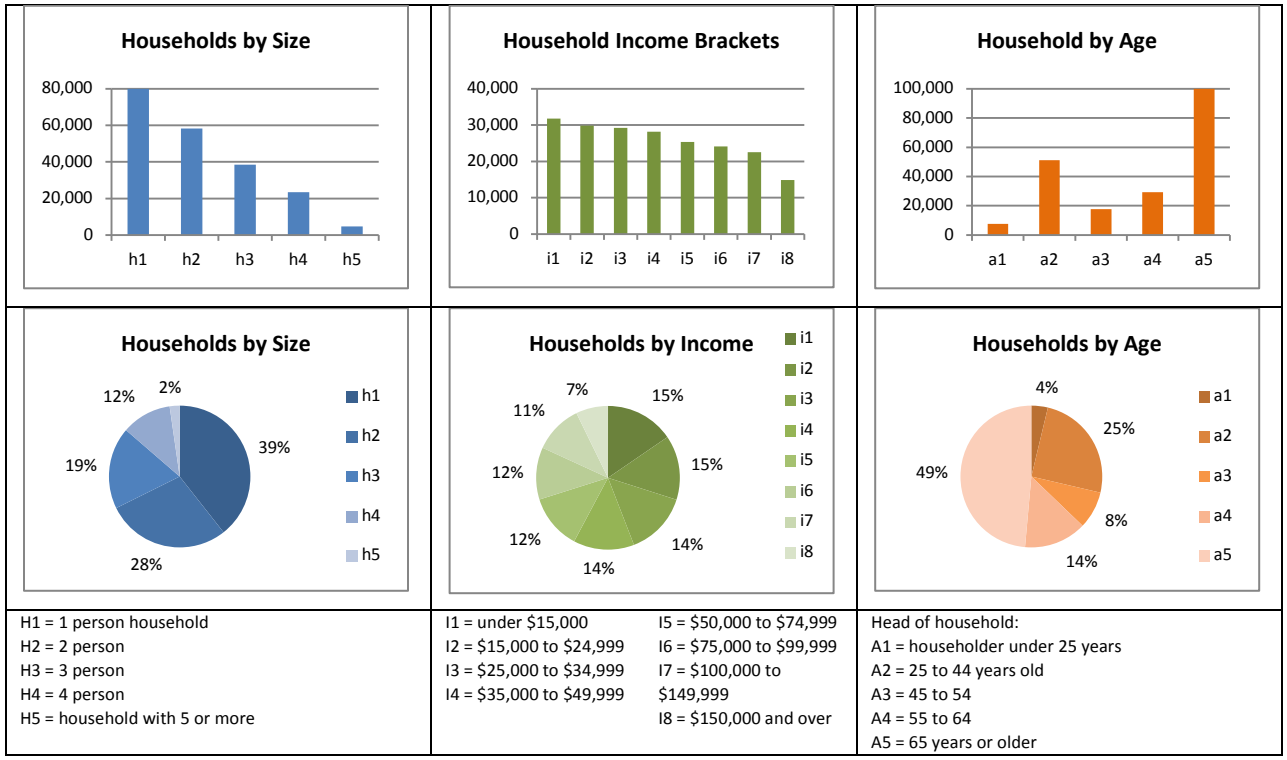


Figure 1: 2015 to 2035 HIA forecast marginal distributions (source: MetroScope Scen. #1462)

[8] Please note that we use the term "household" and "housing unit" interchangeably. This is because we are talking about units that are dimensioned by housing characteristics (i.e., tenure and type) as well as attributed with household characteristics (age, income and number of persons in a household who could occupy the unit).

- 61 percent of future households are expected to be of 1 or 2 persons. This is consistent with overall projected declines in average household sizes from 2.60 (in 2010) to 2.47 (in 2035) for the MSA region. Despite a decline in average household size, the absolute number of households with 3 or more persons increases in number by 2035 as compared to 2010 figures.
- Note that the income brackets are not equally spaced. (They were by construction initially divided into 8 equal proportions to the extent possible given available Census categories.) The regional forecast overall anticipates proportionally fewer households in the middle income bracket with the numbers proportionally bifurcating into both lower and upper end income brackets in general.
- The influence of the baby boom generation is felt by the large proportion of older householders at the margin (41 percent of the net change in population and households are in the retirement age group – 65 years and older, another 13% in pre-retirement – ages 55 to 64.) An increase in median age of the population is expected due to the increase proportion of retirement age householders, yet the number of householders in younger age categories is expected to increase in absolute numbers.

Addendum:

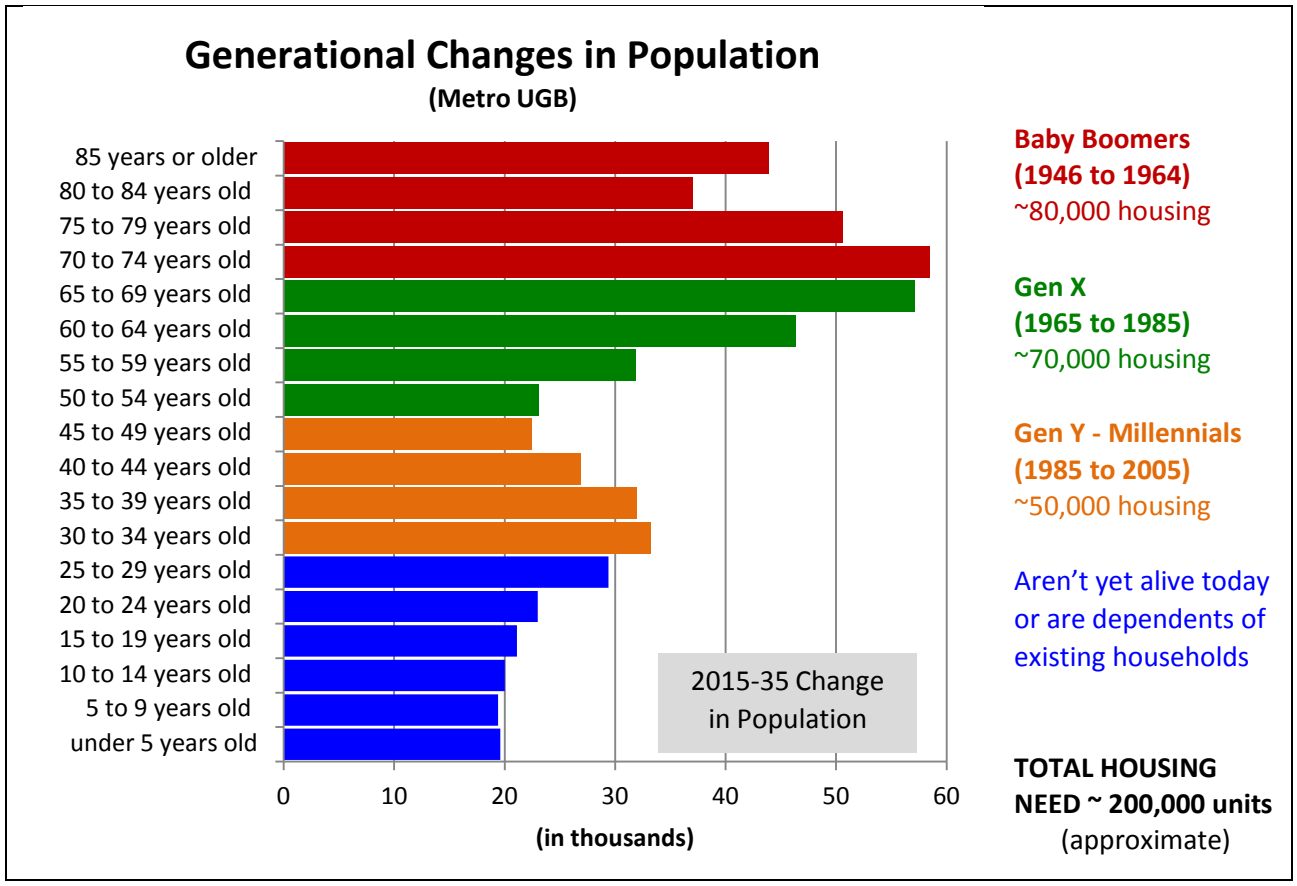


Figure 2: Groupings of age cohorts by Generation (approximate) – medium baseline scenario (scen #1462)

- *As Figure 2 illustrates, there will be more demand for housing by structure type (i.e., SF or MF) and tenure (i.e., own or rent) of all types for each generation in the future. The numbers going forward (2015 to 2035) indicate an approximate need for more housing units to accommodate the needs for the increase in baby boomers, Gen X, and Millennials.*
- *By 2035, the last of the baby boomers will all be of retirement age and the leading edge of the Gen X generation will also be entering retirement. Current Census information indicates homeownership remains fairly high and don't begin tapering off until residents reach age 85. Even at 85 years and older, the current cohort data show homeownership still above 50%. Baby boomers are said to be healthier than previous generations. With healthier lifestyles, it is conceivable (possible) that baby boomers and subsequent generations may age in place longer and maintain a higher ownership rate than current peers. This augurs for longer delays before senior householders choose to relinquish their single family home in favor of living in multifamily dwelling units or perhaps a group quarter living arrangement.*
- *There has been nascent talk that Millennials (or even the tailing end of Gen Xers) are changing their "preferences" for structure type and opting for life in apartments. However, it is still early in their life cycle with many of them delaying when they marry and have kids. Census data would suggest that once couples form families, their preferences switch dramatically in favor of "single family style" development forms[9].*

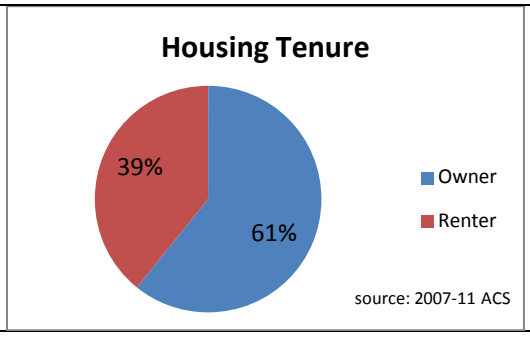
Steps 5 and 6 are detailed later in this report, beginning with 2010 Census data as a contextual backdrop to the housing need forecast.

2010 Census of Population and Housing – the current housing story

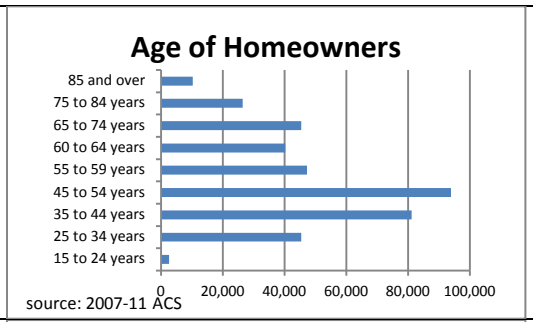
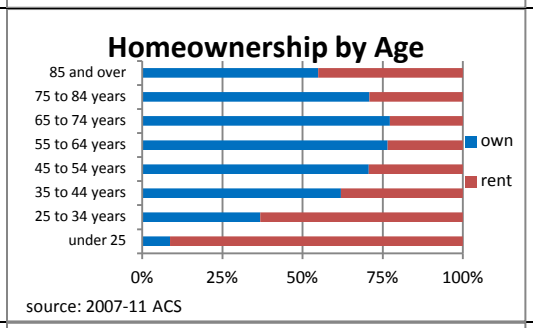
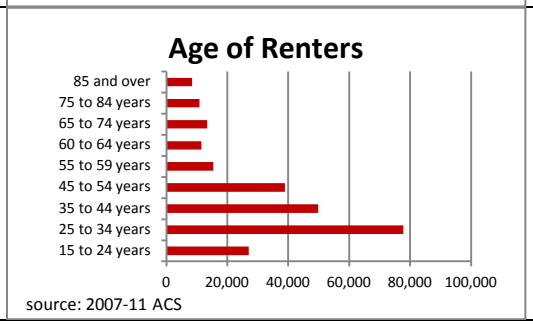
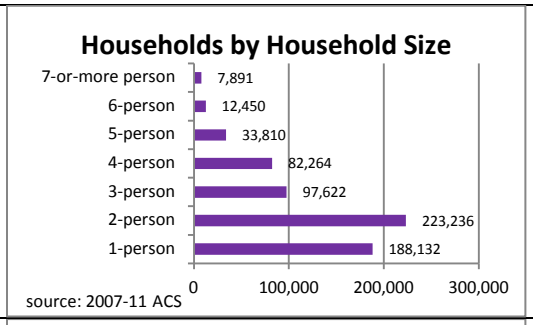
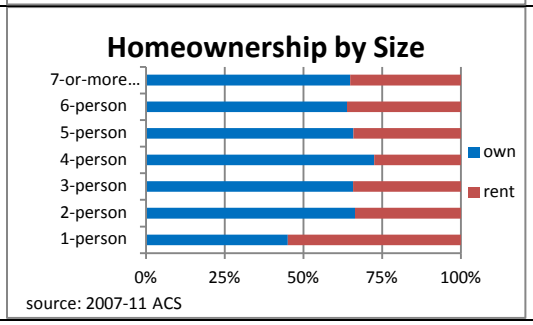
(unless otherwise noted, data are for the three-county area)

Tenure (own / rent) and Age

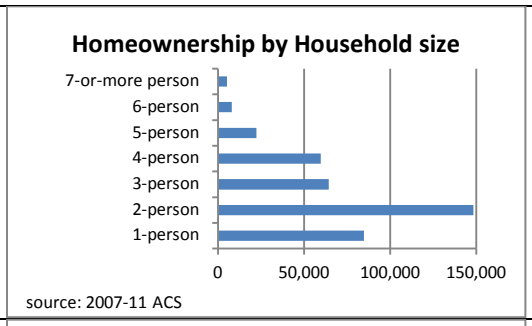
- Homeowners held a 22 percentage point edge over the number of renters in the Tri-counties (Clackamas, Multnomah, and Washington).
- 392,300 owners
- 253,100 renters



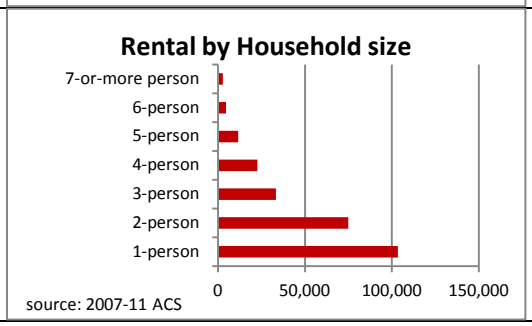
[9] Is it possible that single family development forms instead of developing horizontally as single family detached units or single family attached units as row houses but develop vertically as mid to high-rises apartments and condo units in more urban locations with 3 or more bedrooms to accommodate households with children? Presently, we see very little inventory and construction if any of the "vertical single family" development form.

• Absolute number of home owners peaked at middle age (45 to 54 year) • The drop in home ownership numbers in seniors came from a decline in the number of householders. • Retirees (65 and over) who owned homes out-numbered renters 2 to 1	
• Share of home ownership by age rose and peaked up to age 75 before edging lower. • Ownership tapered slightly faster at 85 years and over (perhaps age becomes an issue in the upkeep and maintenance of owned homes). • Ownership share in the oldest cohort was more than half (55 percent).	
• Renters were more apt to be younger (under 35 years). • The proportion of renters fell off with age, presumably when they were more likely to be married or starting families.	
Tenure and household size	
• 645,405 households in the 3-county area. • 411,400 households were 1 or 2 person • Household size was related to tenure choice. • 45 percent of single-person households owned (55 percent rent).	
• Home ownership increased with larger households (up to 4-person households, 73 percent own) • Households with 2 or more residents were more likely to own (about 66 percent).	

- Majority of people who own homes lived in households with 2 or more people, although there were over 80,000 1-person households who owned their own home.

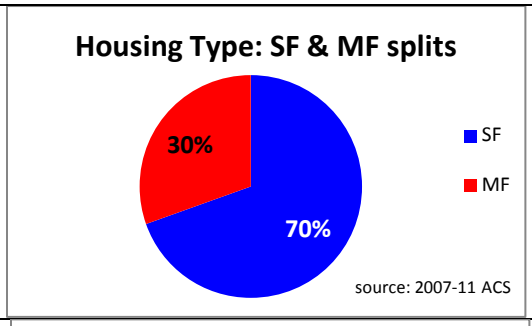


- Majority of renters were 1 or 2 person households.
- 75,000 households with 3 or more persons rented.

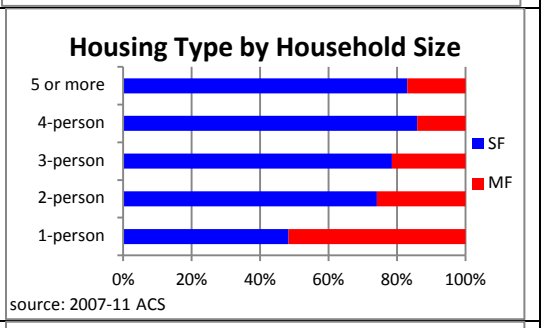


Housing Type: single family (SF) or multifamily (MF) and household size

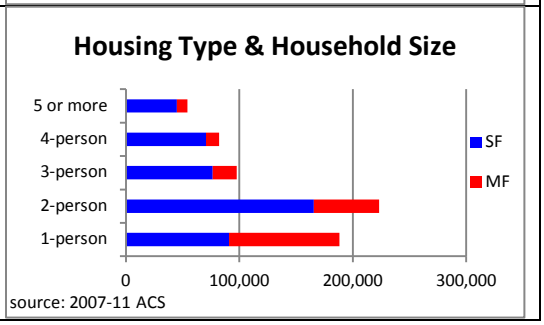
- 70 percent of households occupied a form of single family housing.
- Single family units are defined in these charts as: 1-unit detached or attached, and / or mobile, manufactured home



- Larger households were more likely to occupy single family housing.
- About half of the 1-person households occupied single family housing.

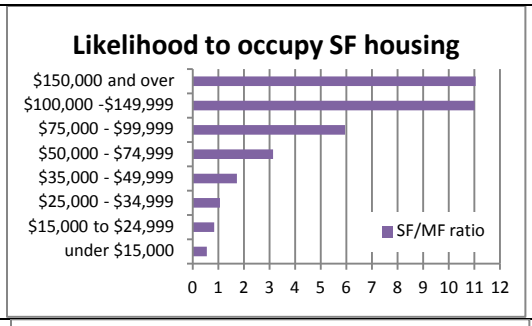


- This graph shows the relationship between household size and housing type for the 3-county area.



Housing Structure Type: single family (SF) or multifamily (MF) and household income bracket

- Households with higher incomes were more likely to live in a SF structure.
- Of the subset of low income bracket homeowners, some were headed up by retirees with fixed incomes.



- The chart (right) shows the distribution or proportion of housing type by household income bracket.
- Lower income household were more likely to occupy multifamily homes and higher income households were more likely to occupy single-family homes.

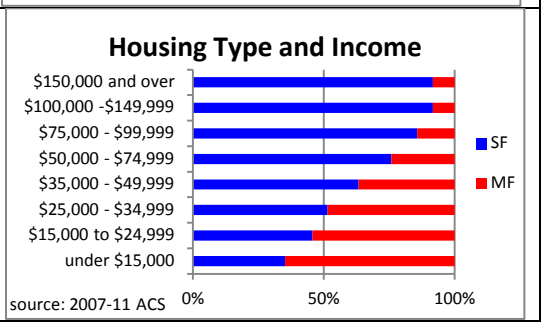


Table 2: 2010 Census, comparing household size, income, and age against demand by structure type and tenure relationships

RESIDENTIAL HOUSING BY SOCIOECONOMIC CLASS (source: Census 2010)

geography: Tri-county (Clackamas, Multnomah, Washington) 6/11/14

time span: 2010 data

		Household by size		Demand for: SF	MF	%SF	%MF	own	rent	%own	%rent
1 person	h1	29%	189,322	95,722	93,600	51%	49%	87,178	102,144	46%	54%
2 persons	h2	35%	225,656	169,783	55,872	75%	25%	153,365	72,291	68%	32%
3 persons	h3	15%	98,293	73,814	24,479	75%	25%	61,828	36,465	63%	37%
4 persons	h4	12%	77,962	64,847	13,115	83%	17%	54,713	23,249	70%	30%
5 or more persons	h5	8%	54,173	44,532	9,640	82%	18%	35,263	18,910	65%	35%
		100%	645,405	448,698	196,707	70%	30%	392,346	253,059	61%	39%

		HH by income bracket		Demand for: SF	MF	%SF	%MF	own	rent	%own	%rent
under $15,000	i1	13%	83,675	32,424	51,251	39%	61%	22,977	60,699	27%	73%
$15,000 to $24,999	i2	11%	70,983	35,184	35,798	50%	50%	27,055	43,928	38%	62%
$25,000 - $34,999	i3	11%	70,453	38,706	31,747	55%	45%	31,374	39,079	45%	55%
$35,000 - $49,999	i4	15%	97,762	64,976	32,786	66%	34%	54,569	43,193	56%	44%
$50,000 - $74,999	i5	19%	122,254	95,367	26,887	78%	22%	83,000	39,253	68%	32%
$75,000 - $99,999	i6	12%	78,025	68,211	9,813	87%	13%	62,688	15,337	80%	20%
$100,000 - $149,999	i7	12%	75,719	70,307	5,412	93%	7%	67,646	8,074	89%	11%
$150,000 and over	i8	7%	46,534	43,522	3,011	94%	6%	43,037	3,496	92%	8%
		100%	645,405	448,698	196,707	70%	30%	392,346	253,059	61%	39%

		HH by householder age		Demand for: SF	MF	%SF	%MF	own	rent	%own	%rent
under 25 years old	a1	5%	33,679	23,491	10,187	70%	30%	19,961	13,718	59%	41%
25 to 44 years old	a2	34%	217,562	151,567	65,995	70%	30%	131,488	86,074	60%	40%
45 to 54 years old	a3	21%	135,907	94,629	41,278	70%	30%	83,335	52,572	61%	39%
55 to 64 years old	a4	19%	121,777	84,411	37,366	69%	31%	74,303	47,474	61%	39%
65 years or older	a5	21%	136,480	94,599	41,881	69%	31%	83,258	53,222	61%	39%
		100%	645,405	448,698	196,707	70%	30%	392,346	253,059	61%	39%

source: U.S. Census and Metro Research Center SF = 1 unit attached or detached, mfg. home MF = multifamily unit, apartment or condo

Table 2 summarizes the residential conditions for the Portland tri-county area for year 2010 based on data from the U.S. Census. This table summarizes the 5x8x5 HIA matrix for year 2010.

- 70 percent of households occupied a 1-unit structure (i.e., a single family)
- 30 percent of households occupied a multifamily residence – includes attached units of 2 or more (i.e., multifamily, duplex, triplex and other plexes are included in this category)
- 61 percent of households owned their residence
- 39 percent of households rented their residence

The information in table 2 illustrates the historic relationship between household characteristics (household size, income bracket and age bracket) and housing characteristics (tenure and housing structure type (i.e., single family (SF) and multi-family(MF)). The projection for housing demand in the UGR does not use this Census information to forecast future housing demand. For that, MetroScope

data are used and are tabulated in the next section of this report. The next section includes marginal details of the 5x8x5 HIA matrix used in forecasting residential demand for single and multi-family.

UGR MetroScope scenario results

Data in this section are derived from a MetroScope scenario that is intended to illustrate how the population and employment growth forecast may play out with a continuation of currently adopted land use and transportation policies. These modeled data inform the UGR's assessment of future housing needs.

Figures 3 to 5 illustrate the household characteristics in year 2010, the change in characteristics between 2015 and 2035, and the projected outlook in 2035. The UGR residential need estimate is based on these changes in residential composition and projected shift in housing demand between 2015 and 2035 (figures shown are from the baseline medium growth scenario). It is clear that shifts in housing preference are in part predicated on projected demographic shifts and the economy. It is also apparent that state (Washington and Oregon), regional, and local land-use policies in effect today (and presumably in future years) such as zoning ordinances, the UGB and urban reserves will have a profound impact on regulating housing demand and residential location choice.

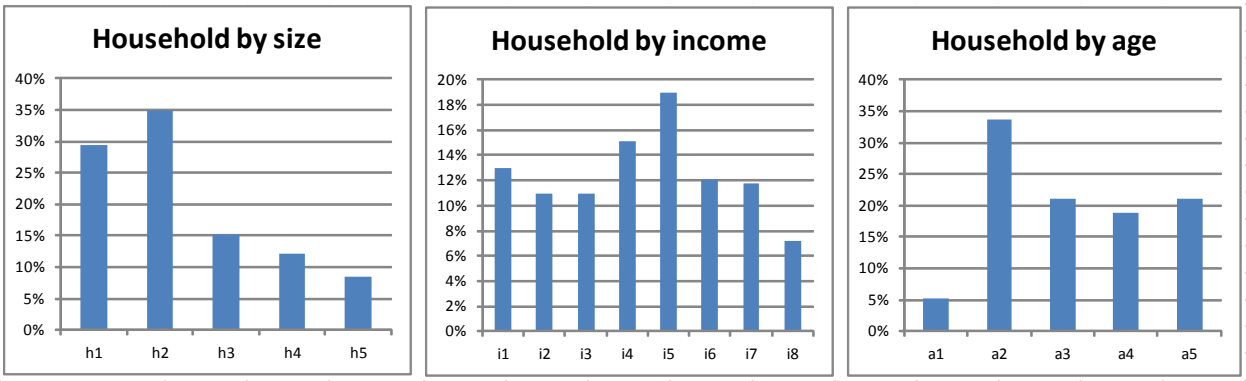


Figure 3: 2010 Household characteristics

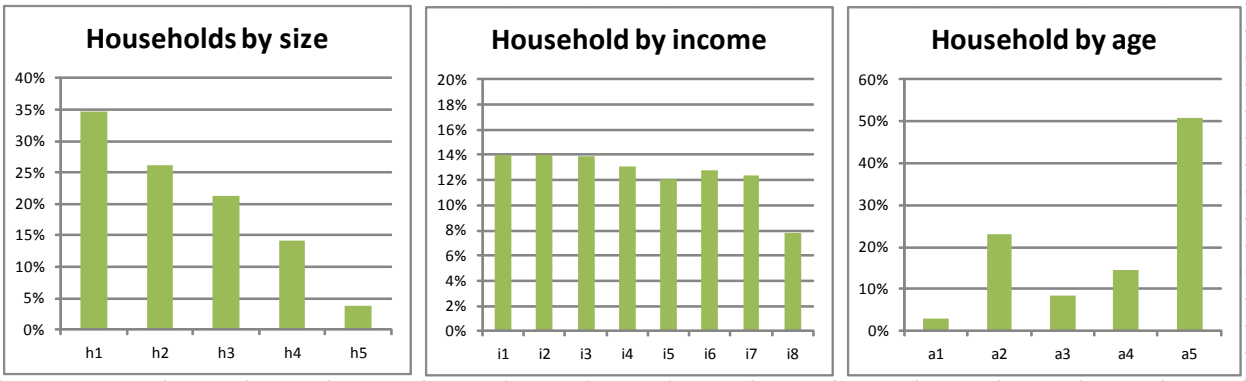


Figure 4: Change in Household characteristics (2015 to 2035) – baseline medium growth scenario

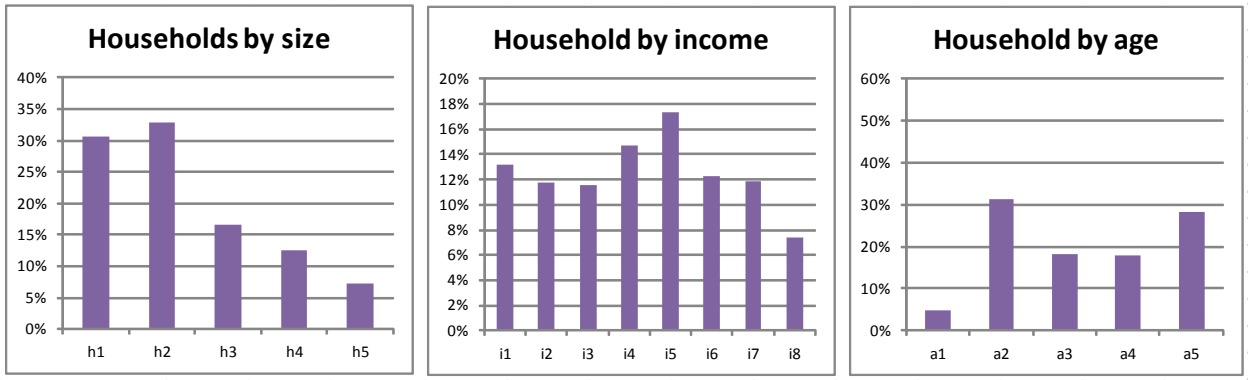


Figure 5: 2035 Household characteristics – baseline medium growth scenario

According to the baseline medium growth forecast scenario:

- 6 out of 10 net new households are expected to be 1 or 2 person. Figure 4 shows proportionally larger increases in 1 and 2 person households.
- Average household size in the Tri-county is expected to fall from 2.54 (in 2010) to 2.48 (in 2035); marginal household size projected to be 2.30.
- Partly due to the increase in numbers of 1-person households, there will be a larger share of lower income households at the margin – making up 42% of net new households, see Figure 4 income brackets i1, i2, and i3 which are households with under $35,000 .
- The lower to middle income category (i4 and i5 - $35,000 to $74,999) loses share between 2015 and 2035, particularly indicative of the on-going economic pressures on middle-income Americans, Figure 4.
- Largest increase in number of households by age will be seen in the retired cohort (65 years and older), Figure 4.

Table 3 summarizes the anticipated shift in demand for residential housing based on MetroScope Scen. #1462 results[10] (the baseline medium scenario). *The tables and figures shown derive from the baseline medium growth scenario, but the reader should be aware that the values in the HIA matrix shown in Table 3 will necessarily show a shift in housing demand between tenure and structure type between the low, medium and high growth scenarios. The resulting shift in housing demand preferences in the Metro UGB for 2015 to 2035 is in part due to the obvious difference in population growth rates in the low, medium and high. The change is not only in demand, but the response in the consumer supply for housing must shift between the low to medium to high scenarios to accommodate increased housing demand outlook. Because the housing supply is unevenly distributed among cities, structure types are also unequally allocated (as evidenced by the BLI estimates), transportation accessibility varies (street*

[10] The technical basis for the MetroScope scenario is outlined in Appendix 11. The appendix provides a basic overview of socio-economic, land use, real estate, transportation and policy/political assumptions. Although technical in nature, these specifications have the power to influence residential demand, the development form and composition of future housing (and employment) trends for cities and the region inside and outside the Metro UGB. The technical specifications reflect current policies

networks differ), real estate values and neighborhood quality measures are not the same across the region, redevelopment and public investments are more prevalent in some cities than others, this uneven distribution of housing supply attributes creates opportunities for competitive imbalances in residential absorption between scenarios. (Addendum to explain in few economic details for why supply and demand factors necessarily shift between scenario alternatives.)

Table 3: Baseline - medium growth scenario (MetroScope Scen #1462) – *REVISED*

RESIDENTIAL FORECAST PROJECTIONS BY SOCIOECONOMIC CLASS (MetroScope basis)

geography: Metro UGB 8/29/14
time span: 2015 to 2035
Scen #1462 **(medium)**

		Households by size		Demand for: SF	MF	%SF	%MF	own	rent	%own	%rent
1 person	h1	40%	78,593	13,077	65,516	17%	83%	38,419	40,174	49%	51%
2 persons	h2	28%	55,315	20,398	34,916	37%	63%	40,716	14,599	74%	26%
3 persons	h3	19%	37,126	22,855	14,270	62%	38%	27,166	9,960	73%	27%
4 persons	h4	11%	22,482	17,123	5,359	76%	24%	17,867	4,615	79%	21%
5 or more persons	h5	2%	3,884	3,471	413	89%	11%	3,756	128	97%	3%
		100%	197,400	76,926	120,474	39%	61%	127,923	69,477	65%	35%

		HH by income bracket		Demand for: SF	MF	%SF	%MF	own	rent	%own	%rent
under $15,000	i1	16%	30,797	5,423	25,374	18%	82%	10,301	20,496	33%	67%
$15,000 to $24,999	i2	15%	28,916	8,435	20,481	29%	71%	14,947	13,969	52%	48%
$25,000 - $34,999	i3	14%	28,297	9,288	19,009	33%	67%	16,300	11,997	58%	42%
$35,000 - $49,999	i4	14%	26,887	9,444	17,443	35%	65%	18,151	8,736	68%	32%
$50,000 - $74,999	i5	12%	23,696	9,045	14,650	38%	62%	18,209	5,487	77%	23%
$75,000 - $99,999	i6	12%	22,975	12,067	10,909	53%	47%	17,798	5,178	77%	23%
$100,000 - $149,999	i7	11%	21,371	12,486	8,885	58%	42%	18,168	3,203	85%	15%
$150,000 and over	i8	7%	14,461	10,738	3,723	74%	26%	14,050	411	97%	3%
		100%	197,400	76,926	120,474	39%	61%	127,923	69,477	65%	35%

		HH by householder age		Demand for: SF	MF	%SF	%MF	own	rent	%own	%rent
under 25 years old	a1	4%	7,159	256	6,903	4%	96%	616	6,543	9%	91%
25 to 44 years old	a2	24%	48,049	11,876	36,173	25%	75%	20,714	27,334	43%	57%
45 to 54 years old	a3	8%	15,827	3,206	12,621	20%	80%	10,382	5,445	66%	34%
55 to 64 years old	a4	14%	27,901	10,635	17,266	38%	62%	20,716	7,185	74%	26%
65 years or older	a5	50%	98,464	50,953	47,511	52%	48%	75,495	22,968	77%	23%
		100%	197,400	76,926	120,474	39%	61%	127,923	69,477	65%	35%

source: Metro Research Center SF = 1 unit attached or detached, mobile home MF = multifamily unit, apartment or condo

6

For brevity, the HIA matrices for the high and low growth scenarios are not reported. However, it should be noted that the summary tables for the high and low growth differ from this medium baseline table on tenure and structure type preferences. Under the high growth scenario, the SF/MF ratio is 38 percent / 62 percent and the aggregate tenure is unchanged, and we see small variations in individual household size, income bracket and age. Under the low growth scenario, the SF/MF ratio is 42 percent / 58 percent and unchanged in aggregate for tenure, with subtle variations in the details.

Table 4: Baseline - medium growth scenario

Residential Demand by Value Class

5/19/2014

MetroScope UGR Scenario #1462 Results

2015

UGB 2015

Value Class	Total Residential Demand (units) Owner Single Family	Owner Multi-family	Renter Single Family	Renter Multi-family	Residential Prices Owner Single Family	Owner Multi-family	Est. Monthly Rent Rental Single Family	Rental Multi-family
1	32,134	3,981	2,304	17,174	$ 85,062	$ 82,228	$ 594	$ 341
2	34,995	2,971	9,215	32,778	120,071	116,423	790	384
3	41,831	3,116	6,715	28,651	146,220	146,930	969	449
4	41,709	1,910	8,045	26,407	174,310	166,718	1,136	502
5	45,403	2,308	5,827	21,694	211,744	203,193	1,314	570
6	46,250	1,771	9,891	26,187	240,862	228,855	1,505	647
7	43,644	1,112	10,938	24,263	308,826	278,718	1,814	763
8	45,834	1,104	14,451	18,389	485,427	434,509	3,168	1,167
	331,800	18,273	67,386	195,543				
	54%	3%	11%	32%				

2035

UGB 2035

Value Class	Total Residential Demand (units) Owner Single Family	Owner Multi-family	Renter Single Family	Renter Multi-family	Residential Prices Owner Single Family	Owner Multi-family	Est. Monthly Rent Rental Single Family	Rental Multi-family
1	36,699	14,726	2,454	27,487	$ 126,987	$ 105,755	$ 764	$ 467
2	44,988	15,488	8,464	40,720	182,219	162,159	956	522
3	46,189	11,101	5,430	36,715	225,363	210,320	1,113	591
4	55,806	10,406	7,340	37,894	268,789	245,241	1,338	678
5	53,118	8,079	7,735	34,186	321,264	297,240	1,587	774
6	59,070	6,749	9,220	32,249	368,411	344,918	1,892	895
7	53,702	3,203	10,059	29,589	454,937	429,537	2,309	1,065
8	59,853	3,940	16,393	31,048	734,872	699,781	4,091	1,636
	409,425	73,692	67,095	269,888				
	50%	9%	8%	33%				

Note: "value class" refers to the aggregation of household characteristics attributed by household size, income, and age of householder (i.e., HIA) into eight household types as shown in Table 4.

The MetroScope scenario model uses 400 types of households[11] that are determined by household size, income, household age and whether children are present. To make analysis and presentation feasible,

[11] Household refers to the residents, not the residence. Although when we forecast which households demand which type of housing and tenure, the unit of measure switches to housing units. The difference between households and housing units is defined by an occupancy factor.

the 400 types have been simplified to eight household types (described as "value class" in some tables in this report). The value classes roughly correspond to income bracket, but are not precise because the classes also consider the impact that household size and age may have on residential preferences. These eight value classes thus correspond to household types and are ranked roughly commensurate with income generally increasing from value class one to value class eight. (see Table 4)

- The market share for owner single family (OSF) is expected to fall to 50 percent in 2035, from 54 percent in 2015. In total, the SF market share (own + rent) is 65 percent (54 percent OSF + 11 percent RSF) in 2015 and 58 percent (50 percent OSF + 8 percent RSF) in 2035, a 7 percent drop in market share expected between 2015 and 2035. (In 2010, the Census estimated the SF market share to be about 70 percent).
- Change in product type mix (2015 to 2035) is nearly equally divided by owner single family (37 percent) and renter multi-family (36 percent).

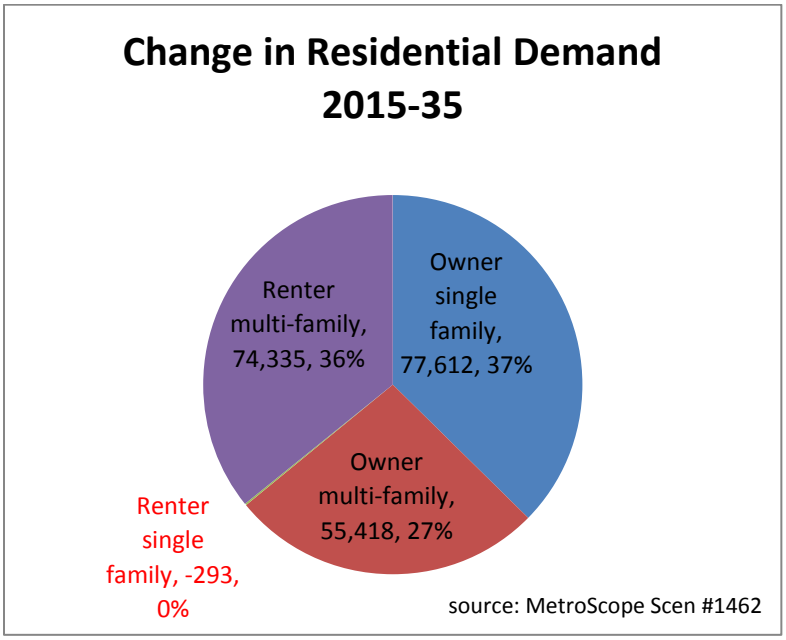


Figure 6: change in residential demand by type and tenure in the Metro UGB (2015-2035) - *REVISED*

- Remaining market share of owner multifamily is expected to be driven by a 3 fold increase of condos between 2015 and 2035. This marks a significant change in consumer product demand.
- Tenure rates (i.e., ownership) are about the same in 2015 (57 percent) and 2035 (59 percent).
- The renter multifamily market (i.e., apartments for rent) is expected to edge up to 33 percent of the market from 32 percent.
- There is little change expected in the renter single family market between 2015 and 2035 as evidenced in the 0 percent change shown in Figure 6.

Residential buildable land inventory capacity

The buildable land inventory includes capacity for about 390,000 dwelling units. Additional detail about the inventory can be found in Appendix 3. This estimate is less than what would be allowable under adopted local zoning codes since not all developed land will redevelop to its fully allowed extent in the next 20 years. Likewise, as described later in this report, not all the buildable land inventory is counted for this analysis.

30 percent of the buildable land inventory's capacity is for single family (SF) homes, of which there are about 118,000 units. SF capacity is defined to include single family detached units, single family attached units (e.g., duplexes, triplexes, row houses and townhomes), manufactured home capacity or any other unit type that may be considered as a standalone 1-unit structure.

About 70 percent of the UGB's residential buildable land inventory capacity is for multifamily residences. Multifamily (MF) capacity includes apartments and condominium units. Typically, this capacity is counted in multifamily residential (MFR) districts or mixed use residential / commercial (MUR) districts. Capacity for nearly 274,000 MF dwelling units is estimated in this prospective buildable land inventory.

Addendum (September 2014):

The initial capacity estimated for the urban reserves added to the Metro UGB by HB 4078 (2013) near the city of Forest Grove is denoted in Table 5.

	Single Family (SFR5 Units)	Multi-Family (MUR2 Units)	Single Family Capacity (Acres)	Multi-Family Capacity (Acres)	Commercial (Acres)	Industrial (Acres)	Total (Acres)
Forest Grove – N	570	572	91.7	31.4	7.9	0.0	131.0
Forest Grove - S	107	108	17.2	5.9	1.5	0.0	24.6
Total:	677	680	118.9	37.3	9.4	0.0	155.6

Table 5: Preliminary estimates of residential and non-residential capacity for urban reserves added near Forest Grove by HB 4078 (source: 2014 BLI)

Additional comprehensive planning information and revisions given by the city of Forest Grove to Metro, the designated residential and commercial capacity estimates are now all moved into industrial. The net is a loss of 677 SF and 680 MF units from the BLI and 9.4 acres of neighborhood commercial that had been programmed into these two urban reserve locations. There is a net gain of 155.6 acres of adjusted industrial land for the BLI. These adjustments are summarized into the various UGR appendices.

Table 6: 2014 Buildable Land Inventory by Regionalized Zone Class Designations - *REVISED*

Current Dwelling Unit Capacity
(as of September 2014)

	Redevelopment	Vacant	Total
SFR1	595	1,718	2,313
SFR2	636	1,938	2,574
SFR3	4,158	4,984	9,142
SFR4	1,096	1,577	2,673
SFR5	11,183	8,904	20,087
SFR6	11,183	6,046	17,229
SFR7	12,632	11,079	23,711
SFR8	9,332	5,625	14,957
SFR9	4,373	1,724	6,097
SFR10	2,772	1,703	4,475
SFR11	0	0	0
SFR12	2,655	975	3,630
SFR13	0	0	0
SFR14	4,791	509	5,300
SFR15	4,704	1,131	5,835
SFR16	0	0	0
MFR1	3,010	1,485	4,495
MFR2	8,234	2,314	10,548
MFR3	9,915	4,569	14,484
MFR4	2,802	584	3,386
MFR5	31,873	2,140	34,013
MFR6	0	0	0
MFR7	27,833	2,383	30,216
MUR1	2,458	2,329	4,787
MUR2	479	985	1,464
MUR3	1,583	1,874	3,457
MUR4	3,170	704	3,874
MUR5	4,164	2,451	6,615
MUR6	2,838	2,886	5,724
MUR7	2,871	978	3,849
MUR8	3,446	663	4,109
MUR9	94,834	4,898	99,732
MUR10	33,618	8,934	42,552
UGB total	**303,238**	**88,090**	**391,328**

	Redev	Vacant	Total
SFR	70,110	47,913	118,023
MFR	83,667	13,475	97,142
MUR	149,461	26,702	176,163
	303,238	**88,090**	**391,328**

Glossary of Regionalized Zone Class Designations

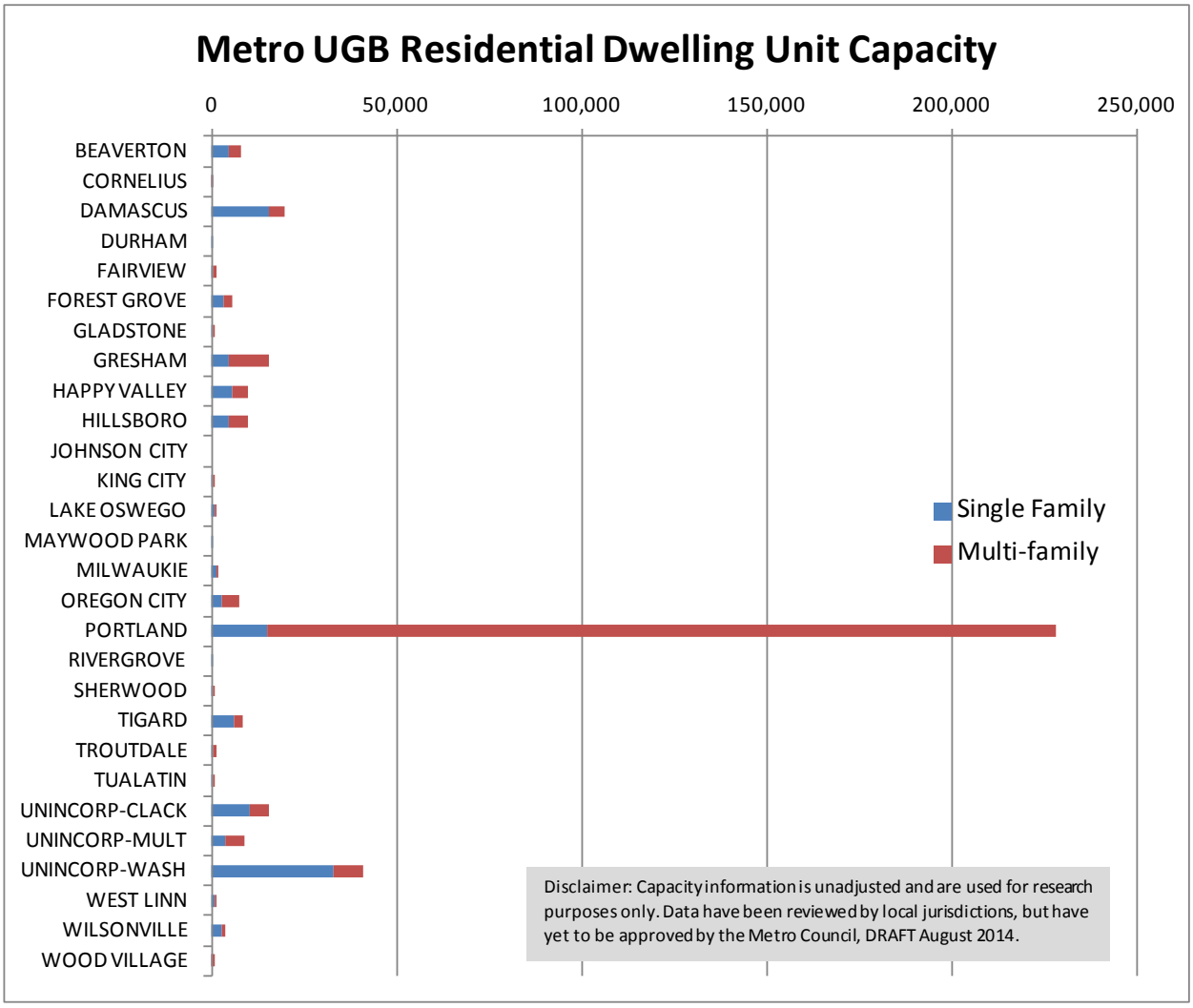
Single Family Residential Zone Classes (SFR)
SFR# where # = specified units per net acre

Multi-family Residential Zone Classes (MFR):
MFR1: 4 to 15 units per net acre
MFR2: 16 to 20
MFR3: 21 to 25
MFR4: 26 to 30
MFR5: 31 to 35
MFR6: 36 to 45
MFR7: 46 to 85

Mixed Use Residential Zone Classes (MUR):
MUR1: 4 to 15 units per net acre
MUR2: 16 to 20
MUR3: 21 to 25
MUR4: 26 to 30
MUR5: 31 to 35
MUR6: 36 to 45
MUR7: 46 to 65
MUR8: 66 to 100
MUR9: 101 to 125
MUR10: 126 to 700

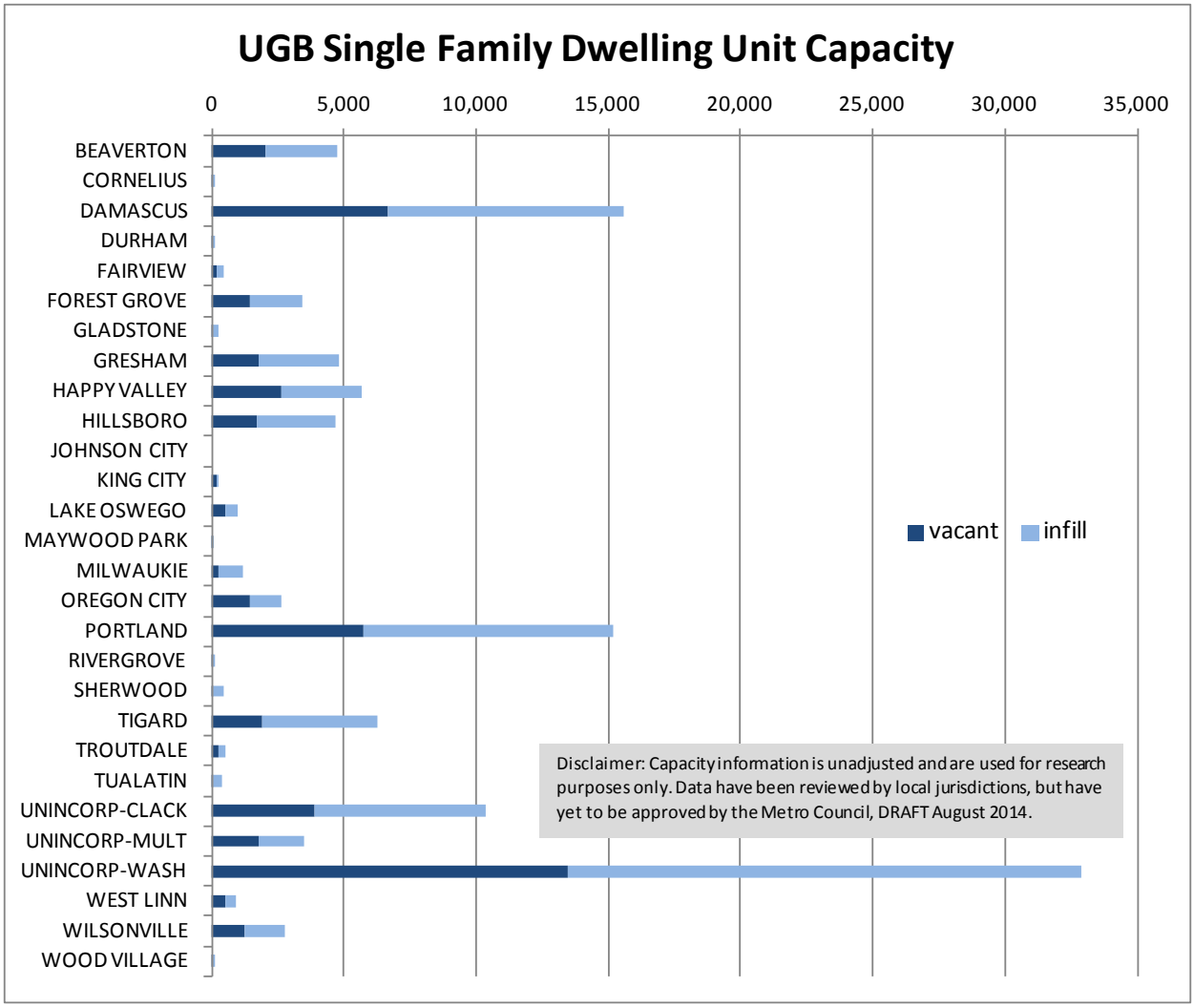
Table 6 enumerates the distribution of residential capacity by generalized regional zone classes in the Metro UGB. The majority of the region's potentially developable supply of housing is found in single family infill (18 percent) and multifamily redevelopment (60 percent). For reasons described later in this report, not all the infill and redevelopment inventory is counted in this UGR analysis. The rest is vacant capacity, which is all counted in the UGR analysis. Figure 7 illustrates the buildable land inventory capacity by jurisdiction for single family and multifamily housing. Figure 8 and Figure 9, respectively, illustrate the single family and multifamily capacity broken out by infill and vacant for each local jurisdiction.

Figure 7: 2014 Residential Buildable Land Inventory (prospective) by jurisdiction - *REVISED*



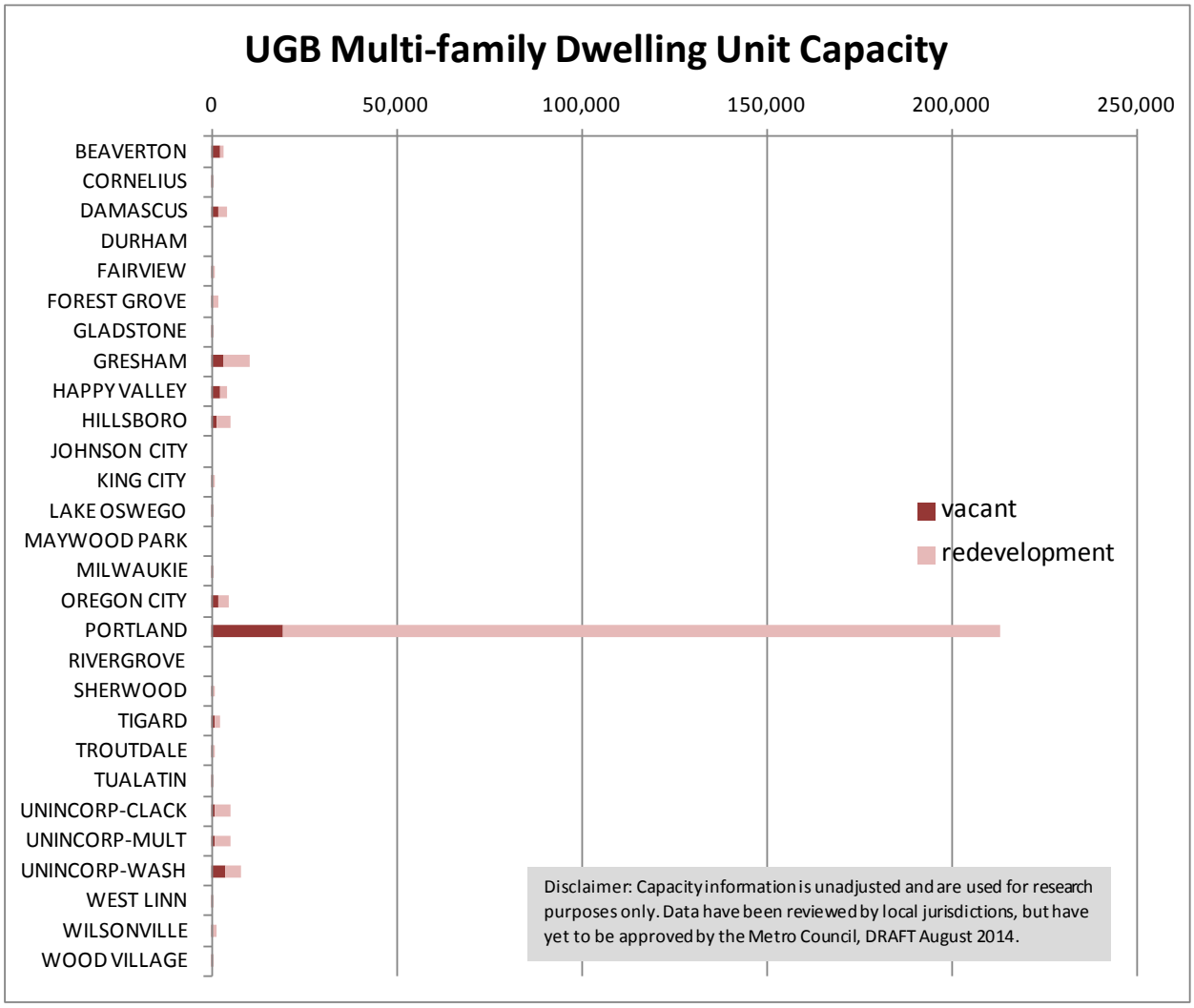
The figures include all vacant capacity and all prospective single family infill and multi-family redevelopment capacity. As noted elsewhere, all vacant capacity are used in the UGR net need computation, while about half (less than) of the prospective multi-family redevelopment capacity is counted in the UGR net need computation. The capacity is deemed prospective because we do not fully count all redevelopment or infill unless growth projections indicate there is sufficient demand for the potential to be realized. The amount realized varies according to the amount of residential demand per scenario.

Figure 8: Prospective Single-family dwelling unit capacity included in buildable land inventory by jurisdiction - *REVISED*



Note: axis dimensions changed

Figure 9: Prospective Multifamily dwelling unit capacity included in buildable land inventory by jurisdiction - *REVISED*



Note: axis dimensions changed

Market feasibility of the buildable land inventory

This analysis begins with the premise that not all the region's buildable land inventory is likely to be market feasible in the 20-year timeframe. Some reasons for this include:

- Land assembly challenges
- Infrastructure deficiencies
- Annexation challenges
- Financial feasibility of infill and redevelopment:
    - The buildable land inventory identifies possible candidates for redevelopment and infill

- Though without the necessary and sufficient demand prospective redevelopment and infill don't happen, thus not all redevelopment and infill candidates will actually develop in the next 20 years
- Not all sites that do redevelop will redevelop to the maximum density allowed under current zoning, so some loss in efficiency is likely

Addendum:

The list represents a few items that could foretell difficulty in absorbing the vacant, infill and redevelopment capacity identified in the buildable land inventory. Land assembly challenges suggest that a relative scarcity of larger to mid-size parcels may be a barrier to development at expected densities in the future. Moreover, a collection of smaller tax lots (and not necessarily contiguous) is not necessarily the same as one larger tax lot(s) because of economies of scale. In economic terms, economies of scale accrue cost advantages to firms or organizations due to size, output or scale of operation, with cost per unit of output generally decreasing with increasing scale and efficiency because fixed costs can be spread out over more housing units. In terms of residential development, smaller tax lots and parcels may not "pencil out" due to higher cost of construction per housing unit because of lower operational efficiencies because of small area, infill lots or physical encumbrances around redevelopment near existing improvements.

Infrastructure deficiencies and financial feasibility concerns are immediate barriers to future development of "greenfields", but may also be an impediment to redevelopment and infill. If the existing infrastructure (e.g., water, sewer, roads, gas lines, etc.) cannot adequately provide the necessary level of service to accommodate increased density levels, this may be a barrier. In unsettled new urban areas, if residents have no access to roads, utilities, and other infrastructure amenities are nonexistent, any prospective notions of future capacity are unrealizable.

The lack of financial feasibility has been a growing issue for municipal organizations going forward as federal funding for roads, sewer and water works has been sharply scaled back in recent decades. Municipalities and utility districts generally have capital improvement programs, but these generally fall short for funding the infrastructure needed to open up prospective urban reserves.

Annexation challenges and other political barriers pose possible obstacles to developing out the capacity estimated in the prospective buildable land inventory. Because annexations have a significant impact on the rights of individual landowners, developers, and city residents, many conflicts may arise to oppose or support adding rural lands to city limits. Voter approved annexation further deepens the potential challenges to city annexations. According to the League of Oregon Cities, the following cities in the Metro UGB require voter approval for annexation: King City, Lake Oswego, Oregon City, Sherwood and West Linn (source: http://www.orcities.org/Portals/17/A-Z/VoterAnnexation09132013.pdf). *City annexations make available urban services such as sewer, water, and mass transit and make possible urban level development to occur. Challenges to city annexation thus may make governance and provision of urban services prohibitive to future land development at expected densities.*

Given the prospective buildable land inventory, this housing needs analysis estimates how much of this inventory is likely to be market feasible supply between 2015 and 2035. Following the advice of Metro's public and private sector technical advisory group, MetroScope, an integrated land use and transportation model was used to make those estimates. A detailed description of the inputs used for this modeling can be found in Appendix 11. To add perspective on possible rates of market absorption of the inventory, the following section extrapolates a variety of historic absorption alternatives.

Testing the reasonableness of the potential supply: a comparison with hypothetical growth trends

How long could the residential buildable land inventory in the current Metro UGB last (without additional replenishment) given different hypothetical absorption rate (i.e., consumption) assumptions?

To provide some comparison with modeled results, this analysis examines how long the buildable land inventory might last with a variety of absorption alternatives based on history, ranging from the extreme (historical high and low growth scenarios that perpetuate for years) to more typical annual development rates for both single and multifamily structure types for a 20 year span. The range of historical data is from annual permits of single (SF) and multifamily (MF) from 1960 to 2012. The absorption rate is carried out for 20 years in a row to see how many years it would take to exhaust the inventory. These are intended as hypothetical illustrations.

Growth scenario alternatives considered:

- Development rate at the historical minimum
  - Historical minimum for SF = 2,300 units (in 1982 – a recession year)
  - Historical minimum for MF = 793 units (in 1983 – a recession year)
- Development rate at historical maximum
  - Historical maximum for SF = 12,348 units (in 1977)
  - Historical maximum for MF = 9,949 units (in 1972)
- Decade by decade average annual absorption rate
  - Historical Highs (9,582; 1990's decade) and lows (3,311; 2010-12) for SF
  - Historical Highs (6,285; 1970's decade) and lows (2,141; 2010-12) for MF
- Average annual absorption rate for recession and non-recession years between 1960 to 2012
  - SF: development rate of recession years = 4,741 per year average
  - SF: development rate of non-recession years = 7,836 per year average
  - MF: development rate of recession years = 2,265 per year average
  - MF: development rate of non-recession years = 5,080 per year average
- 1960 to 2012 absorption average over all years
  - SF = 6,960 average per year
  - MF = 4,283 average per year
- UGR (MetroScope scenario) average annual absorption
- Census (HIA based) average annual absorption

Hypothetical absorption rate findings are shown in Table 7.

- The UGR MetroScope scenario estimates current supply of SF capacity could last up to 24 years, which by comparison is most similar to the SF recession scenario at 25 years.
- The Census-based scenario estimates current supply lasting up to 19 years for single family, which, by comparison, is most similar to the average absorption rate over the last 50+ years. (Not a surprising conclusion since the Census scenario is a cumulative sum total of all development in the region for all time and the last 50 years scenario is essentially the half-life for the modern era of this region.)
- By all accounts, there is more than a 20 year inventory of multifamily product for all the scenarios considered based on the prospective supply given for the UGB.

Table 7: hypothetical absorption scenarios for residential buildable land inventory inside the current UGB

Current estimate of Metro UGB SF capacity (SUPPLY):	**119,100**	**units**
Hypothetical - Years Available if SUPPLY is consumed at a rate of *X thousand* per year:		
(hypothetical annual consumption rates)		
historical minimum (2,300 in a year)	52	years
historical maximum (12,300 in a year)	10	years
decade average low (3,300 average)	36	years
decade average high (9,600 average)	12	years
recession years average (4,700 per year)	25	years
non-recession years average (7,200 per year)	15	years
1960 to 2012 average (7,000 per year)	17	years
+/- 1 std. dev.	+/- 5	years
MetroScope annual average absorption (5,000 per year)	24	years
Census (HIA) annual average preference rate (6,400 per year	19	years
Current estimate Metro UGB MF capacity (SUPPLY):	**280,602**	**unadjusted units**
Hypothetical - Years Available if MF SUPPLY is consumed at a rate of *X thousand* per year:		
(hypothetical annual consumption rates)		
historical minimum (800 in a year)	354	years
historical maximum (10,000 in a year)	28	years
decade average low (2,100 average)	131	years
decade average high (6,300 average)	45	years
recession years average (2,200 per year)	124	years
non-recession years average (5,100 per year)	55	years
1960 to 2012 average (4,300 per year)	**66**	**years**
+/- 1 std. dev.	+/- 22	years
MetroScope annual average absorption (4,500 per year)	26	years
Census (HIA) annual average preference rate (3,100 per year	38	years

Modeled market absorption of the buildable land inventory

For the following assessments, modeled absorption data (MetroScope scenario) are used (not Census nor historic data). In Figures 10, 11 and 12, "adjusted" supply refers to the amount of the buildable land inventory that gets absorbed in the modeled growth scenario. It is this amount that is being counted as capacity in the Urban Growth Report. Different demand assumptions (from the range forecast) result in different amounts of redevelopment and infill supply in each scenario.

Low growth scenario summary of housing capacity needs

At the low end of the range forecast for accommodating household growth, there is no need for additional growth capacity for multifamily or single-family housing. Detail is provided in Figure 10.

Figure 10: summary of single family and multifamily housing capacity, demand, and need under the low growth scenario (Metro UGB, 2015-2035) - *REVISED*

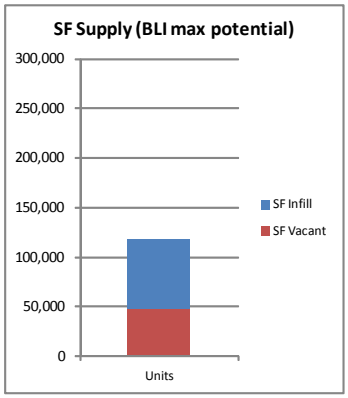
URBAN GROWTH REPORT (HOUSING NEEDS CALCULATION) - MetroScope / BLI supply constraints MetroScope

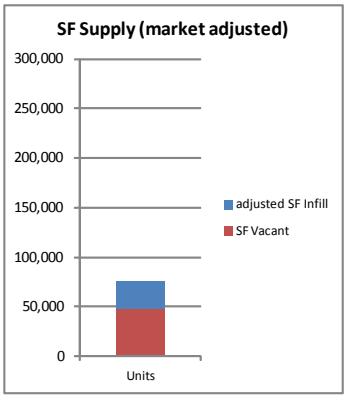
9/16/14 Scen #1464

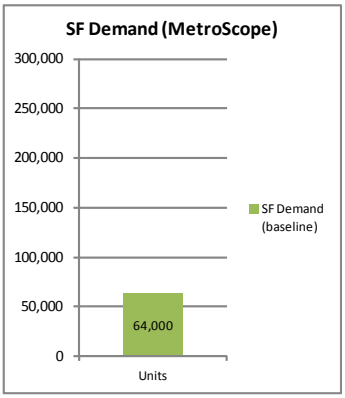
(all vacant capacity is counted in UGR analysis)

	(rounded) Units			Adjusted Units per Scen #1464	
SF Demand (baseline)	64,000		SF Demand (baseline)	64,000	
SF Infill	70,100		adjusted SF Infill	28,000	60% infill SF taxlots go undeveloped
SF Vacant	47,900	118,000 (total SF supply)	SF Vacant	47,900	62% vacant SF taxlots go undeveloped
NET	54,000 surplus		NET	11,900 surplus	

(Damascus partly included & Forest Grove adj.)





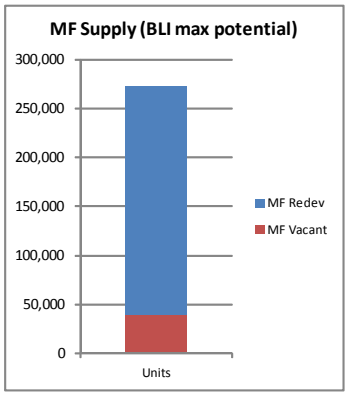


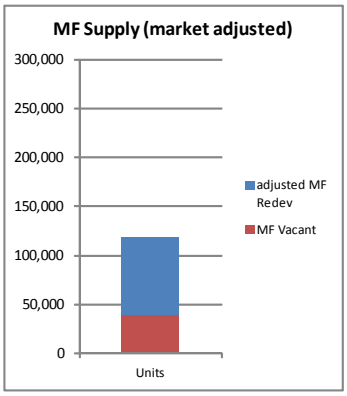
SINGLE FAMILY

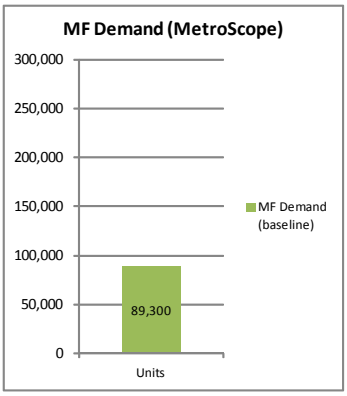
(all vacant capacity is counted in UGR analysis)

	(rounded) Units			Adjusted Units per Scen #1464	
MF Demand (baseline)	89,300		MF Demand (baseline)	89,300	
MF Redev	233,100		adjusted MF Redev	78,200	60% redev MF taxlots go possibly undeveloped
MF Vacant	40,200	273,300 (total MF supply)	MF Vacant	40,200	72% vacant MF taxlots could go potentially undeveloped
NET	184,000 surplus		NET	29,100 surplus	

(Damascus partly included & Forest Grove adj.)







MULTI-FAMILY

Addendum (Aug. 2014): adjusted prospective inventory for Forest Grove – switch residential capacity to industrial; corrected HIA housing matrix – switch HIA matrix from 7 county to Metro UGB

Baseline (medium growth scenario) summary of housing capacity needs

At the midpoint of the range forecast for household growth, there is no need for additional growth capacity for either single family or multifamily housing. Detail is provided in Figure 11.

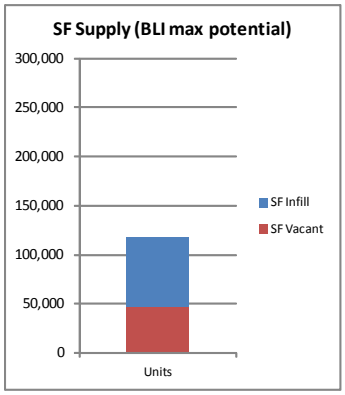
Figure 11: summary of single family and multifamily housing capacity, demand, and need under the baseline (medium) growth scenario (Metro UGB, 2015-2035) - *REVISED*

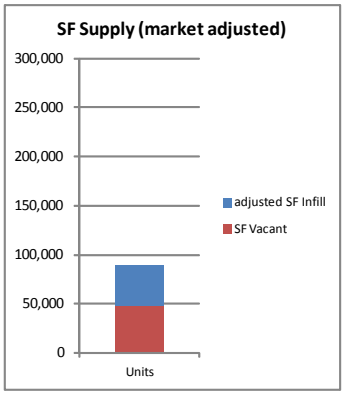
URBAN GROWTH REPORT (HOUSING NEEDS CALCULATION) - MetroScope / BLI supply constraints MetroScope

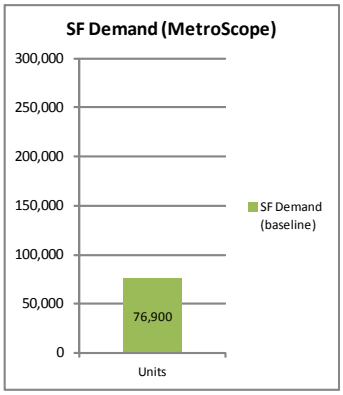
9/16/14 Scen #1462

(all vacant capacity is counted in UGR analysis)

	(rounded) Units			Adjusted Units per Scen #1462		
SF Demand (baseline)	76,900		SF Demand (baseline)	76,900		
SF Infill	70,100		adjusted SF Infill	42,100	40%	infill SF taxlots go undeveloped
SF Vacant	47,900	118,000 (total SF supply)	SF Vacant	47,900	34%	vacant SF taxlots go undeveloped (less Forest Grove ~ 100 acres)
NET	41,100 surplus		NET	13,100 surplus		(Damascus partly included & Forest Grove adj.)



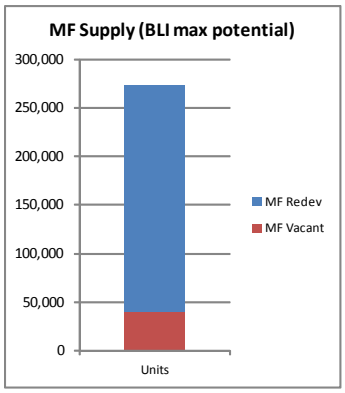


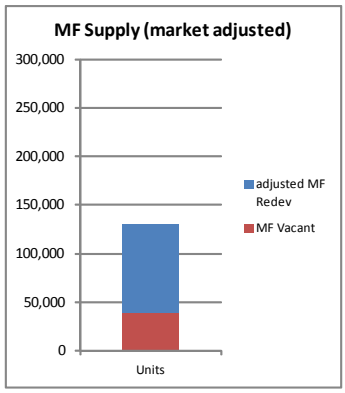


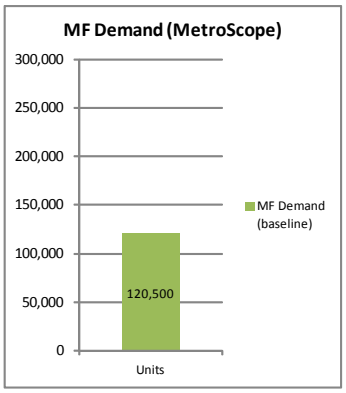
SINGLE FAMILY

(all vacant capacity is counted in UGR analysis)

	(rounded) Units			Adjusted Units per Scen #1462		
MF Demand (baseline)	120,500		MF Demand (baseline)	120,500		
MF Redev	233,100		adjusted MF Redev	89,900	55%	redev MF taxlots go possibly undeveloped
MF Vacant	40,200	273,300 (total MF supply)	MF Vacant	40,200	24%	vacant MF taxlots could go potentially undeveloped
NET	152,800 surplus		NET	9,600 surplus		(Damascus partly included & Forest Grove adj.)







MULTI-FAMILY

Addendum (Aug. 2014): adjusted prospective inventory for Forest Grove – switch residential capacity to industrial; corrected HIA housing matrix – switch HIA matrix from 7 county to Metro UGB

High growth scenario summary of housing capacity needs

At the high end of the range forecast for household growth, there is no need for additional growth capacity for either single family or multifamily housing. Detail is provided in Figure 12.

Figure 12: summary of single family and multifamily housing capacity, demand, and need under the high growth scenario (Metro UGB, 2015-2035) - *REVISED*

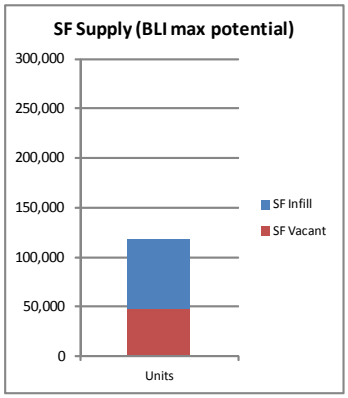
URBAN GROWTH REPORT (HOUSING NEEDS CALCULATION) - MetroScope / BLI supply constraints MetroScope

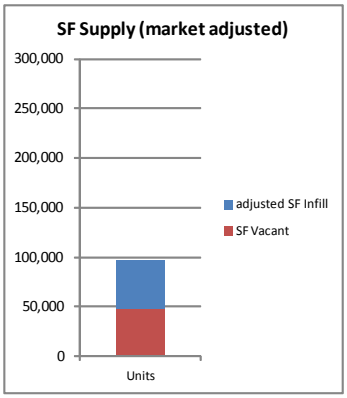
9/16/14 Scen #1465

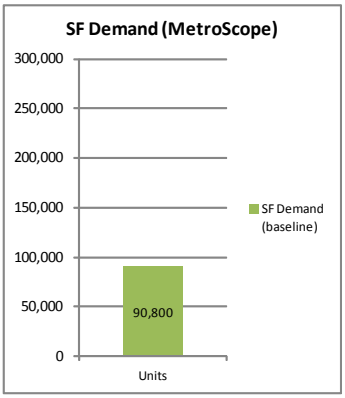
(all vacant capacity is counted in UGR analysis)

	(rounded) Units			Adjusted Units per Scen #1465	
SF Demand (baseline)	90,800		SF Demand (baseline)	90,800	
SF Infill	70,100		adjusted SF Infill	49,100	30% infill SF taxlots go undeveloped
SF Vacant	47,900	118,000 (total SF supply)	SF Vacant	47,900	30% vacant SF taxlots go undeveloped
NET	27,200 surplus		NET	6,200 surplus	

(Damascus partly included & Forest Grove adj.)





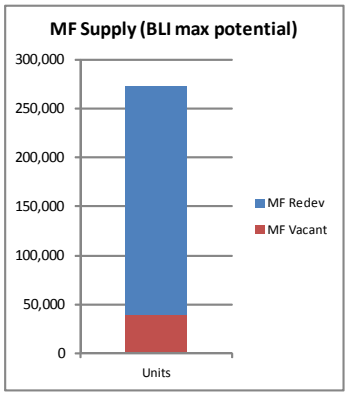


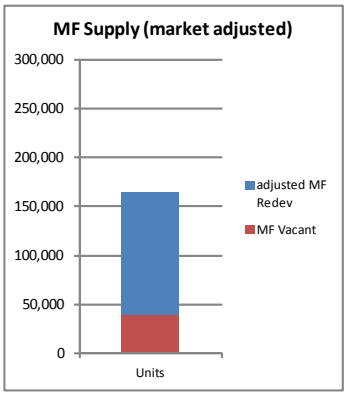
SINGLE FAMILY

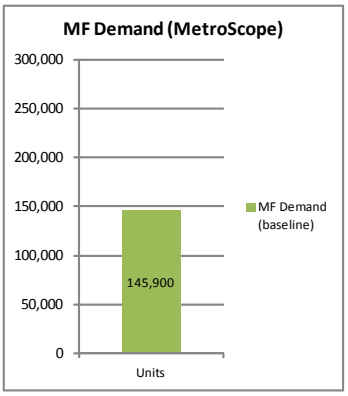
(all vacant capacity is counted in UGR analysis)

	(rounded) Units			Adjusted Units per Scen #1465	
MF Demand (baseline)	145,900		MF Demand (baseline)	145,900	
MF Redev	233,100		adjusted MF Redev	124,900	40% redev MF taxlots go possibly undeveloped
MF Vacant	40,200	273,300 (total MF supply)	MF Vacant	40,200	48% vacant MF taxlots could go potentially undeveloped
NET	127,400 surplus		NET	19,200 surplus	

(Damascus partly included & Forest Grove adj.)







MULTI-FAMILY

Addendum (Aug. 2014): adjusted prospective inventory for Forest Grove – switch residential capacity to industrial; corrected HIA housing matrix – switch HIA matrix from 7 county to Metro UGB

Summary of housing capacity needs

Table 8 and Table 9 summarize residential capacity needs for the low, medium and high growth scenarios. At the low end of the forecast range and at the midpoint of the forecast range, there is no regional need for additional single-family or multifamily housing capacity. At the high end of the forecast range, there is a regional need for additional single-family housing capacity, but not multifamily.

Addendum (Aug. 2014): Tables 8 and 9 summarize (and include corrections to) the market supply and demand estimates. A correction was made to the HIA housing demand matrix and a change to unincorporated Washington supply because of HB 4078 and Forest Grove. This overall results in less demand for SF units and more demand for MF units.

Table 8: Metro UGB single-family residential needs 2015 to 2035 expressed in dwelling units - *REVISED*

	Single-family dwelling units			
	Buildable land inventory	**Market-adjusted supply**	**Demand**	**Surplus or need**
Low growth forecast	118,000*	75,900	64,000	+11,900
Middle (baseline) growth forecast		90,000	76,900	+13,100
High growth forecast		97,000	90,800	+6,200

**Forest Grove adjustment – residential to industrial change per HB 4078 – reduces SF capacity by 700 units*

Table 9: Metro UGB multifamily residential needs 2015 to 2035 expressed in dwelling units - *REVISED*

	Multifamily dwelling units			
	Buildable land inventory	**Market-adjusted supply**	**Demand**	**Surplus or need**
Low growth forecast	273,300**	118,400	89,300	+29,100
Middle (baseline) growth forecast		130,100	120,500	+9,600
High growth forecast		165,100	145,900	+19,200

***Forest Grove adjustment – residential to industrial change per HB 4078 – reduces MF capacity by 700 units*

Additional analysis details from MetroScope scenarios

Three (3) MetroScope-Urban Growth Report Scenarios were prepared for the 2014 Urban Growth Report. The 3 scenarios included were derived from the "high", "medium or baseline", and "low" growth population and employment projections[12]. The following section provides additional details about those scenarios. Appendix 11 describes in more detail the inputs used in creating each of these scenarios.

[12] Detailed specifications for the population and employment growth forecast may be found in Appendix 1a.

Average density by housing type

As required under ORS 197.296, figure 13 shows the estimates of housing need by type and density range under each scenario alternative.

Figure 13: Housing need by type and density range for three scenarios (2015- 2035, Metro UGB) - *REVISED*

MetroScope UGR Scenarios, residential absorption estimates (2010 to 2035)

MetroScope UGR LOW -- Scenario #1464
MetroScope UGR MEDIUM -- Scenario #1462
MetroScope UGR HIGH -- Scenario #1465

(MetroScope Supply-side module)

		Dwelling Unit Absorption				% of DU Absorbed by Zoning			
Zone Class	Nominal Units / Acre	Low	Medium	High		Low	Medium	High	general zone class
SFR1	1	264	468	1,543		0.6%	0.6%	1.9%	single family product
SFR2	2	483	1,001	1,451		1.0%	1.4%	1.8%	
SFR3	3	2,109	5,010	6,616		4.6%	6.8%	8.0%	
SFR4	4	575	1,618	2,092		1.2%	2.2%	2.5%	
SFR5	5	7,382	12,169	13,855		15.9%	16.5%	16.8%	
SFR6	6	7,829	10,607	12,060		16.9%	14.4%	14.6%	
SFR7	7	8,293	15,727	14,294		17.9%	21.3%	17.3%	
SFR8	8	6,769	10,433	11,953		14.6%	14.1%	14.5%	
SFR9	9	3,590	4,189	4,274		7.7%	5.7%	5.2%	
SFR10	10	2,756	2,945	2,969		5.9%	4.0%	3.6%	
SFR11	11	0	0	0		0.0%	0.0%	0.0%	
SFR12	12	1,415	2,299	2,732		3.1%	3.1%	3.3%	
SFR13	13	0	0	0		0.0%	0.0%	0.0%	
SFR14	14	1,948	3,380	4,226		4.2%	4.6%	5.1%	
SFR15	15	2,916	4,027	4,405		6.3%	5.5%	5.3%	
SFR16	16	0	0	0		0.0%	0.0%	0.0%	
MFR1	12.3	533	1,737	2,503		0.5%	1.3%	1.6%	multifamily product
MFR2	17.8	903	1,859	3,352		0.8%	1.4%	2.2%	
MFR3	23.3	4,483	6,945	9,557		4.1%	5.3%	6.3%	
MFR4	29.4	565	716	792		0.5%	0.5%	0.5%	
MFR5	33.4	15,988	20,073	22,474		14.5%	15.2%	14.7%	
MFR6	40	0	0	0		0.0%	0.0%	0.0%	
MFR7	73.1	13,612	15,413	17,526		12.3%	11.7%	11.5%	
MUR1	11.2	397	510	676		0.4%	0.4%	0.4%	
MUR2	18.2	162	210	359		0.1%	0.2%	0.2%	
MUR3	23.1	533	743	1,228		0.5%	0.6%	0.8%	
MUR4	29.1	1,352	1,738	2,329		1.2%	1.3%	1.5%	
MUR5	34.6	1,210	1,584	1,949		1.1%	1.2%	1.3%	
MUR6	40.1	2,010	2,880	3,561		1.8%	2.2%	2.3%	
MUR7	54.6	931	1,719	2,216		0.8%	1.3%	1.5%	
MUR8	75.5	1,644	1,841	2,352		1.5%	1.4%	1.5%	
MUR9	110.5	46,191	51,787	57,202		41.8%	39.3%	37.5%	
MUR10	222.5	20,112	22,151	24,484		18.2%	16.8%	16.0%	
TOTAL UNITS ABSORBED		**156,956**	**205,780**	**235,031**		**Percent SF/MF split**			
single family subtotal		**46,330**	**73,874**	**82,470**	**single family**	30%	36%	35%	
multifamily subtotal		**110,626**	**131,905**	**152,562**	**multifamily**	70%	64%	65%	

	Low	Medium	High
Single Family Average Density	7.6	7.4	7.2
Multifamily Average Density	104.9	99.8	96.7
Average Density (all types)	76.2	66.6	65.3

differences in projected absorption owe to: estimates approximating Metro UGB and urban reserves calculations, model convergence between supply and demand modules, and vacancy rate forecasts

Regional residential demand summary

Table 10 summarizes scenario details for household, housing, and location choice for residents in the Metro UGB (i.e., forward looking capture rate). The MSA forecast is the starting point because the time-series data (i.e., employment and population) is better for counties than for estimates of the data history of UGB's. Moreover, the best economic / employment data arrive to us from federal and state employment sources as MSA. Historical data with sufficient and necessary detail are not available for the Metro UGB; also, the UGB is periodically amended while counties rarely change boundaries. Having static boundaries means that measurement errors are minimized and therefore economic and demographic forecasts are more reliable (as in the case of counties or MSA's that are grouped together with the same counties).

Table 10: housing needs forecast details

UGR Forecast Details	High (MS Scenario #1465)	Medium (MS Scenario #1462)	Low (MS Scenario #1464)
2015 MSA Household Estimate (source: Metro Regional Forecast)	917,000	898,700	880,300
2035 MSA Household Forecast (source: Metro Regional Forecast)	1,256,700	1,185,800	1,114,400
2015 UGB Household Estimate (source: MetroScope UGR forecast scenario)	625,900 (68.3 percent share)	613,000 (68.2 percent share)	603,600 (68.6 percent share)
2035 UGB Household Forecast (source: MetroScope UGR forecast scenario)	870,900 (69.3 percent share)	821,100 (69.2 percent share)	768,000 (68.9 percent share)
Capture Rate (2015-35) (source: UGR calculation)	72.0 percent	72.1 percent	70.2 percent
2015 Vacancy Rate (source: 2010 Census)	6.9 percent	6.9 percent	6.9 percent
2035 Vacancy Rate (source: UGR assumption)	4.0 percent	4.0 percent	4.0 percent
2015-35 Housing Demand Forecast (source: UGR calculation)	236,600	197,400	153,300

As expected, the high growth regional scenario yields a greater housing unit demand (236,000 total units) for the Metro UGB relative to the metropolitan MSA forecast. Transitively, the medium (or so-called baseline) scenario yields less growth than the high, but more growth than the low alternative. The

household projections were defined from the regional range forecast and the Metro UGB shares and capture rates were derived from MetroScope growth scenarios.

The MetroScope scenarios used for this analysis differ only in the input assumptions for housing demand levels. This means that, for each scenario, the buildable land inventory and all other supply and transportation assumptions remained unchanged across all three. The difference is that the high growth socio-economic forecast is used for the high growth MetroScope scenario and so on. More population and employment growth generally generates more demand for housing and this level of growth will respond and play itself out in the Metro UGB housing markets a little differently in terms of price, location and residential ownership and structure type demand than in the case of baseline or the low growth forecast alternatives.

Some of these scenario findings like location choice materialize in the capture rate being different for each scenario alternative. The capture rate (as illustrated in Table 10) don't vary across scenarios very much, but compared to historical experience they are somewhat higher than the 63 percent calculated in prior analyses. The higher capture rate projected under the MetroScope scenarios is due to many factors, such as the dwindling residential housing supply going forward in neighbor cities and rural areas adjacent to Metro UGB. Clark County's growth capacity, with its urban growth area, has fewer surpluses in the future as compared to the past. Likewise, as is currently being observed, existing urban areas in the Metro UGB continue to be a draw for growth.

Modeled housing demand

Demographic factors also play a role in some of the shift in housing type demand going forward. As noted in the regional forecast, the share of households made up of 1-person or 2-person households is expected to rise. This means that net new households are, other things being equal, have a greater propensity to demand multi-family (at least until they start forming families with children). Also, an aging population on balance also has a slightly higher affinity to shift into multi-family development forms, although as the Census data suggests, this doesn't happen until at least until individuals are about 80 to 85 years old.

Economic factors, in particular household income, play a function in determining tenure and the choice between single-family or multifamily development forms. The regional economic forecast predicts proportionally fewer middle-income bracket households and families, meaning a disproportionate rise in the number of lower income households. This results in a slight increase in renter multi-family (RMF) demand as seen in Table 11.

There is also a rise in the very high income brackets predicted in the net change in households. Disproportionate increases in the number of high income households (especially in the high growth scenario) show up in higher home ownership (65 percent in high scenario, 64 percent in medium, 63 percent in low) as compared to the 2010 Census which rang up 60 percent own and 40 percent rent.

Table 11: MetroScope Scenario Housing Need Alternatives – Household Demand by Tenure and Structure Type

UGR Forecast Details	Census Estimate (2010)	High (Change: 2015 – 35)	Medium (Change: 2015 – 35)	Low (Change: 2015 – 35)
Owner 1-unit structure (OSF)	58 percent	38 percent	39 percent	40 percent
Owner multi-family (OMF)	3 percent	27 percent	26 percent	25 percent
Renter 1-unit structure (RSF)	11 percent	0 percent	0 percent	2 percent
Renter multi-family (RMF)	28 percent	35 percent	35 percent	33 percent

Census definitions for structure types:
Single family (SF) = 1-unit detached, 1-unit attached, mobile home, and boat, RV, van, etc.
Multi-family (MF) = 2 units or more

Table 11 summarizes the shift between projected household characteristics (referring to HIA distribution) and their market-clearing demand for housing by type and tenure. Demand shifts materially between the 2010 Census and the future scenarios. But between scenarios, the variations are not very pronounced.

The forecast scenarios show a major shift in the type of housing under demand, from single family (SF) to multi-family (MF). Pre-adoption of the Regional Framework Plan (RFP) in 1995, the UGB had a mix of about 70 percent SF and 30 percent MF. After the RFP and local government implementation of regional housing policies, the split between new SF and MF became 60 percent / 40 percent, SF over MF. More recently, during the Great Recession, the residential permit ratio between SF and MF became 50 / 50. The recession may have had an outsized impact on the residential development ratio between SF and MF units built, but there appears to be so far an increase favoring MF preferences over the last 10 to 15 year span.

Over the forecast period (2015 to 2035), the growth forecast alternatives derived from MetroScope clearly signal an even greater shift to MF. We surmise that –at least in part – the shrinking share of SF demand may owe to a shift in socio-economic patterns prompted by (1) a decline owing to smaller average household size – see Table 12, (2) a population that is increasingly getting older (rising median population age) – see Table 13, and a proportionate rise in lower income bracket households.

The demand for housing type seems more likely to be influenced by the market clearing effect of what will be the supply of housing types which are implied under current state, regional, and local regulations. The breakdown of the buildable land inventory shows a maximum potential supply of multifamily registering a market share of 70 percent and 30 percent single-family (which includes in its definition 1-unit attached, 1-unit detached, duplexes and triplexes and manufactured homes). Aside

from the buildable land inventory and model inputs, a more practical consideration is that the region has struggled to urbanize past UGB expansion areas, which will be a primary source of future single-family housing capacity. If traditional supplies of SF homes are limited by the market and regulations, how will the region accommodate future needs of families? The MetroScope scenarios suggest that the condo market (or a proxy for "vertical single family housing") will need to expand significantly. Although the market share appears to be very small at this time, the forecast projects the housing market will move to accommodate the SF housing share by providing condominiums (i.e., owner multi-family) that will have the square footage and amenities to accommodate tomorrow's families. The increase in owner multi-family is over 55,000 units between 2015 and 2035, from a 2015 estimate of 18,000 units (see Table 4 and Figure 6). This is a 3-fold increase in market share.

Table 12: Baseline Forecast illustration of households by size

		Regional Forecast (medium scenario)		Household Difference	
	Household size	2015	2035	(2015-35)	percent share
1 person	1	192,978	271,571	78,593	40%
2 persons (couple)	2	224,012	279,327	55,315	28%
3 persons	3	101,343	138,469	37,126	19%
4 persons	4	76,759	99,241	22,482	11%
5 or more persons	5	60,408	64,292	3,884	2%
	Total	655,500	852,900	197,400	100 %

Table 13: Baseline Forecast illustration of households by householder age

		Regional Forecast (medium scenario)		Household Difference	
	Age Bracket	2015	2035	(2015-35)	percent share
under 25 years old	1	43,767	50,926	7,159	4%
25 to 44 years old	2	247,003	295,051	48,049	24%
45 to 54 years old	3	135,340	151,167	15,827	8%
55 to 64 years old	4	108,192	136,093	27,901	14%
65 years or older	5	121,199	219,662	98,464	50%
	Total	655,500	852,900	197,400	100 %

A final point is that overall demand for housing (regardless of scenario) will be larger in 2035. The marginal shares of households by size, income and age are certainly shifting up (and down) over the forecast period and by these shifts have implications on residential demand, but taken all together there is absolute growth in every major category distribution for households. This leads to the conclusion that

there will be in absolute terms additional demand for housing of all types, by tenure (i.e., own or rent) and type (i.e., SF or MF).

Urban renewal (residential reinvestment) capacity and absorption

(source: MetroScope Scen. #1462)

These scenarios include inputs that serve as proxies for existing investment programs such as urban renewal. The rationale behind urban residential incentives (at least how MetroScope models residential reinvestments in the region) is to simulate the kind of market action that might be anticipated areas with existing investment programs. Other things being equal, the residential redevelopment incentive makes these locations relatively more attractive because of a lower cost of construction, but realized growth won't automatically gravitate to these areas unless there is sufficient demand or preference for these locations in the first place. Modeling the economic impact of these investment requires estimates for 1) the number of subsidized units (i.e., capacity) and 2) an investment amount.

The places identified for a residential investment assumption are specified by 1) urban renewal areas (URA), 2) Portland's transit-oriented development tax abatement locations, and 3) Portland's neighborhood prosperity initiative (NPI) sites. The incentivized capacity is defined based on the geography of the site or area and the number of residential dwelling units estimated as potentially redevelopable under the BLI. This residential redevelopment supply is then assumed to get (for modeling purposes) a lower cost of residential construction assumption. For locations designated *central city*, assume $50,000 incentive; *regional center*, assume $25,000 incentive; for *all other* incentive areas, assume $10,000. Over the years, these assumptions have been reviewed with local jurisdictions.

Incentivized locations compete with other potentially developable areas for residential housing. All other market factors in the MetroScope model are active. The resulting modeling and forecasting effect of the incentives is that it tends to speed up the timing of market absorption making the area more attractive (other things being equal) for development to occur going forward.

Figure 14 and Table 14 summarize the model's incentive assumptions as well as modeled absorption of the incentivized units through 2035. As one can observe, the estimated total number of units receiving a form of residential reinvestment incentive is just under 88,000 dwelling units (or 22% of total capacity estimated for the Metro UGB). Overall incentivized housing unit absorption is about 80% and with about 29% of single family (SF) units remaining and 20% of incentivized multi-family units undeveloped by year 2035 . Generally, incentivized units will absorb more quickly than other residential capacity.

Figure 14: Modeled incentivized capacity absorption (capacity that gets absorbed between 2015 and 2035 is shown in "green". The purple segment of each bar represents the capacity that is still undeveloped by year 2035.)

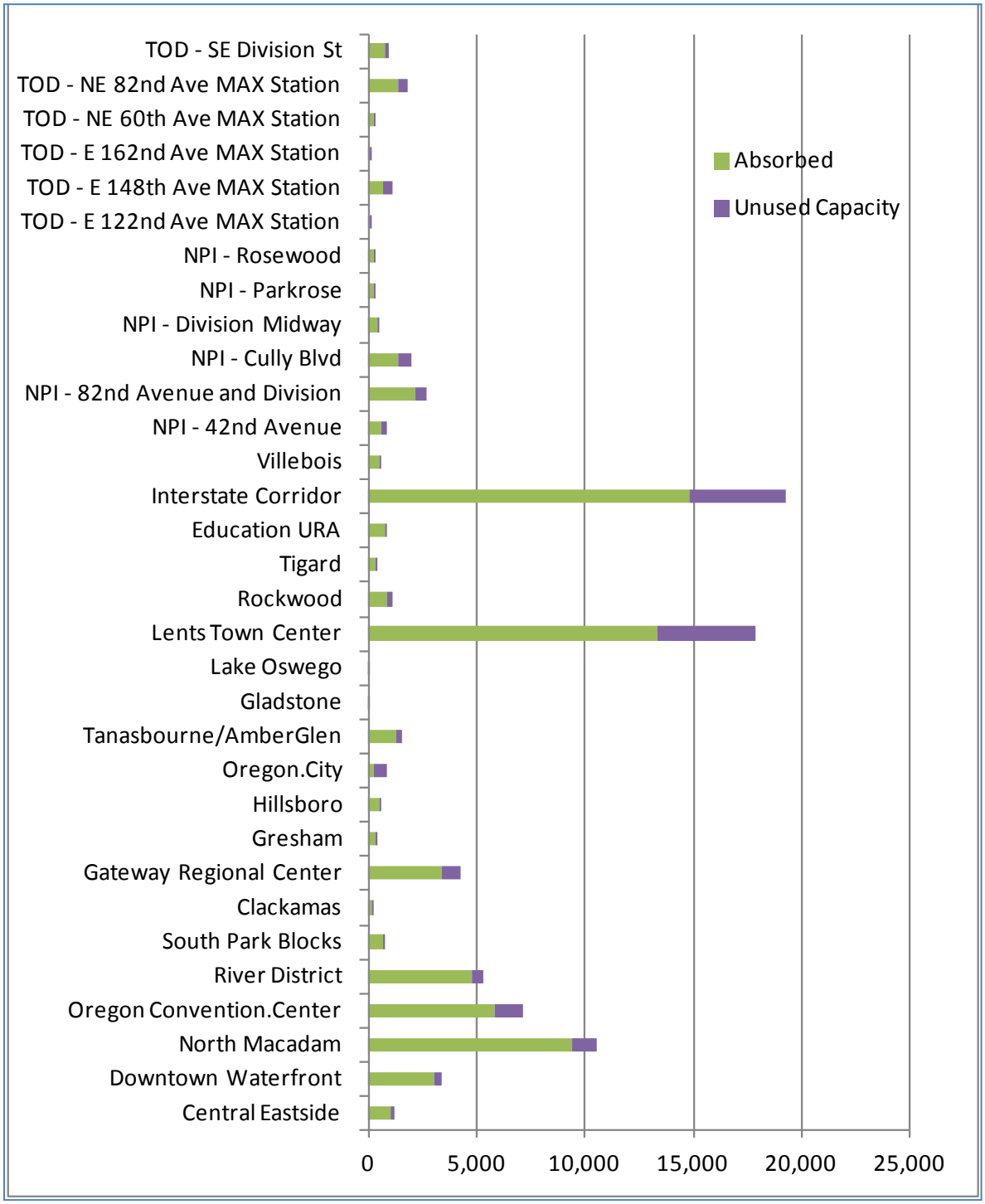


Table 14: Urban Renewal Capacity and Absorption by the Numbers for each location

Urban Renewal Location		Urban Renewal Capacity			UR Capacity Absorbed			Unused Capacity by 2035			% Capacity Remaining		
	Type	SF	MF	Total	SF	MF	Total	SF	MF	Total	SF	MF	Total
Central Eastside	Central City	0	1,196	1,196	0	1,028	1,028	0	168	168	--	14%	14%
Downtown Waterfront	Central City	0	3,376	3,376	0	3,055	3,055	0	321	321	--	9%	9%
North Macadam	Central City	0	10,574	10,574	0	9,402	9,402	0	1,172	1,172	--	11%	11%
Oregon Convention.Center	Central City	0	7,105	7,105	0	5,871	5,871	0	1,234	1,234	--	17%	17%
River District	Central City	0	5,336	5,336	0	4,809	4,809	0	527	527	--	10%	10%
South Park Blocks	Central City	0	787	787	0	707	707	0	80	80	--	10%	10%
Clackamas	Regional Center	0	248	248	0	203	203	0	45	45	--	18%	18%
Gateway Regional Center	Regional Center	0	4,233	4,233	0	3,405	3,405	0	828	828	--	20%	20%
Gresham	Regional Center	14	365	379	9	303	312	5	62	67	39%	17%	18%
Hillsboro	Regional Center	238	408	646	161	342	504	77	66	142	32%	16%	22%
Oregon.City	Regional Center	0	886	886	0	254	254	0	632	632	--	71%	71%
Tanasbourne/AmberGlen	Regional Center	8	1,553	1,561	7	1,267	1,274	1	286	287	11%	18%	18%
Gladstone	Town Center	10	0	10	9	0	9	1	0	1	8%	--	8%
Lake Oswego	Town Center	3	33	36	2	28	30	1	5	6	26%	16%	16%
Lents Town Center	Town Center	682	17,209	17,891	431	12,918	13,349	251	4,291	4,542	37%	25%	25%
Rockwood	Town Center	0	1,135	1,135	0	855	855	0	280	280	--	25%	25%
Tigard	Town Center	67	337	404	33	274	307	34	63	97	50%	19%	24%
Education URA	Non-Center UR	0	831	831	0	757	757	0	74	74	--	9%	9%
Interstate Corridor	Non-Center UR	194	19,036	19,230	184	14,594	14,778	10	4,442	4,452	5%	23%	23%
Villebois	Non-Center UR	530	105	635	464	34	498	66	71	137	12%	67%	22%
NPI - 42nd Avenue	NPI	14	813	827	13	609	622	1	204	205	8%	25%	25%
NPI - 82nd Avenue and Division	NPI	38	2,690	2,728	36	2,144	2,180	2	546	548	5%	20%	20%
NPI - Cully Blvd	NPI	4	1,960	1,964	4	1,392	1,396	0	568	568	5%	29%	29%
NPI - Division Midway	NPI	0	507	507	0	431	431	0	76	76	--	15%	15%
NPI - Parkrose	NPI	2	339	341	2	256	258	0	83	83	22%	24%	24%
NPI - Rosewood	NPI	61	248	309	23	193	216	38	55	93	62%	22%	30%
TOD - E 122nd Ave MAX Station	Portland TOD	6	84	90	4	72	76	2	12	14	33%	15%	16%
TOD - E 148th Ave MAX Station	Portland TOD	128	1,001	1,129	47	638	685	81	363	444	63%	36%	39%
TOD - E 162nd Ave MAX Station	Portland TOD	4	54	58	1	39	40	3	15	18	63%	28%	31%
TOD - NE 60th Ave MAX Station	Portland TOD	1	308	309	1	255	256	0	53	53	5%	17%	17%
TOD - NE 82nd Ave MAX Station	Portland TOD	2	1,851	1,853	2	1,383	1,385	0	468	468	3%	25%	25%
TOD - SE Division St	Portland TOD	1	978	979	1	774	775	0	204	204	6%	21%	21%
UGB Total		2,007	85,586	87,593	1,435	68,292	69,726	572	17,294	17,867	29%	20%	20%

MetroScope residential absorption projections by Jurisdiction

(addendum)

Tables 15, 16, and 17 summarize how much of the prospective residential capacity is absorbed between 2015 and 2035, according to each MetroScope growth scenario[13]. The supply of prospective residential units is included as a reference against absorption estimates. For modeling purposes, we consider the inventory to approximate 40+ years of residential supply if all vacant and redevelopment/infill are absorbed. Included in each table is the amount of residential absorption by jurisdiction and by structure type.

Highlights of the baseline medium growth residential capacity consumption scenario:

[13] Directly tabulated MetroScope data will differ by thousands of dwelling units because of rounding errors innate to modeling in a partial general equilibrium model (like MetroScope) and vacancy rate assumptions applied in the UGR but not in a MetroScope scenario.

- *As to be expected, more units are absorbed in the high scenario as compared to the medium and low growth alternatives.*

Observations on projected single family development:

- *The 2014 BLI estimates capacity for 118,000 single family (SF) units – 47,900 on vacant land and up to 70,100 infill units in the current Metro UGB.*
- *From 2015 to 2035, the number of SF lots absorbed is expected to be nearly 74,000 units based on the assumptions folded into the baseline medium scenario (#1462).*
- *Uninc. Washington County leads all jurisdictions with nearly 21,100 single family units developed during the 20-year period.*
- *Regionwide, 63% (74,000 out of 118,000) of the prospective buildable inventory of single family is used.*
- *By 2035, we anticipate nearly all vacant SF tax lots inside the Metro UGB to be absorbed in the baseline medium scenario. We anticipate what remains after 20 years will be infill lots that may be too difficult to build on or access.*

Observations on projected multi-family development:

- *The 2014 BLI estimates nearly 273,300 multi-family (MF) units of inventory potentially available if demand were sufficient to absorb all of this MF redevelopment supply.*
- *However, not all the redevelopment supply is counted in the UGR because redevelopment doesn't happen unless required by sufficient market demand to induce it to happen.*
- *From 2015 to 2035, the number of MF units absorbed is expected to be about 142,000 units based on assumptions folded into the baseline medium scenario (#1462).*
- *Multi-family development in the city of Portland (113,500 MF units absorbed) far outpaces any individual suburban city and exceeds the efforts of all other cities combined (18,400 units). In order for Portland to achieve the baseline expectations in MF absorption by 2035, the city will have to be very successful in redeveloping at higher densities than what will be torn down. Portland will have to absorb about half of its estimated redevelopment capacity from its recognized potential BLI (113,500 used out of 213,200 units).*
- *City of Portland leads all jurisdictions with nearly 113,500 multi-family units developed for the next 20 years, with 54% of its prospective multi-family inventory used during the UGR period.*
- *In general, cities near the suburban fringes of the Metro UGB find a majority of their prospective multi-family dwelling capacity going unused, for example, Damascus (96%), Happy Valley (87%), Oregon City (83%), Wilsonville (63%), Gresham (71%), uninc. Multnomah County (98%), Cornelius (83%), Forest Grove (78%), Sherwood (61%), and uninc. Washington County (61%).*

Excel files supporting this appendix:

MARIO14.xlsx
UGR-HNA 2014 model (LOW).xlsx
UGR-HNA 2014 model (MEDIUM).xlsx
UGR-HNA 2014 model (HIGH).xlsx

Table 15

UGR LOW Forecast **2014 Buildable Land Inventory - Residential Capacity & Absorption**

Georgaphy Current UGB
Units DU (HH x 1.05)
Output Supply Side
Time Span 20 Years (2015-2025)

Metro Research Center DRAFT 8/19/2014 **Scenario #1464**

	BLI Capacity			DU used 2015-2035			DU remaining in 2035			% DU remaining in 2035		
Local Government	**SF**	**MF**	**Total**	**SF**	**MF**	**Total**	**SF**	**MF**	**Total**	**SF**	**MF**	**Total**
Clackamas Total	**40,326**	**20,288**	**60,614**	**14,365**	**2,240**	**16,605**	**25,961**	**18,048**	**44,009**	**64%**	**89%**	**73%**
DAMASCUS	15,554	4,003	19,557	4,191	96	4,287	11,363	3,907	15,270	73%	98%	78%
GLADSTONE	236	331	567	174	193	367	62	138	200	26%	42%	35%
HAPPY VALLEY	5,658	4,346	10,004	1,021	395	1,416	4,637	3,951	8,588	82%	91%	86%
JOHNSON CITY	0	0	0	0	0	0	0	0	0	--	--	--
LAKE OSWEGO	1,010	465	1,475	524	288	812	486	177	663	48%	38%	45%
MILWAUKIE	1,177	59	1,236	767	21	788	410	38	448	35%	64%	36%
OREGON CITY	2,635	4,695	7,330	981	385	1,366	1,654	4,310	5,964	63%	92%	81%
RIVERGROVE	36	0	36	19	0	19	17	0	17	46%	--	46%
WEST LINN	924	124	1,048	366	21	387	558	103	661	60%	83%	63%
WILSONVILLE	2,760	1,092	3,852	1,835	264	2,098	925	828	1,754	34%	76%	46%
UNINCORP-CLACK	10,336	5,173	15,509	4,487	577	5,064	5,849	4,596	10,445	57%	89%	67%
Multnomah Total	**24,532**	**231,302**	**255,834**	**10,125**	**101,168**	**111,293**	**14,407**	**130,134**	**144,541**	**59%**	**56%**	**56%**
FAIRVIEW	421	703	1,124	185	43	228	236	660	896	56%	94%	80%
GRESHAM	4,808	10,514	15,322	1,514	1,768	3,282	3,294	8,746	12,040	69%	83%	79%
MAYWOOD PARK	32	0	32	20	0	20	12	0	12	38%	--	38%
PORTLAND	15,180	213,246	228,426	6,962	99,033	105,995	8,218	114,213	122,431	54%	54%	54%
TROUTDALE	546	969	1,515	201	221	423	345	748	1,092	63%	77%	72%
WOOD VILLAGE	39	581	620	14	1	15	25	580	605	65%	100%	98%
UNINCORP-MULT	3,506	5,289	8,795	1,230	101	1,331	2,276	5,188	7,464	65%	98%	85%
Washington Total	**53,842**	**22,395**	**76,237**	**21,840**	**7,218**	**29,058**	**32,002**	**15,177**	**47,179**	**59%**	**68%**	**62%**
BEAVERTON	4,747	3,269	8,016	3,097	1,222	4,320	1,650	2,047	3,696	35%	63%	46%
CORNELIUS	88	153	241	4	22	26	84	131	215	95%	85%	89%
DURHAM	42	0	42	12	0	12	30	0	30	72%	--	72%
FOREST GROVE	3,439	1,990	5,429	1,073	226	1,298	2,366	1,764	4,131	69%	89%	76%
HILLSBORO	4,661	5,311	9,972	1,448	2,245	3,694	3,213	3,066	6,278	69%	58%	63%
KING CITY	223	169	392	164	65	228	59	104	164	27%	62%	42%
SHERWOOD	467	524	991	152	63	214	315	461	777	68%	88%	78%
TIGARD	6,243	2,270	8,513	2,939	933	3,872	3,304	1,337	4,641	53%	59%	55%
TUALATIN	351	188	539	144	117	262	207	71	277	59%	38%	51%
UNINCORP-WASH	33,581	8,521	42,102	12,808	2,324	15,132	20,773	6,197	26,970	62%	73%	64%
UGB TOTAL	**118,700**	**273,985**	**392,685**	**46,330**	**110,626**	**156,956**	**72,370**	**163,359**	**235,729**	**61%**	**60%**	**60%**

Table 16

UGR MEDIUM Forecast **2014 Buildable Land Inventory (BLI) -- Residential Capacity**

Metro Research Center DRAFT 8/19/2014 **Scenario #1462**

Georgaphy Current UGB
Units DU (HH x 1.05)
Output Supply Side
Time Span 20 Years (2015-2025)

Local Government	BLI Capacity			DU used 2015-2035			DU remaining in 2035			% DU remaining in 2035		
	SF	MF	Total	SF	MF	Total	SF	MF	Total	SF	MF	Total
Clackamas Total	**40,326**	**20,288**	**60,614**	**24,634**	**4,307**	**28,941**	**15,692**	**15,981**	**31,673**	**39%**	**79%**	**52%**
DAMASCUS	15,554	4,003	19,557	9,305	152	9,457	6,249	3,851	10,100	40%	96%	52%
GLADSTONE	236	331	567	201	219	420	35	112	147	15%	34%	26%
HAPPY VALLEY	5,658	4,346	10,004	2,530	561	3,091	3,128	3,785	6,913	55%	87%	69%
JOHNSON CITY	0	0	0	0	0	0	0	0	0	--	--	--
LAKE OSWEGO	1,010	465	1,475	583	324	907	427	141	568	42%	30%	38%
MILWAUKIE	1,177	59	1,236	984	41	1,025	193	18	211	16%	31%	17%
OREGON CITY	2,635	4,695	7,330	1,779	789	2,568	856	3,906	4,762	32%	83%	65%
RIVERGROVE	36	0	36	23	0	23	13	0	13	35%	--	35%
WEST LINN	924	124	1,048	439	37	477	485	87	571	52%	70%	54%
WILSONVILLE	2,760	1,092	3,852	1,912	408	2,320	848	684	1,532	31%	63%	40%
UNINCORP-CLACK	10,336	5,173	15,509	6,877	1,775	8,652	3,459	3,398	6,857	33%	66%	44%
Multnomah Total	**24,532**	**231,302**	**255,834**	**15,947**	**117,562**	**133,509**	**8,585**	**113,740**	**122,325**	**35%**	**49%**	**48%**
FAIRVIEW	421	703	1,124	344	292	636	77	411	488	18%	58%	43%
GRESHAM	4,808	10,514	15,322	2,898	3,019	5,916	1,910	7,495	9,406	40%	71%	61%
MAYWOOD PARK	32	0	32	27	0	27	5	0	5	17%	--	17%
PORTLAND	15,180	213,246	228,426	10,276	113,525	123,801	4,904	99,721	104,625	32%	47%	46%
TROUTDALE	546	969	1,515	345	381	726	201	588	789	37%	61%	52%
WOOD VILLAGE	39	581	620	28	222	250	11	359	370	27%	62%	60%
UNINCORP-MULT	3,506	5,289	8,795	2,028	125	2,153	1,478	5,164	6,642	42%	98%	76%
Washington Total	**53,842**	**22,395**	**76,237**	**33,293**	**10,036**	**43,329**	**20,549**	**12,359**	**32,908**	**38%**	**55%**	**43%**
BEAVERTON	4,747	3,269	8,016	3,478	2,116	5,594	1,269	1,153	2,422	27%	35%	30%
CORNELIUS	88	153	241	9	26	34	79	127	207	90%	83%	86%
DURHAM	42	0	42	15	0	15	27	0	27	65%	--	65%
FOREST GROVE	3,439	1,990	5,429	1,821	433	2,253	1,618	1,557	3,176	47%	78%	58%
HILLSBORO	4,661	5,311	9,972	2,722	2,644	5,366	1,939	2,667	4,606	42%	50%	46%
KING CITY	223	169	392	182	112	294	41	57	98	18%	34%	25%
SHERWOOD	467	524	991	194	161	355	273	363	636	58%	69%	64%
TIGARD	6,243	2,270	8,513	3,615	1,355	4,970	2,628	915	3,543	42%	40%	42%
TUALATIN	351	188	539	172	139	311	179	49	228	51%	26%	42%
UNINCORP-WASH	33,581	8,521	42,102	21,085	3,052	24,137	12,496	5,469	17,965	37%	64%	43%
UGB TOTAL	**118,700**	**273,985**	**392,685**	**73,874**	**131,905**	**205,780**	**44,826**	**142,080**	**186,905**	**38%**	**52%**	**48%**

Table 17

UGR HIGH Forecast **2014 Buildable Land Inventory (BLI) -- Residential Capacity**

Metro Research Center DRAFT 8/19/2014 **Scenario #1465**

Georgaphy Current UGB
Units DU (HH x 1.05)
Output Supply Side
Time Span 20 Years (2015-2025)

	BLI Capacity			DU used 2015-2035			DU remaining in 2035			% DU remaining in 2035		
Local Government	**SF**	**MF**	**Total**	**SF**	**MF**	**Total**	**SF**	**MF**	**Total**	**SF**	**MF**	**Total**
Clackamas Total	**40,326**	**20,288**	**60,614**	**30,012**	**6,318**	**36,330**	**10,314**	**13,970**	**24,284**	**26%**	**69%**	**40%**
DAMASCUS	15,554	4,003	19,557	11,748	196	11,943	3,806	3,807	7,614	24%	95%	39%
GLADSTONE	236	331	567	223	233	456	13	98	111	6%	30%	20%
HAPPY VALLEY	5,658	4,346	10,004	3,811	764	4,576	1,847	3,582	5,428	33%	82%	54%
JOHNSON CITY	0	0	0	0	0	0	0	0	0	--	--	--
LAKE OSWEGO	1,010	465	1,475	610	373	984	400	92	491	40%	20%	33%
MILWAUKIE	1,177	59	1,236	1,094	47	1,141	83	12	95	7%	21%	8%
OREGON CITY	2,635	4,695	7,330	2,146	1,440	3,586	489	3,255	3,744	19%	69%	51%
RIVERGROVE	36	0	36	23	0	23	13	0	13	35%	--	35%
WEST LINN	924	124	1,048	476	44	520	448	80	528	48%	65%	50%
WILSONVILLE	2,760	1,092	3,852	1,817	537	2,354	943	555	1,498	34%	51%	39%
UNINCORP-CLACK	10,336	5,173	15,509	8,063	2,683	10,746	2,273	2,490	4,763	22%	48%	31%
Multnomah Total	**24,532**	**231,302**	**255,834**	**18,840**	**133,121**	**151,962**	**5,692**	**98,181**	**103,872**	**23%**	**42%**	**41%**
FAIRVIEW	421	703	1,124	397	533	930	24	170	194	6%	24%	17%
GRESHAM	4,808	10,514	15,322	3,580	4,565	8,145	1,228	5,949	7,177	26%	57%	47%
MAYWOOD PARK	32	0	32	30	0	30	2	0	2	7%	--	7%
PORTLAND	15,180	213,246	228,426	11,975	126,744	138,718	3,205	86,502	89,708	21%	41%	39%
TROUTDALE	546	969	1,515	458	630	1,088	88	339	427	16%	35%	28%
WOOD VILLAGE	39	581	620	32	410	442	7	171	178	17%	29%	29%
UNINCORP-MULT	3,506	5,289	8,795	2,368	240	2,609	1,138	5,049	6,186	32%	95%	70%
Washington Total	**53,842**	**22,395**	**76,237**	**33,618**	**13,123**	**46,740**	**20,224**	**9,272**	**29,497**	**38%**	**41%**	**39%**
BEAVERTON	4,747	3,269	8,016	3,782	2,406	6,188	965	863	1,828	20%	26%	23%
CORNELIUS	88	153	241	10	79	89	78	74	152	88%	49%	63%
DURHAM	42	0	42	19	0	19	23	0	23	54%	--	54%
FOREST GROVE	3,439	1,990	5,429	2,294	1,069	3,363	1,145	921	2,066	33%	46%	38%
HILLSBORO	4,661	5,311	9,972	3,374	3,218	6,592	1,287	2,093	3,380	28%	39%	34%
KING CITY	223	169	392	151	126	277	72	43	115	32%	26%	29%
SHERWOOD	467	524	991	224	221	445	243	303	546	52%	58%	55%
TIGARD	6,243	2,270	8,513	4,165	1,543	5,708	2,078	727	2,805	33%	32%	33%
TUALATIN	351	188	539	179	155	334	172	33	205	49%	18%	38%
UNINCORP-WASH	33,581	8,521	42,102	19,419	4,306	23,725	14,162	4,215	18,377	42%	49%	44%
UGB TOTAL	**118,700**	**273,985**	**392,685**	**82,470**	**152,562**	**235,031**	**36,230**	**121,423**	**157,654**	**31%**	**44%**	**40%**

Errata (summary of 9/23/14 revisions to previous July 2014 draft)

This revised draft reflects two corrections. Tables and graphs that have been revised in this draft are so noted. Finally, this draft provides additional explanation of several topics that have been of interest to policy makers and stakeholders.

First, in one step of the report's calculations of housing demand, data describing the relative shares of different household types for the larger seven-county area (instead of the urban growth boundary) were used by mistake. As a result, the July 2014 draft overestimated demand for single-family housing within the urban growth boundary.

A second correction relates to lands added to the urban growth boundary by the Oregon Legislature in March 2014 under House Bill 4078, which addressed the designation of urban and rural reserves and made changes to the urban growth boundary. At the request of staff from the City of Forest Grove, the revised analysis counts lands added near Forest Grove as industrial, rather than residential. This has the effect of reducing the region's residential capacity, but increasing its industrial capacity.

- *Corrected the legend for the household income pie chart seen in figure 1, page 5.*
- *Added figure 2, "Generational Changes in Population, Metro UGB" and three additional bullets that illustrate and explain expected net increase in housing demand (2015 to 2035) for each generation of residents, pages 6 and 7.*
- *Page 13, added a paragraph accompanying table 3 to explain demand (and supply) factors necessarily shift between scenario alternatives, which results in shifts in tenure and housing type.*
- *Table 3, page 14 has been revised. It has been replaced with the corrected household, income and age bracket projections for the Metro UGB (was incorrectly reported with MSA proportions), most notable dropping the single family proportion to 39% (incorrectly reported as 45%) and raising the multifamily proportion to 61% (incorrectly reported as 55%).*
- *Figure 6, page 16, has been revised to reflect the correction in adjusted residential demand for housing by type and tenure*
- *Page 17, addendum disclosing the change in BLI due to a correction in the Forest Grove residential supply.*
- *Table 6, page 18; figures 7 thru 9, pages 19-21 has been revised to reflect the correction to the BLI*
- *Added additional context of possible market impediments to building out the buildable land inventory, page 22*
- *Figures 10 thru 12 and summary tables 8 and 9 (pages 26-29) have been revised to reflect changes in the BLI (i.e., Forest Grove adjustment) and housing demand by tenure and type (i.e., Metro UGB correction).*
- *Figure 13 has been revised to correctly show residential absorptions for years 2015 to 2035 (earlier draft had dwelling unit absorption for 2015 to 2040).*
- *Added a section describing residential absorption results for each scenario, beginning on page 37.*

- *Residential absorption estimates (by scenario) by jurisdiction are shown in Tables 15 (low scenario), 16 (medium scenario), and 17 (high scenario).*

Appendix 5

Residential development trends

To better understand how to plan for people's future housing needs, it is useful to understand past residential development trends. This report includes some of the data required under ORS 197.296 (the "needed housing" statute). Additional statutory requirements are addressed in other appendices.

ORS 197.296

(5)(a) Except as provided in paragraphs (b) and (c) of this subsection, the determination of housing capacity and need pursuant to subsection (3) of this section must be based on data relating to land within the urban growth boundary that has been collected since the last periodic review or five years, whichever is greater. The data shall include:

(A) The number, density and average mix of housing types of urban residential development that have actually occurred;

(B) Trends in density and average mix of housing types of urban residential development;

(C) Demographic and population trends; [see Appendices 1a and 4 for additional information]

(D) Economic trends and cycles; and [see Appendices 1a and 8 for additional detail]

(E) The number, density and average mix of housing types that have occurred on the buildable lands described in subsection (4)(a) of this section.

Definitions and data sources

Single family houses were identified from Metro assessor data as tax lots with a land use designation of SFR or RUR (translated from PCA codes). Building value, building square footage, year built and other attributes were also used to identify lots with a house on them.

Multifamily dwellings were identified from Metro's multifamily housing inventory. The inventory includes the obvious apartments and high density condos, as well as some other less clearly defined housing types. A duplex, triplex, or any other lot with multiple housing units under common ownership on a single tax lot would be included. Any development with condo style tax lots is included, identified by individually owned units within a common lot owned by a condo association or similar organization. Single family housing developments with common areas owned by a Homeowners Association are not included in multifamily. Most attached single family houses have single family style tax lots and are not included in the multifamily database. This analysis excludes dormitories and retirement facilities, which are typically a single room occupancy style of housing.

Infill refers to development that occurred on a tax lot that would be considered "developed" in Metro's buildable lands inventory, where the original structure has been left intact. Infill may include residential units being added to the same lot with existing development, as well as splitting lots off from the existing development for new residential units.

Oversized single family lots are developed single family lots where zoning would allow for the lot to be subdivided and developed at a higher density of single family housing.

Redevelopment refers to development that occurred on a tax lot that would be considered "developed" in Metro's buildable lands inventory, where the original structure was demolished to make room for new construction. Redevelopment may or may not involve subdividing or reconfiguring the original tax lot to accommodate new development.

Vacant implies that development occurred on land that would be considered "vacant" in Metro's buildable lands inventory, and the lot has no indication of prior development in the recent past and was not part of a developed tax lot in the recent past (generally back to 2003 for the purposes of this analysis – a consequence is that historic redevelopment and infill may be underestimated if a tax lot was previously developed, but has been vacant since 2003).

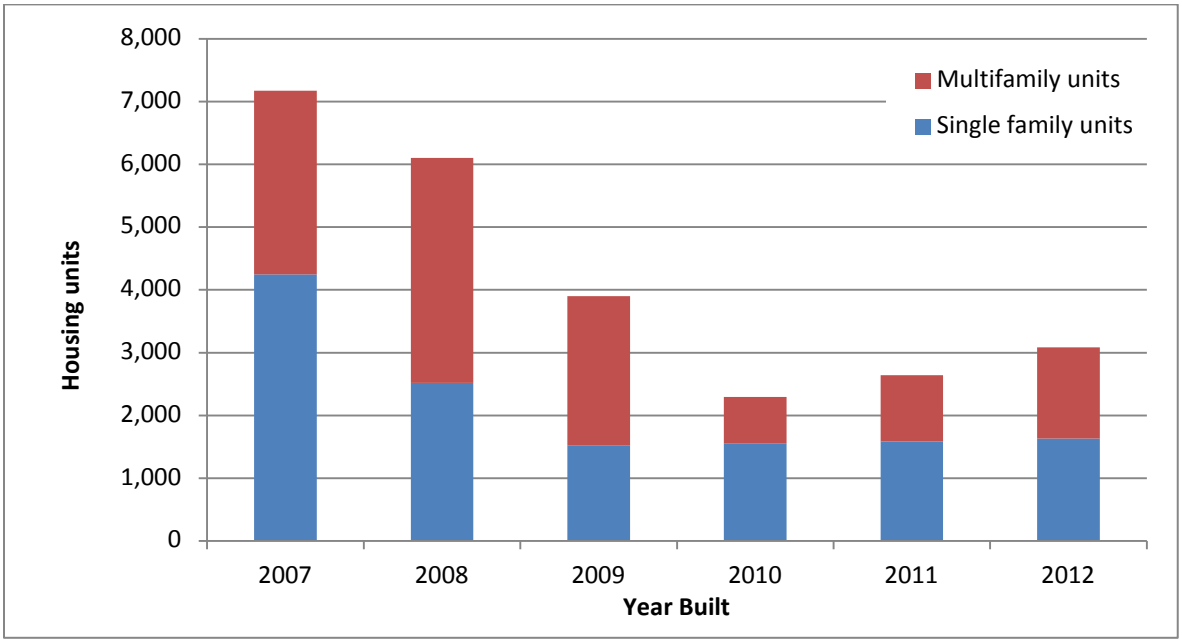
This report focuses on **net new units**, which will differ from total reported building permits. Redevelopment is a significant source of land for new residential development, so this analysis subtracts the units that were demolished to make way for new housing so as not to overstate residential growth.

Densities are reported as units per **net acre**. When a large parcel is developed, a certain percentage of the area must be devoted to streets, parks and other common areas. Because this analysis is based on tax lots after they have been subdivided and developed, these take-outs are already excluded from the land consumption statistics.

Development trends by housing type

This report provides data on residential development over the period 2007 to 2012, picking up where the last refill study left off in 2006. Recent trends in residential development have been heavily influenced by the housing bust and resulting recession. New development and housing prices dropped off substantially from 2006 through 2010, before slowly starting to recover in 2011 and 2012. This trend is clearly visible in Figure 1, showing only a modest uptick in construction through 2012.

Figure 1: Net new housing units added to the UGB from 2007 to 2012 by type



On average, the region produced about 4,100 housing units per year during this period, with a high of nearly 7,000 units in 2007 and a low of 2,200 units in 2010. The mix of single family and multifamily housing units has fluctuated over the period in the range of 38.0% single family and 62.0% multifamily to 66.4% single family and 33.6% multifamily. Over the six year period, this averages out to about an even split between the two housing types.

Table 1: Net new housing units in the UGB from 2007 to 2012 and shares of multifamily and single family housing

Year built	2007	2008	2009	2010	2011	2012	2007-2012
Single family units	4,001	2,396	1,455	1,469	1,515	1,561	12,398
Multifamily units	2,927	3,583	2,371	743	1,057	1,452	12,133
Total units	6,928	5,979	3,826	2,212	2,572	3,013	24,531
Share SF	57.8%	40.1%	38.0%	66.4%	58.9%	51.8%	50.5%
Share MF	42.2%	59.9%	62.0%	33.6%	41.1%	48.2%	49.5%

Development trends by density

Housing densities of new construction varied over the period as well. Single family housing reached a minimum average density of 6.9 units per acre, or 6,320 square feet of land per house in 2010, and a maximum of 8.2 units per acre, with an average lot size of 5,314 square feet, in 2011. New multifamily developments were built at an average density of 41.8 units per net acre over the six year period. Development and density dropped off in 2010 and 2011, with only 743 multifamily units added at an

average density of 34.6 units per net acre in 2010. Multifamily construction began picking up again in 2012, when 1,452 units were built at a density of 71.8 units per net acre.

Table 2: Average density of net new housing units in the UGB for single family, multifamily and all units combined; densities reported as average lot size and units per net acre

Year built	2007	2008	2009	2010	2011	2012	2007-2012
Combined average lot size	4,035	2,754	2,480	4,620	3,729	3,448	3,429
single family	5,897	5,515	5,381	6,320	5,314	6,091	5,766
multifamily	1,490	908	700	1,258	1,456	607	1,041
Combined average units/acre	16.6	31.9	41.6	16.2	17.1	38.3	24.5
single family	7.4	7.9	8.1	6.9	8.2	7.2	7.6
multifamily	29.2	48.0	62.2	34.6	29.9	71.8	41.8

The highest density developments also tend to be the largest, so while there were many smaller low density developments the statistics are dominated by the large high density developments. This pattern is clear in Figure 2 and Figure 3, which roughly mirror each other.

Figure 2: Net new multifamily units inside Metro UGB by density (2007-2012)

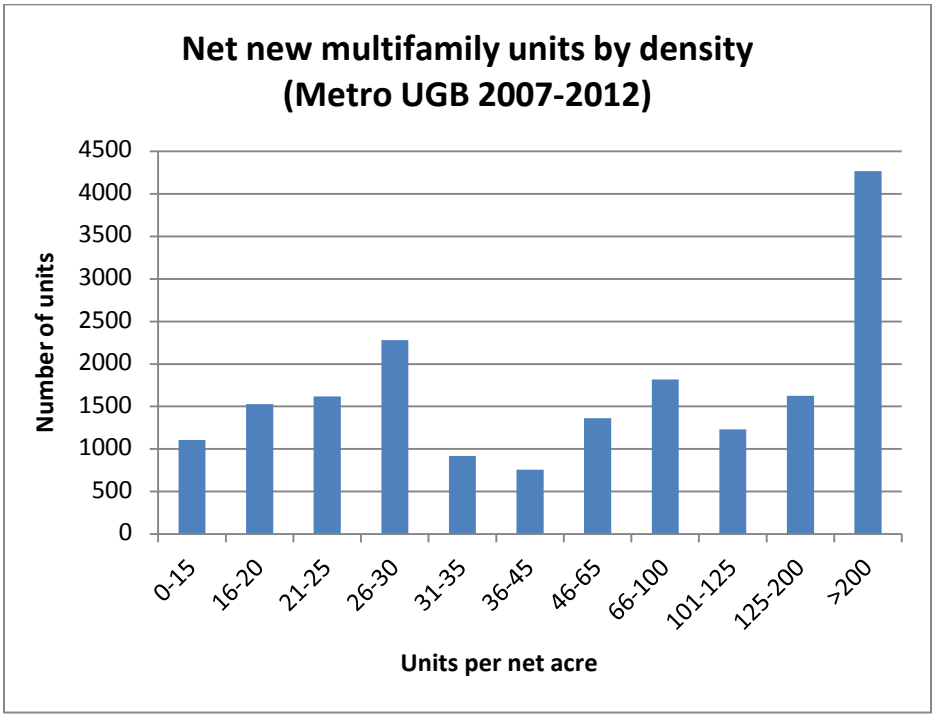
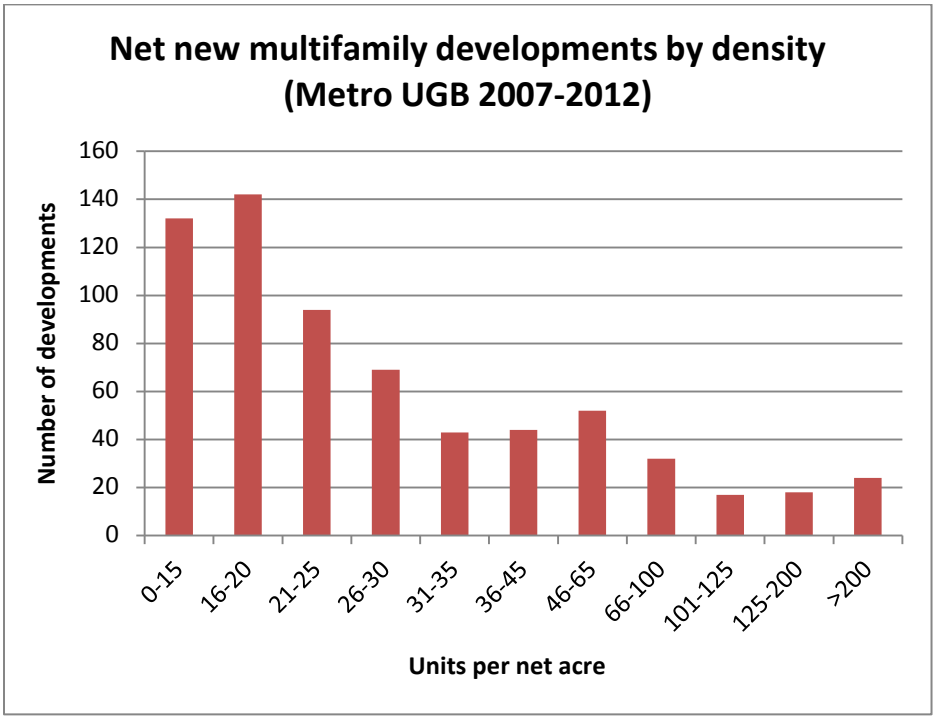


Figure 3: Net new multifamily developments inside Metro UGB by density (2007-2012)



Development trends by type of land

The rest of this report further divides the statistics shown above into the three types of land that are accounted for in the buildable lands inventory: vacant, infill and redevelopment.

Note: Infill and redevelopment generally refer to development that occurs on land that is already considered developed in the buildable lands inventory. However, some of the development identified in this analysis as infill and redevelopment occurred on very large lots with a significant proportion of vacant land. Lots that are at least 95% vacant are included as vacant land rather than developed in the buildable lands inventory. Because the data used for this analysis are not directly comparable to the data used for the buildable lands inventory[1], we have to create a proxy for these lots that are mostly vacant. Lots that were at least five acres in size before subdivision, and had one single family house on them prior to the new development, have been moved to the vacant designation. As an example, a five acre lot with 10,000 square feet delineated as developed would be just over 95% vacant.

For the purposes of this analysis, the only difference between infill and redevelopment is whether the original structure is left standing when the new development occurs (if yes, then it is infill). Infill accounted for about 20% of single family development, but less than 3% of multifamily units. Many of the statistics in this report combine the two developed land types.

[1] By definition, development documented in this analysis did not occur on land in the 2014 UGR's buildable land inventory.

Over the six year period from 2007 to 2012, redevelopment and infill accounted for about 58% of all residential units produced within the UGB, with around 42% developed on vacant land. Single family houses were about evenly split, with 52% of units built on developed lots and 48% built on vacant lots. Multifamily units skewed more toward redevelopment, with about 64% of units built on developed land and 36% built on vacant land. These shares are not directly comparable to the "refill rates" that have been reported in prior studies, due to changes in the definition of vacant and developed land (in particular partially vacant land) in the buildable lands inventory.

Figure 4: Number of residential units by land source

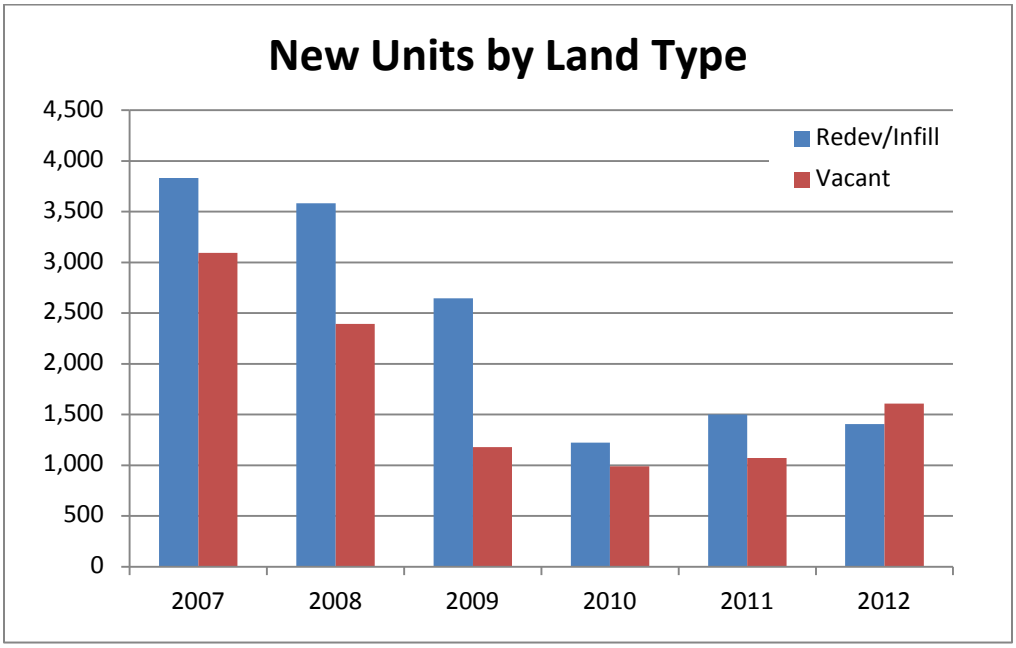


Figure 5: Number of housing units built on vacant and developed land, by housing type

Year built	2007	2008	2009	2010	2011	2012	2007-2012
Single family							
Redev/Infill	2,035	1,341	750	813	822	696	6,457
Vacant	1,966	1,055	705	657	693	865	5,940
Multifamily							
Redev/Infill	1,798	2,243	1,897	409	679	709	7,735
Vacant	1,129	1,340	474	334	378	743	4,398
All residential units							
Redev/Infill	3,833	3,584	2,647	1,222	1,501	1,405	14,192
Vacant	3,095	2,395	1,179	991	1,071	1,608	10,338

Figure 6: Number of housing units classified as infill, redevelopment and vacant, by housing type

Year built	2007	2008	2009	2010	2011	2012	2007-2012
Infill							
Single family	745	592	377	354	283	255	2,606
Multifamily	157	103	28	17	13	28	346
Redevelopment							
Single family	1,290	749	373	459	539	441	3,851
Multifamily	1,641	2,140	1,869	392	666	681	7,389
Vacant							
Single family	1,966	1,055	705	657	693	865	5,940
Multifamily	1,129	1,340	474	334	378	743	4,398

Single family houses categorized as infill and redevelopment were typically built on smaller lots compared to houses built on vacant land. Figure 7 shows that the average lot size for a house built on vacant land was around 6,600 square feet from 2007 to 2012, while a house built on already developed land had an average lot size around 5,000 square feet. For multifamily, units that were built on vacant land actually had a higher density than units on redeveloped land for 2007 and 2008. However, this pattern reversed for 2009 to 2012, with redevelopment built at a higher density than vacant development.

Figure 7: Average single family lot size by land source

Year built	2007	2008	2009	2010	2011	2012	2007-2012
Redev/Infill	5,128	4,823	4,526	5,105	4,962	5,637	5,026
Vacant	6,756	6,477	6,369	7,973	5,770	6,490	6,641
All single family lots	5,897	5,515	5,381	6,320	5,314	6,091	5,766
Average units/net acre	7.4	7.9	8.1	6.9	8.2	7.2	7.6

Figure 8: Average multifamily lot size (i.e. land per unit) by land source

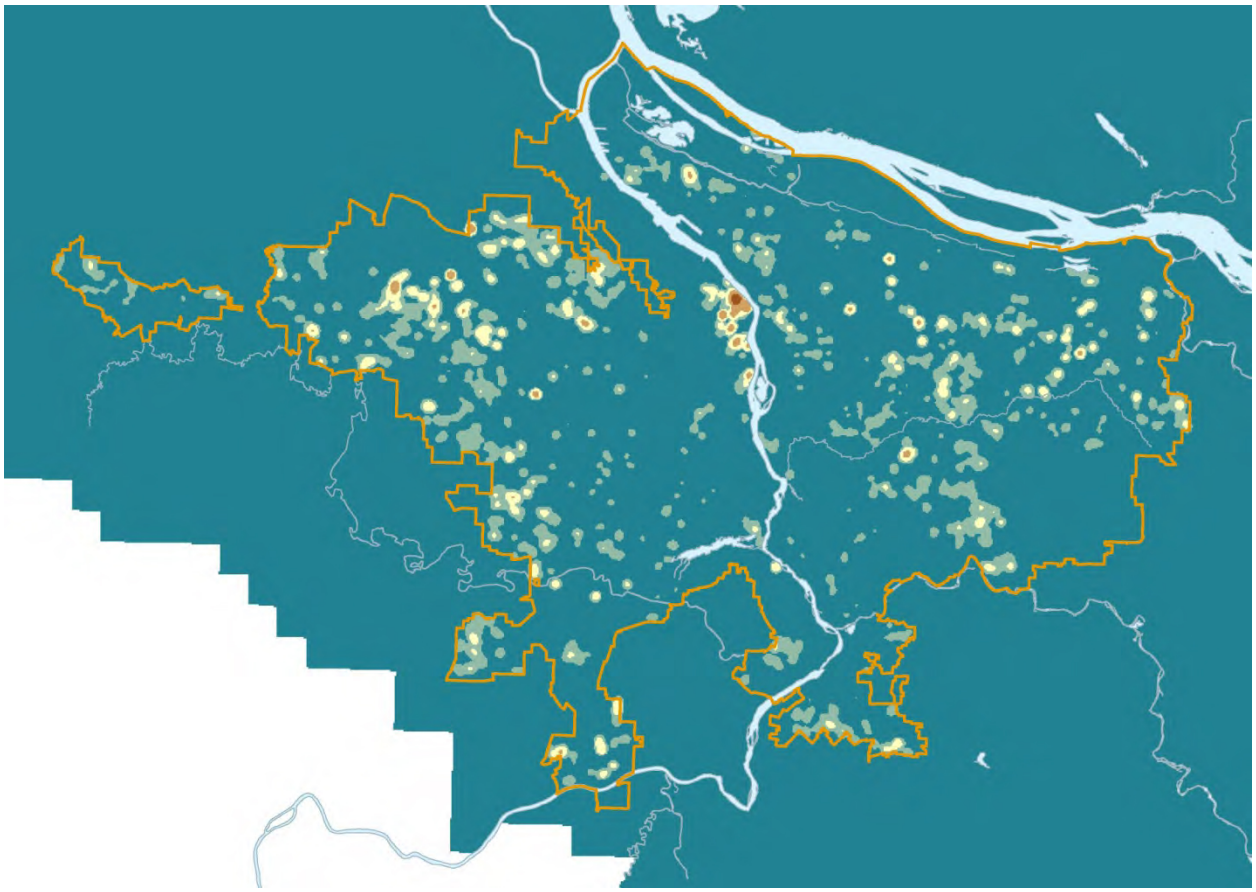
Year built	2007	2008	2009	2010	2011	2012	2007-2012
Redev/Infill	1,576	940	615	1,208	995	551	992
Vacant	1,353	855	1,039	1,319	2,285	659	1,128
All multifamily units	1,490	908	700	1,258	1,456	607	1,041
Average units/net acre	29.24	47.97	62.23	34.62	29.91	71.82	41.85

Development in UGB expansion areas

The original Metro UGB was adopted in 1979. Since that time, over 31,000 acres have been added to accommodate residential and employment growth. From 2006 to 2012, 10,376 of the total 12,398 new single family units were built within the UGB as it existed in 1979. 2,022 single family units were built within areas added to the UGB since 1979. During that same time period, 12,075 of the 12,133 (nearly all) multifamily units were built within the 1979 UGB.

Map 1 provides a visual depiction of the intensity of residential development activity inside the Metro UGB for a longer time period, from 1998 to 2012. From 1998 to 2012, 94% of the new residential units were built inside the original 1979 UGB. During these 14 years, post-1979 UGB expansion areas produced about 6,500 housing units while there were about 105,000 units produced in the original 1979 UGB. With a couple of notable exceptions, UGB expansion areas have been slow to develop because of challenges with governance, planning, voter-approved annexation, infrastructure financing, service provision, and land assembly.

Map 1: Intensity of residential development activity inside UGB 1998-2012



Single-family residential sales price statistics

The following figures and tables summarize residential price trends inside the UGB.

Figure 9: Average single-family residential sales price by county (inside UGB only)

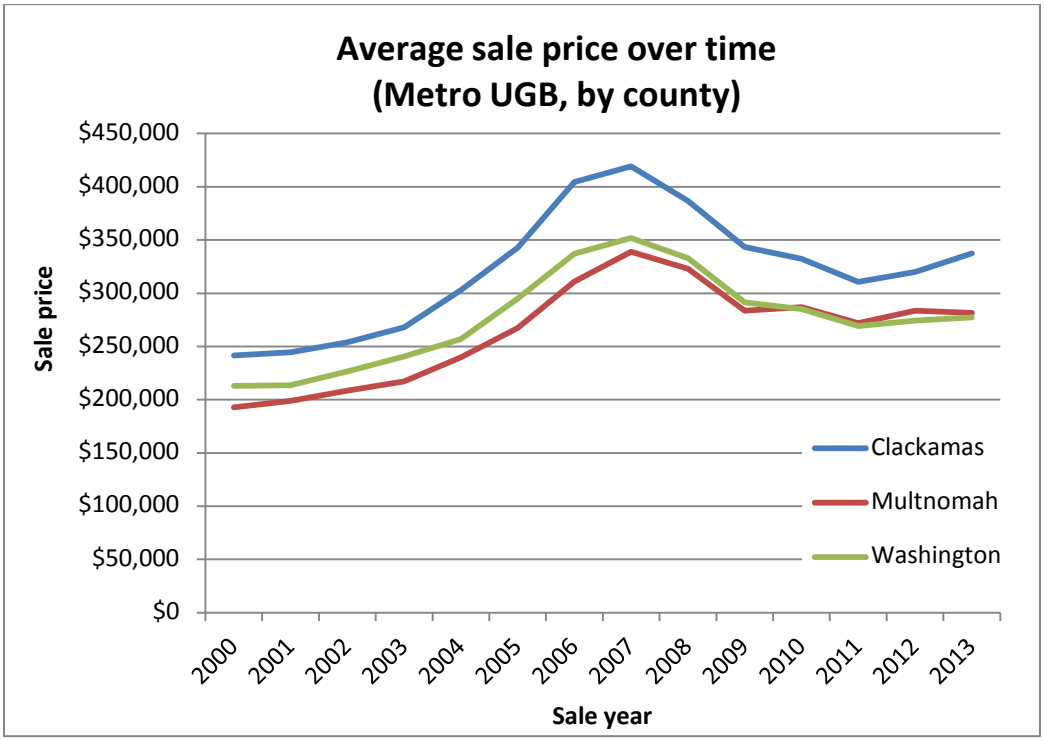


Figure 10: Average single-family residential sales prices 2007-2012 by city (inside UGB only)

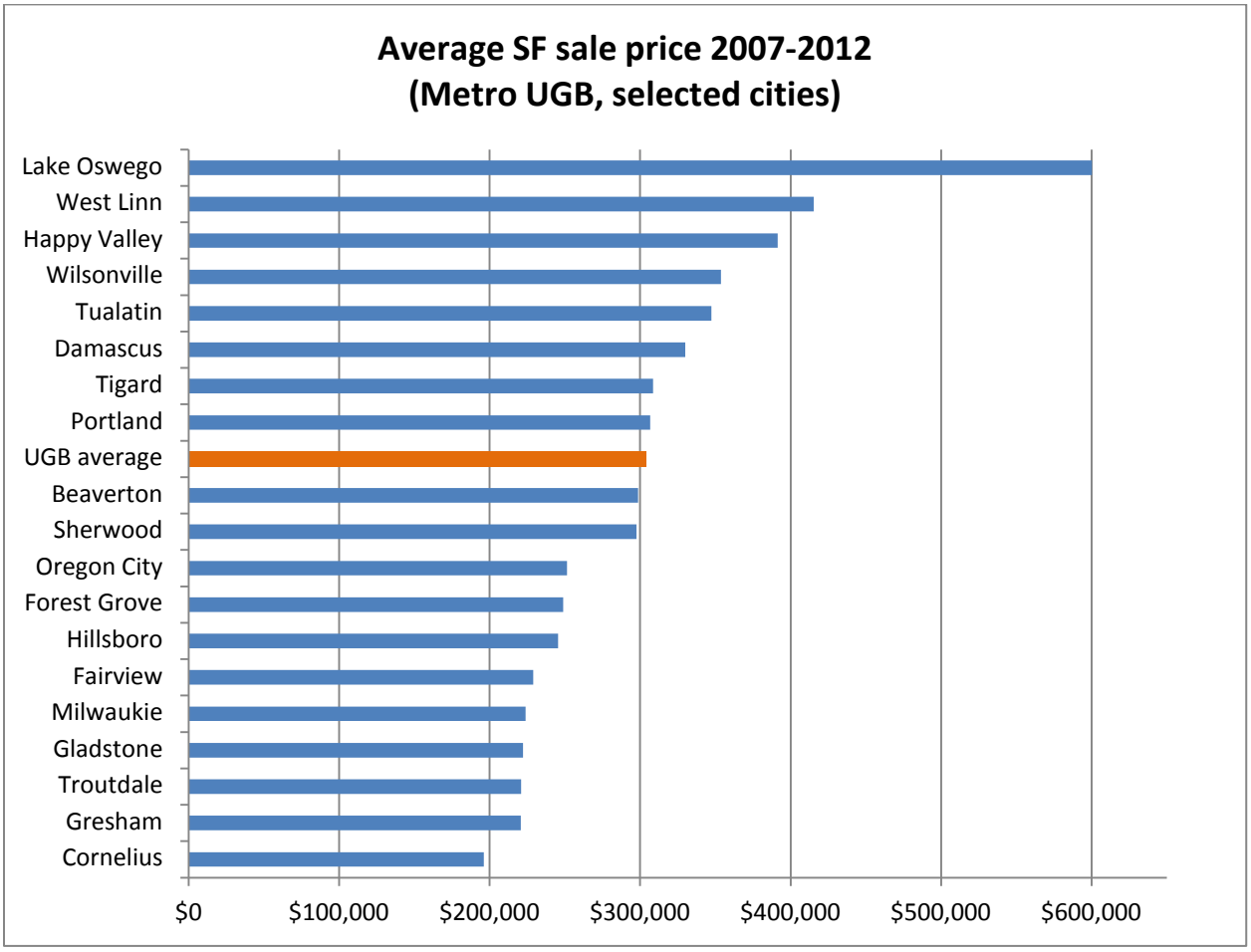


Figure 11: Median single-family residential sales price by city (UGB only) over time

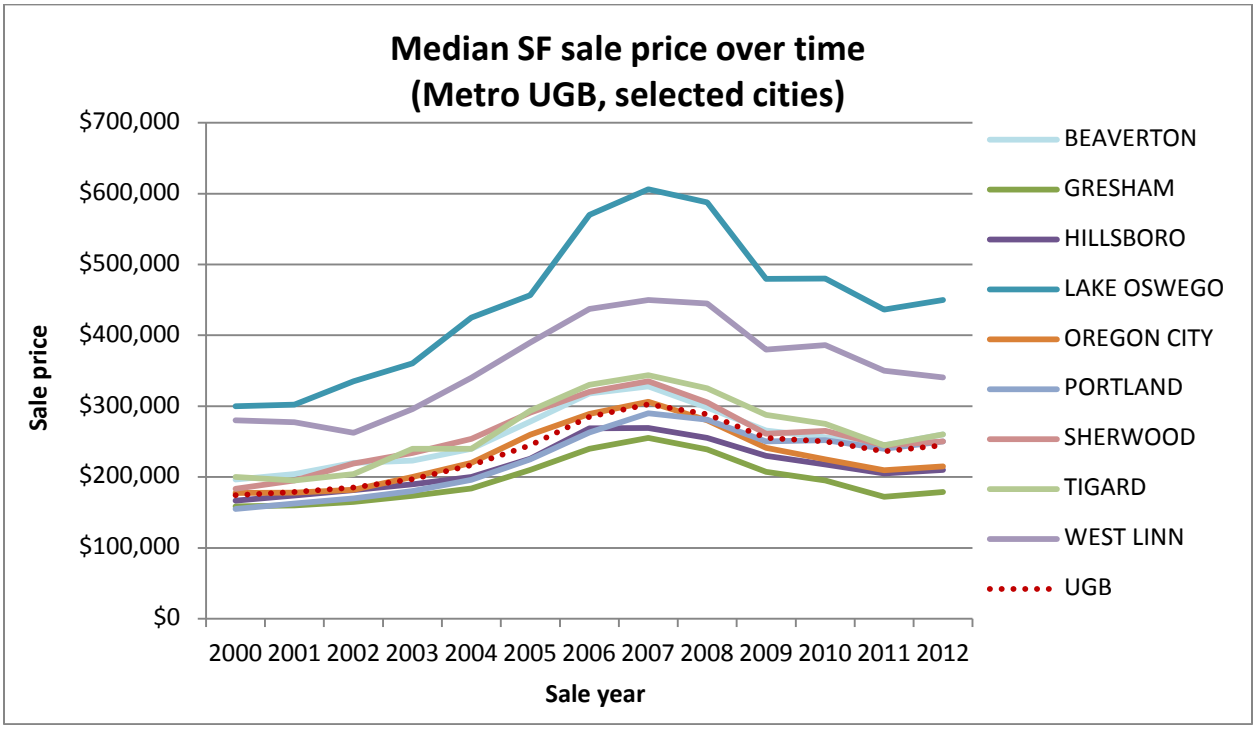
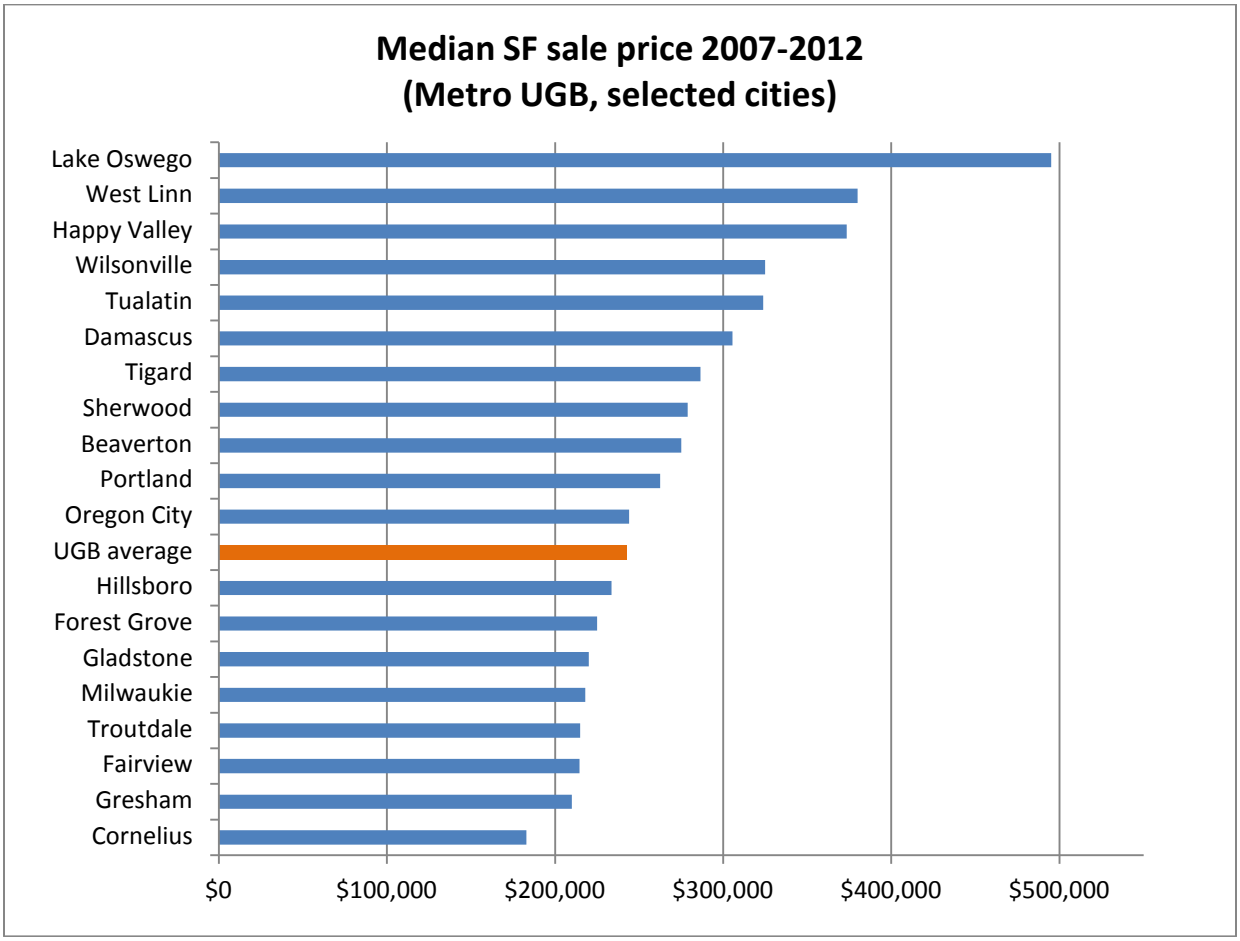


Figure 12: Median single-family residential sales price for selected cities inside UGB (2007-2012)



Appendix 6

Employment land demand analysis (revised 9/23/14)

This revised draft incorporates a correction. This correction relates to lands added to the urban growth boundary by the Oregon Legislature in March 2014 under House Bill 4078. At the request of city of Forest Grove staff, this revised report counts lands added near Forest Grove as industrial rather than residential with a small amount of commercial. When the revised regional numbers are rounded at regional scale, this amounts to 200 additional acres of industrial land and 100 fewer acres of commercial land in the employment buildable land inventory.

Background

A healthy regional economy depends on many factors, including, for example, an educated workforce, positive national and global economic conditions, freight mobility, workers able to get to their jobs easily, access to specialized infrastructure, clustering of businesses to create markets and economic activity, and a buildable land supply to accommodate employment growth. This report assesses the final factor – the adequacy of employment land inside the urban growth boundary to accommodate anticipated job growth in the 2015 to 2035 timeframe.

For this analysis, employment is divided into two general categories – general industrial and commercial. Demand for large industrial sites (over 25 net buildable acres per site) is described separately in Appendix 7. The approach for estimating the 20-year demand for industrial and commercial land (acreage) relies on a regional employment forecast by major economic sectors[1] (NAICS). The sector details from this job forecast roll up into three categories each of industrial and commercial land demand. Industrial demand includes 1) general industrial manufacturing, 2) warehousing and distribution, and 3) tech / flex and business park. Commercial demand includes 1) office, 2) retail, and 3) institutional.

The approach for estimating land supply (i.e., buildable land inventory measured in acres) includes various estimates of vacant land and identifying individual tax lots which have the potential to redevelop[2]. Additional steps are taken to "clean up" the inventory of vacant and redevelopable tax lots in order to account for environmental constraints and/or other issues that would make the tax lot entirely or partly undevelopable. This analysis concludes with a comparison of the land demand forecast and the supply / capacity estimates to determine whether a surplus or deficit exists for future commercial and industrial land needs.

[1] See Appendices 1a, 1b, 1c, and 1d on the regional forecast for more specific forecast details, assumptions, inputs and growth scenario ranges.

[2] See Appendix 2 for details on the methodology for identifying the buildable land inventory and Appendix 3 for a summary of the inventory itself.

Notes and caveats

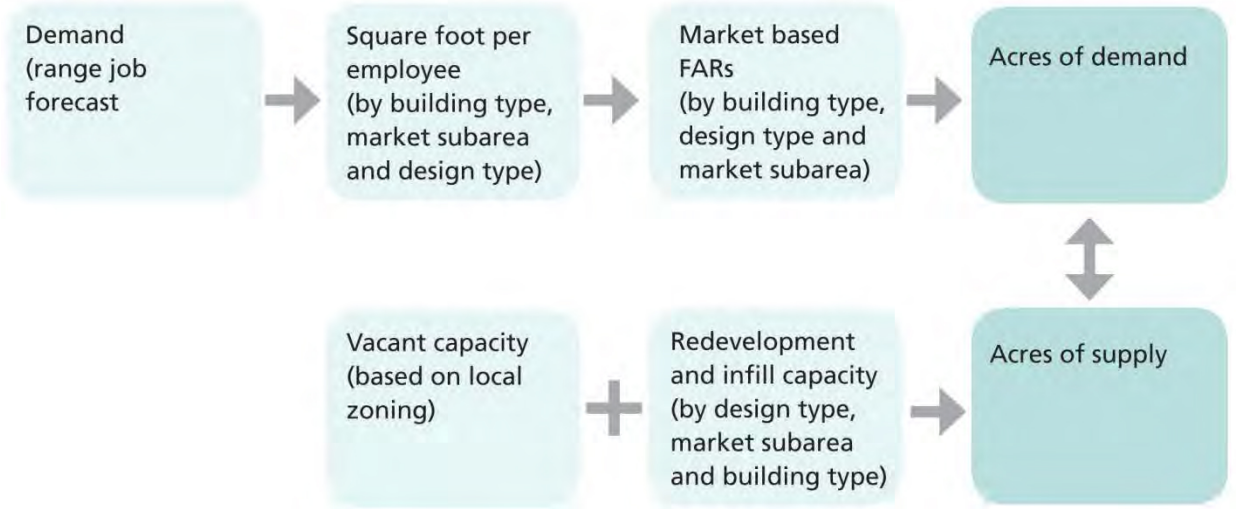
- Demand for large industrial sites (sites over 25 net buildable acres) is described separately in Appendix 7.
- The growing trend in some industry groups (such as warehousing / distribution, selected producer goods industries and perhaps industries highly linked with maritime activities) toward increased mechanization and other labor saving techniques may underestimate land demand with this UGR analysis technique as industries that are becoming less reliant on employment may still actually have a need for more land. A methodology that utilizes employment growth (or loss) as an indicator (or driver) may incorrectly associate land demand. However, alternative land demand estimation methodologies are not well-defined at this time, so using the employment forecast remains the best practice.
- The regional employment forecast could significantly diverge from future actual trends. The forecast is expressed as a range to acknowledge that uncertainty.
- Factors (including future square foot per employee and floor area ratio) for conversion of employment forecasts to commercial and industrial land demand are based on what can be observed today and could be off significantly due to rapid technological change, other innovations and/or regulations in society that could cause these factors to shift significantly from current assumptions.
- There are some rigid assumptions about the distribution of jobs by geographic subareas, building types, and Region 2040 land use design types (i.e., corridors, main streets, centers etc.) which could be relaxed based on MetroScope scenario information, but are presently fixed to historical distributions in the current analysis.

General methodology: step by step instructions

Figure 1 illustrates the following steps that are taken to compare supply and demand for employment land.

1. Determine the portion of the regional MSA forecast that chooses to locate in the Metro UGB
2. Assign forecasted jobs into six building types
3. Apply square feet per employee assumptions to employment by building types and geographic location
4. Distribute job forecast of six building types to subareas and 2040 land use design types
5. (do not apply refill rate – infill redevelopment supply now handled by the buildable land inventory [BLI])
6. Assumptions for floor area ratios (FAR) applied to employment by building types and geographic locators
7. Summarize building square footage demand
8. Summarize acreage land demand
9. UGR analysis comparing land demand and the buildable land inventory (BLI) supply / capacity

Figure 1: General approach for comparing supply and demand for employment land



Methodology step by step

Step 1: Capture rate and Metro UGB job forecast

The regional MSA jobs forecast is a first step towards determining how much employment growth will locate inside the Metro urban growth boundary (UGB). A MetroScope Urban Growth Report (UGR) scenario (#1462) provides projections for employment by individual NAICS sectors so we can compute Metro UGB employment shares. Table 1 presents the MSA employment forecast (7-counties) and the projected share of jobs in the UGB for years 2015 and 2035.

Table 1: MSA Employment Forecast at Midpoint of Range (source: Metro Regional Forecast – baseline trend scenario and MetroScope Scen. #1462))

		Total MSA Jobs				Projected UGB Share Rate		
2 Digit	NAICS Sector	2010	2015	2035	2040	2015	2035	2040
11 & 21	Natural Resources	1,070	1,440	1,280	1,250	60%	73%	73%
23	Construction	45,050	59,920	99,270	110,880	73%	72%	72%
31-33	Manufacturing, total	107,030	119,110	124,380	127,170	80%	78%	78%
42	Wholesale Trade	53,230	60,220	79,550	82,720	84%	80%	80%
44-45	Retail Trade	101,170	113,410	144,640	150,670	74%	70%	70%
22, 48-49	TWU	33,280	37,840	45,010	46,050	79%	77%	77%
51	Information	22,460	23,470	35,570	38,310	82%	78%	78%
52	Finance & Insurance	39,960	42,580	48,340	50,980	82%	78%	78%
53	Real Estate	21,950	23,080	27,200	27,750	82%	78%	78%
54	Pro., Sci., Tech.	53,040	65,620	97,680	104,450	82%	78%	78%
55	Management of Companies	23,220	27,600	43,600	46,350	82%	78%	78%
56	Admin & Waste Mgmt.	51,550	68,370	110,390	119,670	82%	78%	78%
61	Education	24,900	27,580	32,580	34,430	86%	83%	83%
62	Health Care	114,480	127,860	194,880	206,340	80%	77%	77%
71	Arts, Entertain. & Rec.	13,640	16,660	21,830	22,730	74%	70%	70%
72	Accomm. & Food Ser.	80,830	94,030	122,270	128,280	74%	70%	70%
81	Other Services	34,600	38,020	54,730	58,880	72%	71%	71%
92	Government	147,390	153,250	201,310	214,400	71%	72%	72%
	TOTAL (excl. Natural Resources)	**967,780**	**1,098,620**	**1,483,230**	**1,570,060**	78%	75%	**75%**

The UGB share rate is simply calculated as follows: UGB jobs / MSA jobs. This is different than the capture rate, which describes the percent of new jobs that may locate in the Metro UGB.

Table 2 summarizes the employment projections by sector for the Metro UGB. (Metro operated MetroScope – a land use real estate forecast distribution model – to estimate the amount of employment that chose to settle in the Metro UGB from 2010 to 2035.)

(For brevity sake, in this section the methodology is illustrated using the baseline medium growth scenario. The same methodology is repeated for the high and low growth scenarios. The high growth forecast scenario will lead to more land demand while the low growth scenario will lead to a lower land demand result.)

Table 2: Metro UGB Employment Forecast at Midpoint of Range (source: MetroScope Scen. #1462))

		Total Jobs estimated within UGB			
2 Digit	NAICS Sector	2010	2015	2035	2040
11 & 21	Natural Resources	644	867	937	915
23	Construction	32,707	43,503	71,598	79,972
31-33	Manufacturing, total	85,377	95,013	96,600	98,766
42	Wholesale Trade	44,819	50,704	63,359	65,884
44-45	Retail Trade	74,678	83,713	101,827	106,072
22, 48-49	TWU	26,274	29,875	34,633	35,433
51	Information	18,481	19,312	27,886	30,034
52	Finance & Insurance	32,881	35,036	37,897	39,966
53	Real Estate	18,061	18,991	21,324	21,755
54	Pro., Sci., Tech.	43,643	53,995	76,577	81,885
55	Management of Companies	19,106	22,710	34,181	36,337
56	Admin & Waste Mgmt.	42,417	56,257	86,542	93,817
61	Education	21,297	23,590	26,910	28,438
62	Health Care	92,115	102,881	150,786	159,653
71	Arts, Entertain. & Rec.	10,068	12,297	15,368	16,002
72	Accomm. & Food Ser.	59,664	69,407	86,078	90,309
81	Other Services	25,034	27,509	38,755	41,694
92	Government	104,594	108,753	143,968	153,329
	TOTAL (excl. Natural Resources)	**751,862**	**854,413**	**1,115,224**	**1,180,260**

The formula for the capture rate is:
Eq. (1): Capture rate = (2035 job in UGB – 2015 job in UGB) / (2035 job in MSA – 2015 job in MSA)

(Note: The capture rate formula is different than the annual share rate.)

(Note: The annual employment shares and UGB capture rate figures change across different scenarios [as a scenario result, not as an input assumption]. This is calculated from a set of MetroScope scenarios that inform the location of where jobs will be situated either inside the Metro UGB or outside.)

Using the formula (see equation 1) and employment data from Table 1 and Table 2 produces the capture rates by employment sector displayed in Figure 2. The capture rate is a computed variable and

arrived at as a result of running a MetroScope scenario with a specified set of economic and demographic forecast assumptions and current land use policies and statewide regulations and seeing how the combination of these assumptions determine future development trends[3].

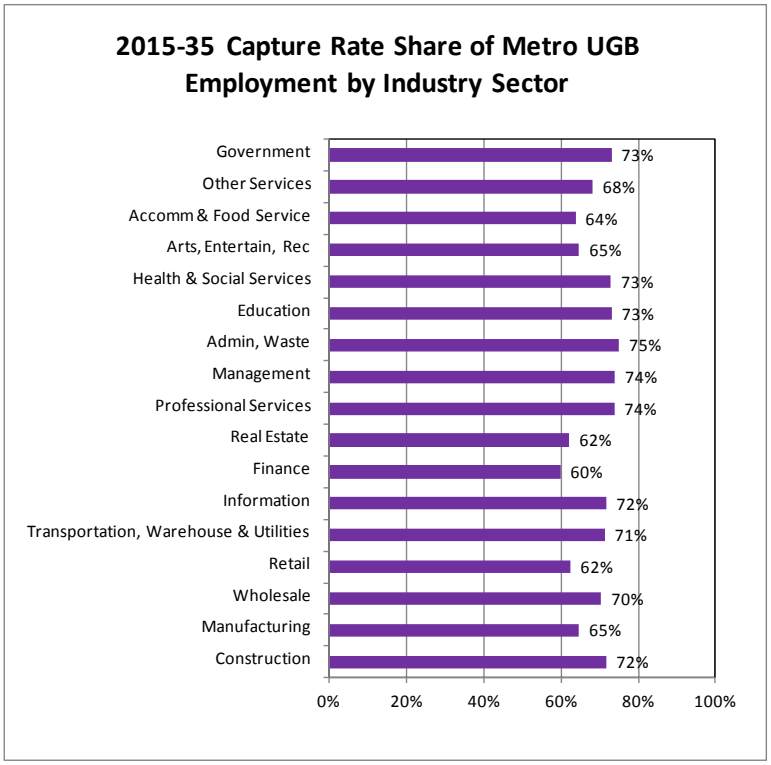


Figure 2: 2014 UGR Capture Rate Forecast Assumptions by Sector at forecast range midpoint (source: MetroScope Scen. #1462)

Step 2: Summarize employment by NAICS[4] into building types

Table 3: Metro UGB Employment Forecast at Midpoint (source: MetroScope Scen. #1462)

Building Type	Total Jobs in Metro UGB				Change	
	2010	2015	2035	2040	2015 - 2035	% APR
Office	253,506	290,162	392,878	418,186	102,717	1.5%
Institutional	100,636	109,678	150,766	159,925	41,089	1.6%
Flex	71,442	81,394	102,159	107,784	20,765	1.1%
General Industrial	87,557	100,094	120,108	126,557	20,014	0.9%
Warehousing/ Distribution	57,533	66,125	82,407	86,379	16,282	1.1%
Retail	180,544	206,095	265,969	280,514	59,875	1.3%
	751,218	853,546	1,114,287	1,179,345	260,741	1.3%

[3] Please see Appendix 11 for further MetroScope specification and forecast assumptions.

[4] NAICS stands for North American Industrial Classification System. It is a classification system to sort and organize employment into different industry categories based on similar production processes, technology and services.

Total excludes jobs in natural resources (i.e., agriculture and mining) as they are tabulated outside the Metro UGB as non-urban employment.

Table 3 is tallied from distributing individual NAICS employment (Metro UGB jobs) to each of the six building types.

Table 4: Distribution of Employment by building type (source: E. D. Hovee & Company, LLC, 2009)

		Distribution of Employment to building type						
NAICS	Sectors Represented	Office	Institution	Flex/BP	Gen Industrial	Ware-house	Retail	*check*
11 & 21	Ag, Mining *(excluded from UGB calc.)*							
23	Construction	14%	0%	18%	40%	18%	10%	*100%*
31-33	Manufacturing	8%	0%	24%	60%	8%	0%	*100%*
42	Wholesale Trade	8%	0%	22%	20%	40%	10%	*100%*
44-45	Retail Trade	5%	1%	6%	0%	12%	76%	*100%*
22, 48-49	Transportation, Warehouse & Utilitie	15%	0%	12%	13%	55%	5%	*100%*
51	Information	25%	0%	25%	40%	0%	10%	*100%*
52	Finance	72%	1%	5%	1%	1%	20%	*100%*
53	Real Estate	72%	1%	5%	1%	1%	20%	*100%*
54	Professional Services	72%	1%	5%	1%	1%	20%	*100%*
55	Management	79%	5%	8%	0%	0%	8%	*100%*
56	Admin, Waste	72%	1%	5%	1%	1%	20%	*100%*
61	Education	30%	53%	5%	1%	1%	10%	*100%*
62	Health & Social Services	30%	53%	2%	0%	0%	15%	*100%*
71	Arts, Entertain, Rec	35%	0%	10%	0%	0%	55%	*100%*
72	Accomm & Food Service	20%	1%	7%	1%	1%	70%	*100%*
81	Other Services	72%	1%	5%	1%	1%	20%	*100%*
92	Government	43%	35%	5%	1%	1%	15%	*100%*

(Note: the distribution of regional employment by building type does not change across scenarios.)

Step 3: Square Feet per employee (SFE) assumptions

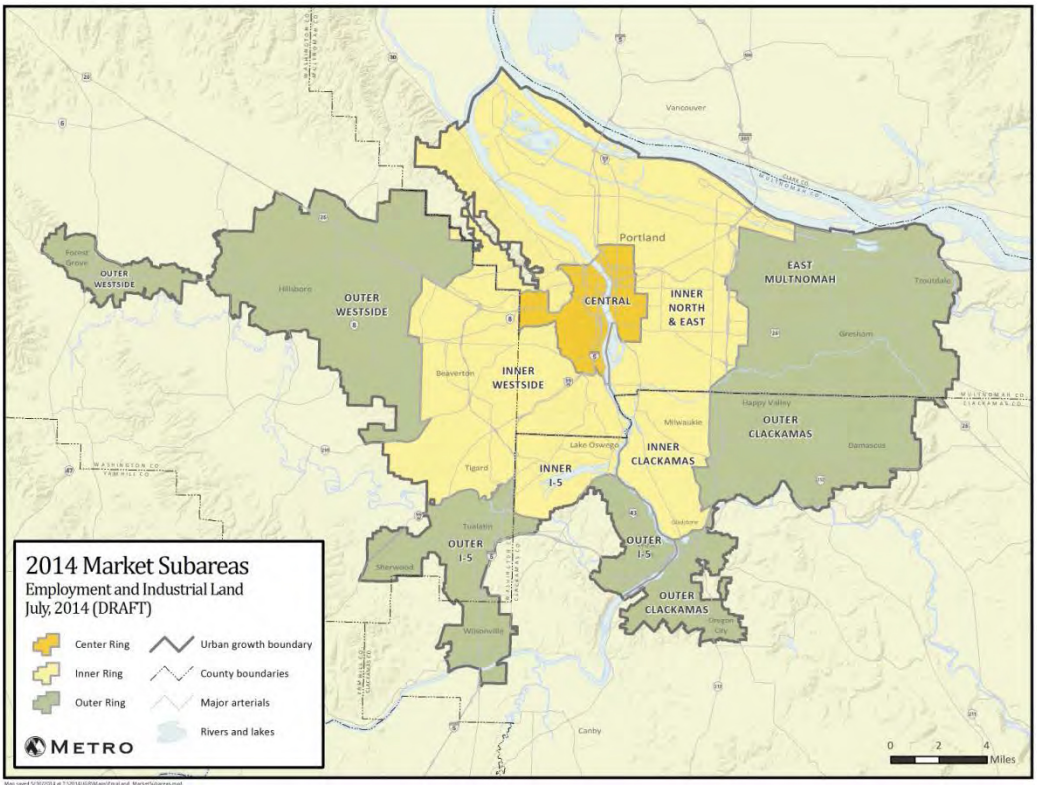
Individual building types, firms, industries and densities vary substantially from place to place. Balancing between complexity and accuracy, this analysis divides the Metro UGB into 3 major subareas: a central hub, an inner ring and an outer ring. The hub and each ring reflect a different employment density assumption to reflect differences in building types, firms, industrial composition and land use patterns in each. Map 1 illustrates the geographic subareas of these rings. The following table shows the square feet per employee (SFE) assumptions, which have been vetted by a technical review panel. It is worth noting that the job forecast does not differentiate between full-time and part-time jobs. Part-time employees often share space with other employees on different shifts, which may reduce the SFE assumption below what may be observed anecdotally.

Table 5: Square Foot per Employee Forecast Assumptions (updated by technical review panel)

CENTRAL AREA	2009 UGR	2014 UGR	
General Industrial	925	925	ind
Warehousing/ Distribution	800	800	ind
Flex	600	600	ind
Office	350	300	com
Retail	475	425	com
Institutional	600	450	com
INNER RING	**2009 UGR**	**2014 UGR**	
General Industrial	800	800	ind
Warehousing/ Distribution	1,250	1,250	ind
Flex	625	625	ind
Office	375	300	com
Retail	500	450	com
Institutional	625	500	com
OUTER RING	**2009 UGR**	**2014 UGR**	
General Industrial	600	600	ind
Warehousing/ Distribution	1,850	1,850	ind
Flex	990	990	ind
Office	375	350	com
Retail	550	500	com
Institutional	650	600	com

(Note: Square foot per employee assumptions – SFE for short – do not vary across scenarios.)

Map 1: Market Subareas (used in calculating and summarizing employment land need analysis)



Step 4: Distribute UGB employment forecast to subareas and design types

Information about employment forecast distribution to different subareas and design types is too detailed to summarize in this report, but the spreadsheet for these calculations may be provided upon request. This step takes the Metro UGB forecast by building type (shown in step two) and further disaggregates those figures into an employment forecast arrayed (9 by 8 matrix) by subareas (see Map 1) and 2040 land use design types for each of the six building types.

Step 5: Apply refill rate (NOT USED IN THIS ANALYSIS)

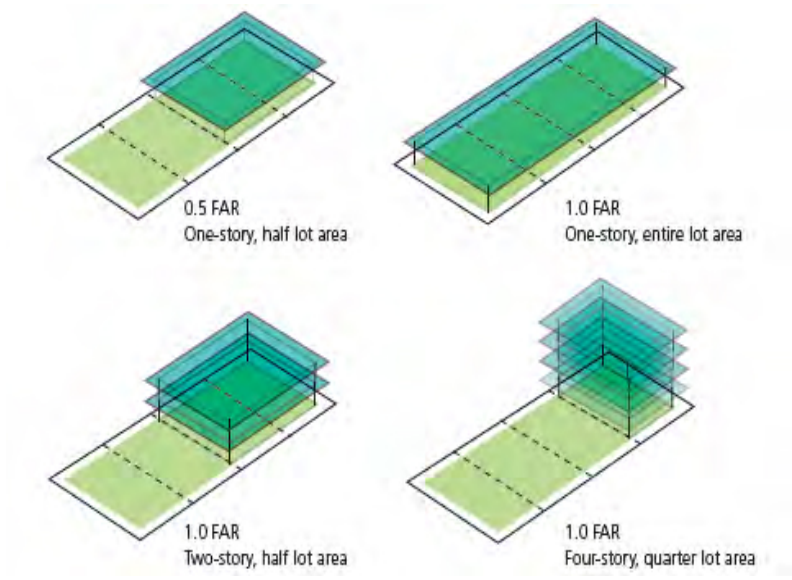
This step was used in past UGR analyses, but has been eliminated in the 2014 UGR. Instead, redevelopment supply is included in the buildable land inventory. The refill rate, formerly, was applied to the land demand forecast. For example, a general refill rate of 40 percent would reduce the amount of land need by 40 percent; the supply that the need would have been compared against would have excluded any direct measurement of redevelopment supply. Hence the old methodology compared a net demand (less refill) against vacant industrial and employment land supply.

Step 6: Apply FAR assumptions to employment forecast (by geographic subareas and 2040 land use design types)

Floor-area ratios (FAR) are used to describe site utilization. See Figure 3 for examples of different FAR concepts. FARs vary for different uses. For brevity, we show the FAR projections for each building type as follows with each arrayed by subareas (central, inner Westside, inner north & east, inner Clackamas, inner I-5, outer Westside, east Multnomah county, outer Clackamas, and outer I-5/I-205) and by 2040 design types (central city, corridors, regional centers, town centers, RSIA, industrial, employment, other neighborhoods). These FAR assumptions were vetted by a technical group consisting of public and private sector experts in industrial and commercial development.[5]

[5] A list of members from various technical review committees are shown at the end of the UGR summary document.

Figure 3: Illustration of floor-area ratio (FAR)



Floor Area Ratio Forecast Assumptions:

Table 6: General Industrial (Manufacturing) FAR

Subareas		Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central		1.00	0.50		0.60	0.50	0.50	0.50	0.50
Inner Westside			0.30	0.60	0.60		0.30	0.30	0.30
Inner North & East		1.00	0.30	0.60	0.60	0.30	0.30	0.30	0.30
Inner Clackamas			0.30	0.60	0.60	0.30	0.30	0.30	0.30
Inner I-5			0.30	0.60	0.60		0.30	0.30	0.30
Outer Westside			0.30	0.50	0.50	0.25	0.25	0.25	0.25
East Mult Co			0.30	0.50	0.50	0.25	0.25	0.25	0.25
Outer Clackamas					0.50	0.25	0.25	0.25	0.25
Outer I-5/205			0.30	0.50	0.50	0.25	0.25	0.25	0.25

Table 7: Warehouse and Distribution FAR

Subareas		Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central		1.00	0.50		0.60	0.50	0.50	0.50	0.50
Inner Westside			0.30	0.60	0.60		0.30	0.30	0.30
Inner North & East		1.00	0.30	0.60	0.60	0.25	0.30	0.30	0.30
Inner Clackamas			0.30	0.60	0.60	0.25	0.30	0.30	0.30
Inner I-5			0.30	0.60	0.60		0.30	0.30	0.30
Outer Westside			0.30	0.50	0.50	0.25	0.25	0.25	0.25
East Mult Co			0.30	0.50	0.50	0.25	0.25	0.25	0.25
Outer Clackamas					0.50	0.25	0.25	0.25	0.25
Outer I-5/205			0.30	0.50	0.50	0.25	0.25	0.25	0.25

Table 8: Tech/Flex and business parks FAR

Subareas		Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central		1.00	0.50		0.60	0.50	0.50	0.50	0.50
Inner Westside			0.30	0.60	0.60		0.30	0.30	0.30
Inner North & East		1.00	0.30	0.60	0.60	0.25	0.30	0.30	0.30
Inner Clackamas			0.30	0.60	0.60	0.25	0.30	0.30	0.30
Inner I-5			0.30	0.60	0.60		0.30	0.30	0.30
Outer Westside			0.30	0.50	0.50	0.25	0.25	0.25	0.25
East Mult Co			0.30	0.50	0.50	0.25	0.25	0.25	0.25
Outer Clackamas					0.50	0.25	0.25	0.25	0.25
Outer I-5/205			0.30	0.50	0.50	0.25	0.25	0.25	0.25

Table 9: Office FAR

Subareas		Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central		5.00	0.75		0.60	0.50	0.50	0.50	0.50
Inner Westside			0.45	0.60	0.60		0.30	0.30	0.30
Inner North & East		3.00	0.60	0.60	0.60	0.40	0.40	0.40	0.30
Inner Clackamas			0.45	0.60	0.60	0.25	0.30	0.30	0.30
Inner I-5			0.45	0.60	0.60		0.30	0.30	0.30
Outer Westside			0.45	0.50	0.50	0.25	0.25	0.25	0.25
East Mult Co			0.45	0.50	0.50	0.25	0.25	0.25	0.25
Outer Clackamas					0.50	0.25	0.25	0.25	0.25
Outer I-5/205			0.45	0.50	0.50	0.25	0.25	0.25	0.25

Table 10: Retail FAR

Subareas		Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central		1.00	0.40		0.40	0.50	0.50	0.50	0.50
Inner Westside			0.35	0.45	0.40		0.30	0.30	0.30
Inner North & East		1.00	0.35	0.45	0.40	0.25	0.30	0.30	0.30
Inner Clackamas			0.35	0.45	0.40	0.25	0.30	0.30	0.30
Inner I-5			0.35	0.45	0.40		0.30	0.30	0.30
Outer Westside			0.30	0.45	0.40	0.25	0.25	0.25	0.25
East Mult Co			0.30	0.45	0.40	0.25	0.25	0.25	0.25
Outer Clackamas					0.40	0.25	0.25	0.25	0.25
Outer I-5/205			0.30	0.45	0.40	0.25	0.25	0.25	0.25

Table 11: Institutional FAR

Subareas		Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central		5.00	0.75		0.90	0.50	0.50	0.50	0.50
Inner Westside			0.45	0.90	0.90		0.30	0.30	0.60
Inner North & East		5.00	0.60	0.90	0.90	0.40	0.40	0.40	0.80
Inner Clackamas			0.45	0.90	0.90	0.25	0.30	0.30	0.60
Inner I-5			0.45	0.90	0.90		0.30	0.30	0.60
Outer Westside			0.45	0.75	0.75	0.25	0.25	0.25	0.50
East Mult Co			0.45	0.75	0.75	0.25	0.25	0.25	0.50
Outer Clackamas					0.75	0.25	0.25	0.25	0.50
Outer I-5/205			0.45	0.75	0.75	0.25	0.25	0.25	0.50

(Note: FAR assumptions do not vary across scenarios.)

Step 8: Summarize land demand (in acres)

The demand forecast by building type is into two categories such that:

- industrial = general manufacturing + warehouse & distribution + tech flex
- commercial = office + retail + institutional.

The land demand forecast is tabulated for industrial and commercial and each is arrayed by nine subareas and eight design types (see Table 13). Table 13 shows results from the baseline medium growth scenario which details the number of acres demand between 2015 and 2035.

Similar tables for the high and low growth forecast scenario alternatives are depicted in Table 14 and Table 15. Table 12 summarizes the total forecast demand (in acres) for all 3 scenarios, with demand divided into industrial (i.e., manufacturing, warehousing/distribution and tech/flex) and commercial demand (i.e, retail, office and institutional).

Table 12: Summary of industrial and commercial land demand 2015 -2035 for the Metro urban growth boundary

Scenario Alternative	Industrial Demand (acres)	Commercial Demand (acres)
High Growth Forecast	6,491	5,727
Medium Growth Forecast	3,778	3,565
Low Growth Forecast	1,236	1,356

Table 13: Baseline - medium growth forecast scenario

Baseline - Medium Growth Scenario

Scenario: MetroScope UGR Forecast Scenario

medium scenario

Net Change: 2015-2035

Step 8 Summary: Total New Demand (ignoring vintage abandonment and refill) in Acres

All Uses Combined

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	644	238	35	-	3	20	15	131	202
Inner Westside	1,112	-	310	66	109	-	83	126	419
Inner North & East	1,923	1	410	63	48	910	63	108	320
Inner Clackamas	606	-	160	61	26	106	72	46	135
Inner I-5	481	-	95	42	50	-	6	135	153
Outer Westside	791	-	164	68	21	10	331	60	136
East Mult Co	684	-	39	40	18	78	175	50	285
Outer Clackamas	17	-	-	-	2	1	2	4	8
Outer I-5/205	1,085	-	133	17	68	4	331	310	222
Total	7,343	238	1,346	357	345	1,130	1,077	971	1,879

Central	644
Inner Ring	4,122
Outer Ring	2,577

INDUSTRIAL BUILDING TYPES

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	194	113	11	-	1	8	8	11	43
Inner Westside	525	-	171	26	18	-	61	78	171
Inner North & East	1,126	1	137	9	4	779	54	54	88
Inner Clackamas	319	-	96	9	4	89	55	23	43
Inner I-5	172	-	34	14	12	-	5	62	45
Outer Westside	492	-	83	13	6	7	289	42	51
East Mult Co	341	-	11	12	6	54	125	41	91
Outer Clackamas	10	-	-	-	1	1	1	2	5
Outer I-5/205	599	-	55	8	28	3	274	167	64
Total	**3,778**	114	599	91	80	941	872	480	602

Central	194
Inner Ring	2,142
Outer Ring	1,442

NON-INDUSTRIAL BUILDING TYPES

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	450	125	23	-	2	12	7	120	160
Inner Westside	587	-	139	40	91	-	21	48	248
Inner North & East	797	0	273	53	44	131	8	55	232
Inner Clackamas	287	-	65	53	21	17	17	22	92
Inner I-5	310	-	61	28	38	-	2	73	108
Outer Westside	299	-	81	55	15	4	42	18	84
East Mult Co	343	-	27	28	12	24	50	8	193
Outer Clackamas	7	-	-	-	1	0	1	2	3
Outer I-5/205	486	-	78	9	39	1	57	144	158
Total	**3,565**	125	747	266	265	189	206	490	1,277

Central	450
Inner Ring	1,980
Outer Ring	1,135

Table 14: High Growth Forecast Scenario Alternative

High Growth Scenario Alternative

Scenario: MetroScope UGR Forecast Scenario

high scenario

Net Change: 2015-2035

Step 8 Summary: Total New Demand (ignoring vintage abandonment and refill) in Acres

All Uses Combined

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	1,059	394	59	-	5	35	27	207	333
Inner Westside	1,875	-	528	111	171	-	144	224	698
Inner North & East	3,168	1	654	98	75	1,524	111	180	525
Inner Clackamas	1,014	-	269	96	41	177	127	79	225
Inner I-5	803	-	158	68	82	-	11	232	252
Outer Westside	1,353	-	270	108	34	16	598	105	222
East Mult Co	1,123	-	60	64	28	130	298	82	459
Outer Clackamas	28	-	-	-	3	2	3	6	14
Outer I-5/205	1,795	-	213	28	110	7	563	514	360
Total	12,218	395	2,211	573	549	1,892	1,882	1,629	3,087

Central	1,059
Inner Ring	6,860
Outer Ring	4,299

INDUSTRIAL BUILDING TYPES

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	347	199	21	-	1	14	14	20	79
Inner Westside	923	-	307	45	30	-	108	143	290
Inner North & East	1,898	1	233	15	6	1,305	98	90	150
Inner Clackamas	555	-	169	14	7	149	97	42	76
Inner I-5	297	-	58	23	20	-	8	109	78
Outer Westside	872	-	143	21	10	10	525	77	86
East Mult Co	570	-	18	19	10	90	213	69	151
Outer Clackamas	17	-	-	-	1	1	2	3	9
Outer I-5/205	1,012	-	92	14	46	5	465	283	106
Total	6,491	200	1,042	151	133	1,573	1,531	836	1,025

Central	347
Inner Ring	3,673
Outer Ring	2,470

NON-INDUSTRIAL BUILDING TYPES

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	712	195	38	-	4	22	13	187	254
Inner Westside	952	-	221	66	141	-	36	81	407
Inner North & East	1,270	0	421	83	69	219	14	90	374
Inner Clackamas	460	-	100	82	34	29	29	37	149
Inner I-5	505	-	100	45	62	-	3	122	174
Outer Westside	481	-	127	87	24	6	73	28	136
East Mult Co	553	-	42	45	18	40	85	13	309
Outer Clackamas	11	-	-	-	1	0	1	3	5
Outer I-5/205	783	-	121	14	64	2	97	232	253
Total	5,727	195	1,169	422	416	318	352	794	2,062

Central	712
Inner Ring	3,187
Outer Ring	1,828

Table 15: Low Growth Forecast Scenario Alternative

Low Growth Scenario Alternative

Scenario: MetroScope UGR Forecast Scenario

low	scenario

Net Change: 2015-2035

Step 8 Summary: Total New Demand (ignoring vintage abandonment and refill) in Acres

All Uses Combined

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	232	85	10	-	1	5	3	54	73
Inner Westside	369	-	100	22	46	-	24	33	143
Inner North & East	715	0	169	26	20	328	17	39	115
Inner Clackamas	210	-	57	27	10	38	21	13	45
Inner I-5	164	-	33	16	19	-	2	42	53
Outer Westside	250	-	61	27	9	5	81	16	50
East Mult Co	254	-	17	16	8	27	56	19	110
Outer Clackamas	6	-	-	-	1	0	1	1	3
Outer I-5/205	394	-	54	6	26	1	110	112	83
Total	2,592	85	502	141	140	404	315	329	676

Central	232
Inner Ring	1,457
Outer Ring	903

INDUSTRIAL BUILDING TYPES

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	51	33	2	-	0	2	2	3	9
Inner Westside	154	-	45	8	6	-	18	19	59
Inner North & East	402	0	47	3	1	287	14	20	30
Inner Clackamas	99	-	27	4	1	33	15	6	12
Inner I-5	54	-	12	5	4	-	1	18	13
Outer Westside	137	-	27	6	2	4	70	9	19
East Mult Co	125	-	4	5	3	20	42	16	35
Outer Clackamas	3	-	-	-	0	0	0	1	2
Outer I-5/205	211	-	20	3	12	1	94	57	24
Total	1,236	33	184	34	30	347	256	148	204

Central	51
Inner Ring	709
Outer Ring	476

NON-INDUSTRIAL BUILDING TYPES

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	181	53	8	-	1	3	2	52	63
Inner Westside	214	-	56	14	39	-	6	15	84
Inner North & East	313	0	122	23	19	41	3	19	85
Inner Clackamas	111	-	29	23	9	4	5	7	33
Inner I-5	110	-	21	11	14	-	1	24	40
Outer Westside	113	-	35	22	7	1	11	7	31
East Mult Co	129	-	13	11	5	7	14	3	75
Outer Clackamas	2	-	-	-	0	0	0	1	1
Outer I-5/205	183	-	34	4	15	0	16	54	59
Total	1,356	53	317	107	110	57	59	181	472

Central	181
Inner Ring	747
Outer Ring	427

Urban Growth Report Non-Residential Land Need Analysis

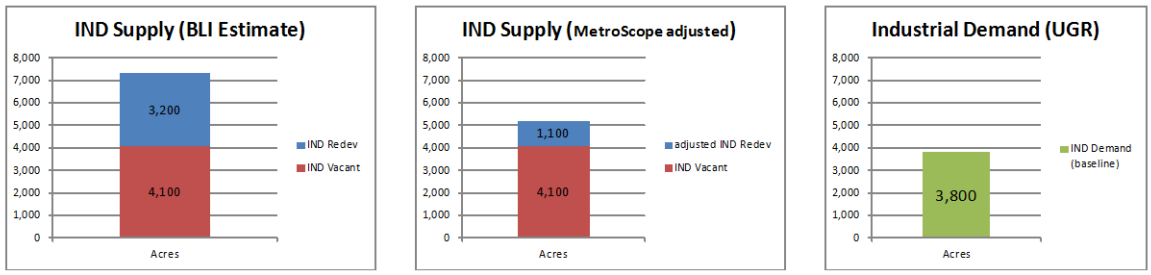
Under the baseline growth forecast, surpluses are shown for industrial and commercial need for the next 20 years (2015 to 2035). There are deficits for industrial and commercial land under the high growth forecast.

Table 16: Baseline – Medium Growth Forecast UGR Needs Assessment (Supply and Demand)

URBAN GROWTH REPORT (Non-Residential NEEDS CALCULATION) - MetroScope / BLI supply constraints — MetroScope

9/3/14 — Scen #1462

	(rounded) Acres			Adjusted Acres per Scen #1462		
IND Demand (baseline)	3,800			IND Demand (baseline)	3,800	
IND Vacant	4,100	7,300 IND SUPPLY		IND Vacant	4,100	(all buildable vacant acres are counted in UGR - adjusted for Forest Grove)
IND Redev	3,200			adjusted IND Redev	1,100	(estimated acres of industrial redev by industrial demand, remainder not counted in adjusted figure)
				less: COM use on IND redev	-1,100	(acres of industrial redev supply transferred to commercial supply)
(unadjusted) NET	3,500	surplus		(adjusted) NET	1,400	surplus



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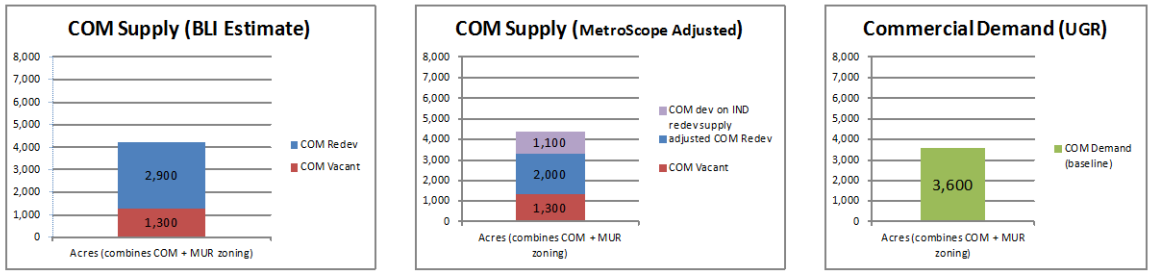
	(rounded) Acres (combines COM + MUR zoning)			Adjusted Acres per Scen #1462		
OM Demand (baseline)	3,600			COM Demand (baseline)	3,600	
COM Vacant	1,300	4,200 COM SUPPLY		COM Vacant	1,300	(all buildable commercial vacant acres are counted in UGR - adjusted for Forest Grove)
COM Redev	2,900			adjusted COM Redev	2,000	4,400 COM SUPPLY
				add: COM re-use of IND redev	1,100	(adjustment is prompted by evidence and forecast data that show redevelopment of industrial land for commercial development end uses)
(unadjusted) NET	600	surplus		(adjusted) NET	800	surplus



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- It should also be noted that a significant share of industrial redevelopment supply (potential) was shifted to commercial supply. This is an economic and real estate dynamic that can be observed in modeling as well as real life. Abandoned industrial sites that have the potential to be redeveloped - according to the forecast – in fact may not redevelop as future industrial uses but develop instead as future commercial uses[6]. This is reflected in the "transfer" of part of the

[6] A review of current employment counts for industrial areas in the region indicate a 50/50 mix of industrial and commercial jobs in industrial districts. Measured in terms of developed land area currently occupied by a business, the same 50/50 ratio exists. Firms operating in industrial district, regardless of employment type (i.e., commercial or industrial) exhibit the same job density of about 14 ½ jobs per acre.

redevelopment BLI from industrial into commercial as shown in the adjusted analysis (see Appendix 8 for additional information about this trend).

- Note the reduction made to the industrial redevelopment supply in the adjusted analysis. To say it is redevelopable from only a supply-side analysis is insufficient. The rationale for this "supply correction" is that it is not sufficient to just estimate the potential for redevelopment based on just supply assumptions, but it is also necessary to consider sufficiency of demand before we count this as supply for the BLI.

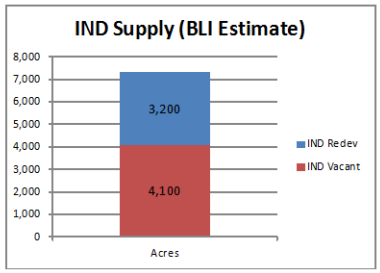
Tables 17 and 18 depict the UGR results of a high and low growth forecast scenario alternative, respectively.

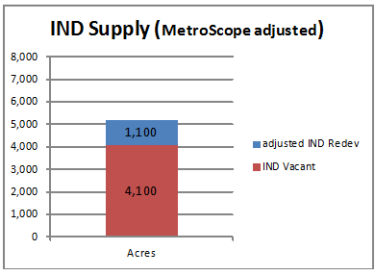
Table 17: High Growth Forecast Scenario UGR Needs Assessment

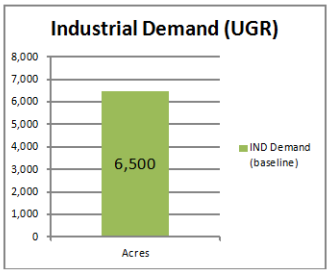
URBAN GROWTH REPORT (Non-Residential NEEDS CALCULATION) - MetroScope / BLI supply constraints — MetroScope

9/3/14 — Scen #1465

	(rounded) Acres			Adjusted Acres per Scen #1465		
IND Demand (baseline)	6,500			IND Demand (baseline)	6,500	
IND Vacant	4,100	7,300 IND SUPPLY		IND Vacant	4,100	(all buildable vacant acres are counted in UGR)
IND Redev	3,200			adjusted IND Redev	1,100	(estimated acres of industrial redev by industrial demand, remainder not counted in adjusted figure)
				less: COM use of IND redev	-1,700	(acres of industrial redev supply transferred to commercial supply)
(unadjusted) NET	800	surplus		(adjusted) NET	-1,300	DEFICIT

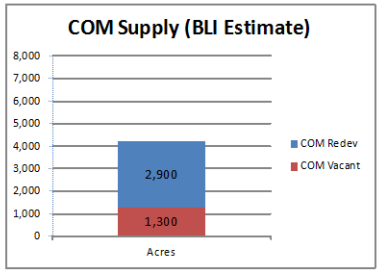


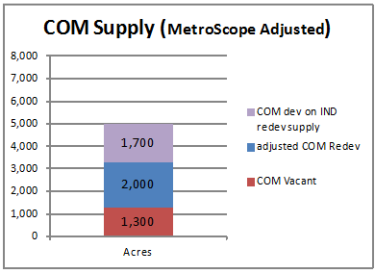




INDUSTRIAL

	(rounded) Acres			Adjusted Acres per Scen #1465		
OM Demand (baseline)	5,700			COM Demand (baseline)	5,700	
COM Vacant	1,300	4,200 COM SUPPLY		COM Vacant	1,300	(all buildable commercial vacant acres are counted in UGR)
COM Redev	2,900			adjusted COM Redev	2,000	5,000 COM SUPPLY
				add: COM re-use of IND redev	1,700	(adjustment is prompted by evidence and forecast data that show redevelopment of industrial land for commercial development end uses)
(unadjusted) NET	-1,500	DEFICIT		(adjusted) NET	-700	DEFICIT





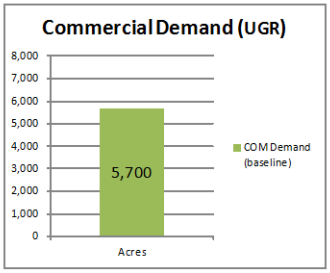


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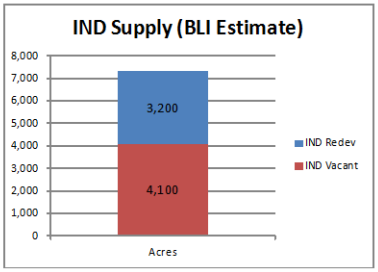
Table 18: Low Growth Forecast Scenario UGR Needs Assessment

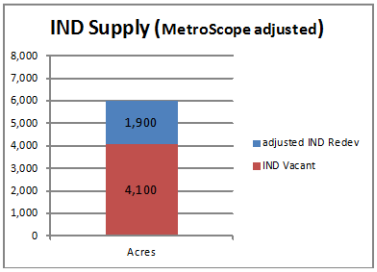
URBAN GROWTH REPORT (Non-Residential NEEDS CALCULATION) - MetroScope / BLI supply constraints — MetroScope

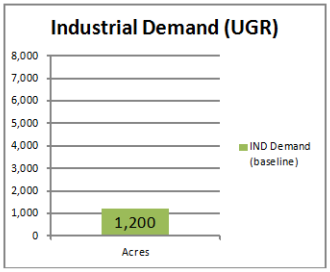
9/3/14 — Scen #1464

	(rounded) Acres
IND Demand (baseline)	1,200
IND Vacant	4,100
IND Redev	3,200
	7,300 IND SUPPLY
(unadjusted) NET	6,100 surplus

Adjusted Acres per Scen #1464		
IND Demand (baseline)	1,200	
IND Vacant	4,100	(all buildable vacant acres are counted in UGR)
adjusted IND Redev	1,900	(estimated acres of industrial redev by industrial demand, remainder not counted in adjusted figure)
less: COM use of IND redev	-300	(acres of industrial redev supply transferred to commercial supply)
(adjusted) NET	4,800 surplus	







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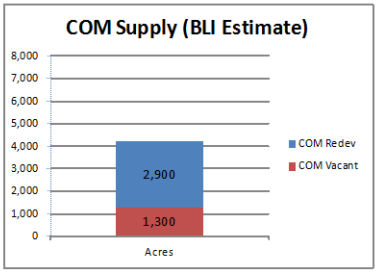
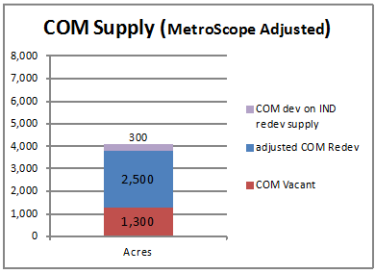
	(rounded) Acres
OM Demand (baseline)	1,400
COM Vacant	1,300
COM Redev	2,900
	4,200 COM SUPPLY
(unadjusted) NET	2,800 surplus

Adjusted Acres per Scen #1464		
COM Demand (baseline)	1,400	
COM Vacant	1,300	(all buildable commercial vacant acres are counted in UGR)
adjusted COM Redev	2,500	4,100 COM SUPPLY
add: COM re-use of IND redev	300	(adjustment is prompted by evidence and forecast data that show redevelopment of industrial land for commercial development end uses)
(adjusted) NET	2,700 surplus	





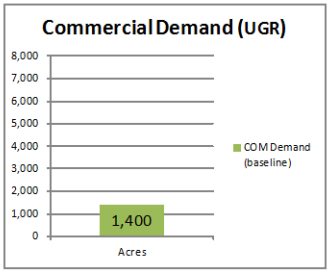


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Table 19: UGR Needs Assessment Summary Table (acres)

Scenario Alternative	Industrial SUPPLY	Industrial DEMAND	Net (surplus/deficit)
High Growth Forecast	5,200	6,500	-1,300 (deficit)
Medium Forecast	5,200	3,800	+1,400 (surplus)
Low Growth Forecast	6,000	1,200	+4,800 (surplus)

Scenario Alternative	Commercial SUPPLY	Commercial DEMAND	Net (surplus/deficit)
High Growth Forecast	5,000	5,700	-700 (deficit)
Medium Forecast	4,400	3,600	+ 800 (surplus)
Low Growth Forecast	4,100	1,400	2,700 (surplus)

Appendix 7

Large industrial site demand analysis

Introduction

A strong regional economy that provides job choices and prosperity is an important part of quality of life. The economic position of the Portland metropolitan region is partially dependent upon global factors as the world shifts towards new market realities. However, local and regional choices can shape this region's place in the global economy. Regional leaders have identified the recruitment and retention of large traded-sector industrial firms as a priority. The availability of development-ready sites is one element of this strategy. This appendix describes the methods used to estimate future demand for large industrial sites (over 25 net buildable acres). An inventory of large industrial sites is being completed for Metro and several public and private-sector partners by the consulting firm, Mackenzie. The inventory will be summarized in a separate documented that is expected to be complete by fall 2014.

Caveats and assumptions

State land use laws require that UGB expansions be based on demonstrated needs for additional land. However, demand for large sites will depend on the decisions of individual firms, so need is inherently difficult to forecast for this use. A regional employment forecast cannot predict which firms could be recruited or which existing firms could expand in the future or which specific sites they may prefer. A regional employment forecast can only provide a general framework for understanding potential demand for large sites. When it comes to large industrial sites, this question would be more appropriately handled as a policy or value statement rather than a technical demand analysis. However, this analysis, with its limitations, is the best available analysis of potential needs. Given this uncertainty, the range forecast for demand is appropriate. Caveats include:

- This analysis assumes that firm size is an indicator of site size needs. In reality some large firms use small sites and some small firms use large sites. A separate analysis finds that the correlation between firm size and site size is weak. Nevertheless, a positive relationship between firm size and site size is asserted for purposes of this assessment.
- This analysis assumes that the current distribution of firm sizes will be the same in the future. It is unknown whether future firms will be bigger or smaller than the current firm size distribution.
- As described in the Regional Industrial Site Readiness project, large industrial firms operate on quick site selection timeframes. These firms are looking for development ready sites. No amount of land will address potential demand if the public and private sector do not work together to make that land development ready.

- This analysis assumes that each NAICS employment category can be mapped to a single primary building type. In reality, one type of employment (e.g., manufacturing) could locate in several different building types.
- This analysis assumes that each building type can be represented by average values for square foot per employee (SFE), floor area ratio (FAR), and consequently, jobs per acre (jobs/acre = FAR*43560 / SFE). In reality, there will be variation, particularly since this is intended to understand demand from a narrow subset of the firms.
- This analysis assumes that the UGB capture rate from the regional forecast is 75% of new jobs. Particularly when it comes to large industrial firms, there may be good policy reasons for striving to attract a different share.

Methods

This analysis starts with the regional jobs forecast for the next 20 years (2015 to 2035). Each employment sector in the forecast is assigned to a single primary building type. In reality, employment can locate in any type of building depending on the circumstances, but the building type assignments here are made to represent an expected average density for the industry. Given the focus of regional and state economic development efforts, this analysis is limited to employment that may locate in three industrial building types – industrial manufacturing, warehouse/distribution, and tech/flex business park.

The employment forecast is converted to an establishment forecast using the 2012 distribution of firm sizes in the confidential QCEW employment data for the UGB. The establishment size distribution is specific to each building type, and therefore to the group of industries that are assigned to that building type. Then each projected new establishment is assigned to a predicted lot size bin based on the number of employees and the employment density assumptions (FAR, SFE) of the building type.

Conversion of employment sectors to building types

NAICS	Sectors	Primary building type
11 & 21	*Ag, Mining (excluded from UGB calc.)*	*NA*
23	Construction	Mfg industrial
31-33	Manufacturing	Mfg industrial
334	High tech manufacturing	Flex/BP
42	Wholesale Trade	Warehouse
44-45	Retail Trade	Retail
22, 48-49	Transportation, Warehouse & Utilities	Warehouse
51	Information	Office
52	Finance	Office
53	Real Estate	Office
54	Professional Services	Office
55	Management	Office
56	Admin, Waste	Office
61	Education	Institution
62	Health & Social Services	Institution
71	Arts, Entertain, Rec	Retail
72	Accomm & Food Service	Retail
81	Other Services	Office
	Government	*Split*
	Gov: NAICS 61-62	Institution
	Gov: all other NAICS	Office

Employment and building density assumptions by relevant building type

Building type	SFE	FAR	Jobs/acre
Mfg industrial	780	0.3	16.75
Warehouse	1,300	0.25	8.38
Flex/BP	740	0.3	17.66

UGB employment forecast by building type, assuming a 75% capture rate of the regional forecast

Low growth	**2015**	**2020**	**2025**	**2030**	**2035**	**20-year change (2015 to 2035)**
Flex/BP	23,363	22,523	22,328	22,260	22,643	-720
Mfg industrial	87,368	87,255	85,688	86,063	85,058	-2,310
Warehouse	69,810	76,410	80,153	83,933	87,225	17,415
Total	180,541	186,188	188,169	192,256	194,926	14,385

Medium growth	**2015**	**2020**	**2025**	**2030**	**2035**	**20-year change (2015 to 2035)**
Flex/BP	27,315	30,248	32,198	33,293	35,483	8,168
Mfg industrial	106,958	116,438	120,060	126,555	132,248	25,290
Warehouse	73,545	81,083	85,193	89,483	93,420	19,875
Total	207,818	227,769	237,451	249,331	261,151	53,333

High growth	**2015**	**2020**	**2025**	**2030**	**2035**	**20-year change (2015 to 2035)**
Flex/BP	31,268	37,980	42,068	44,325	48,330	17,063
Mfg industrial	126,540	145,643	154,418	167,003	179,445	52,905
Warehouse	77,288	85,740	90,218	95,048	99,615	22,328
Total	235,096	269,363	286,704	306,376	327,390	92,296

20-year UGB demand for sites by building type and lot size by growth forecast

Low growth forecast				
Building type	**25 to 49 acres**	**50 to 99 acres**	**100 acres +**	**Total sites**
Flex/BP	0	0	0	0
Mfg industrial	0	0	0	0
Warehouse	5	2	1	8
Total	5	2	1	8

Medium growth forecast				
Building type	**25 to 49 acres**	**50 to 99 acres**	**100 acres +**	**Total sites**
Flex/BP	4	1	1	6
Mfg industrial	4	1	0	5
Warehouse	6	3	1	10
Total	14	5	2	21

High growth forecast				
Building type	**25 to 49 acres**	**50 to 99 acres**	**100 acres +**	**Total sites**
Flex/BP	8	2	2	12
Mfg industrial	7	3	1	11
Warehouse	7	3	1	11
Total	22	8	4	34

Conclusion

Retaining the detail about building types and site sizes in a statement of 20-year regional need implies more certainty and precision than is appropriate for this kind of analysis. Because of all of the caveats and limitations associated with this analysis, a more general statement about potential demand for large industrial sites is appropriate.

With the assumptions made in this analysis, there is a potential regional 20-year demand for 8 to 34 large (over 25 net buildable acres) industrial sites.

The supply (inventory) of large industrial sites inside the UGB will be described in a separate document that is being completed by the consulting firm Mackenzie.

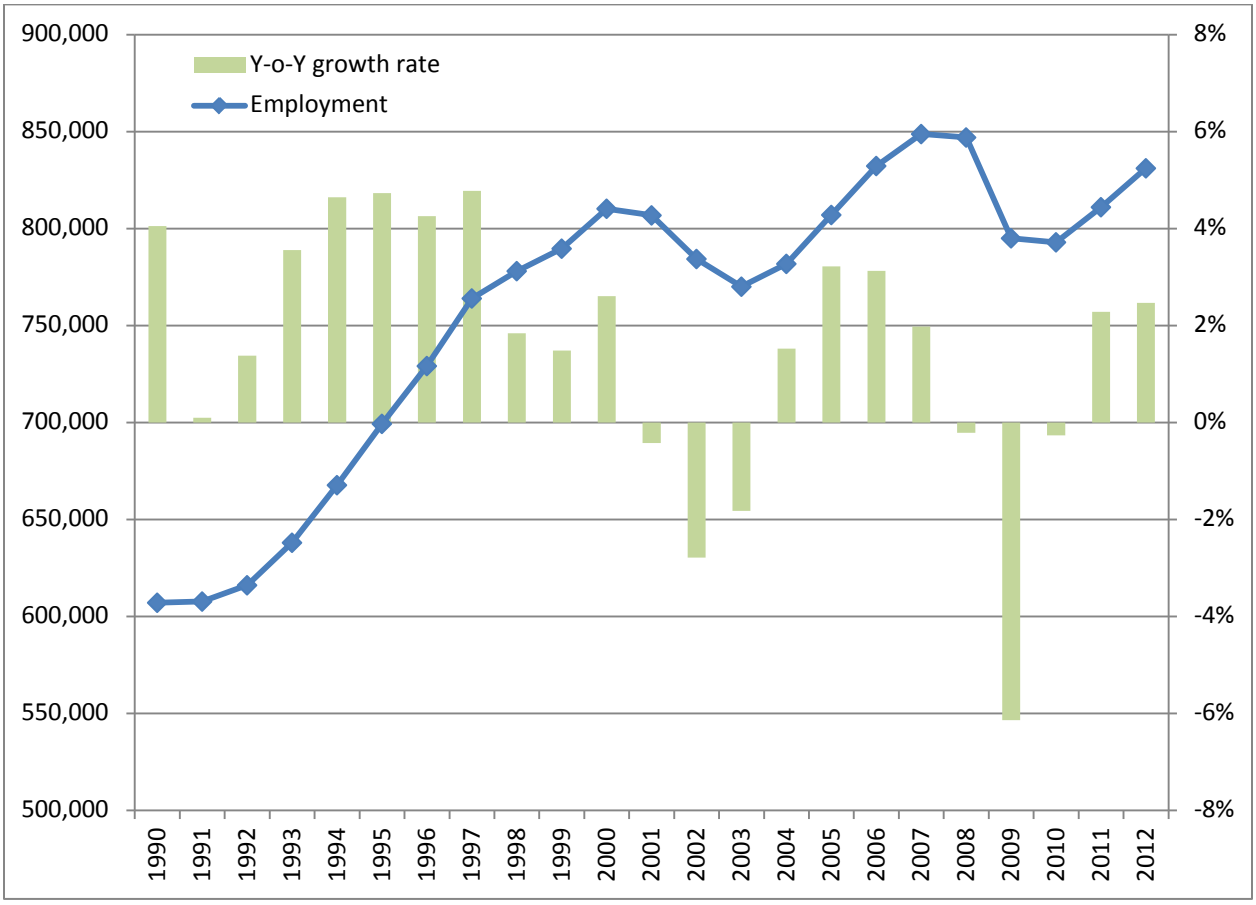
Appendix 8
Employment trends

Introduction
This report is intended to provide additional understanding of the employment trends that have been occurring inside the Metro urban growth boundary from 2006-2012 (the last analysis completed included data through 2006). This report includes information about overall employment levels, employment by sector, and employment location trends.

This analysis is primarily focused on employment trends over the last seven years, and relies on geocoded employment data from the Quarterly Census of Employment and Wages for the years 2006 and 2012.

Overall employment
Tri-county total employment is essentially unchanged from 2006 to 2012. The number of jobs in the region reached a peak in late 2007 to early 2008, just before the Great Recession hit. After hitting a low point in late 2009, the region returned to positive employment growth in 2010, and finally surpassed the pre-recession peak in 2013.

Figure 1: Three county covered employment (1990 to 2012)



Source: OLMIS

Data limitations

The Quarterly Census of Employment and Wages (QCEW) is the best available source of detailed employment data for the region. The confidential disaggregate data from the QCEW program allow for analysis of employment sectors and subareas throughout the region, however, the data set has some limitations that should be kept in mind. QCEW includes all employment that is covered by unemployment insurance, comprising about 99.7 percent of all wage and salary employment. There are some significant exclusions from the program though, including the self-employed, agricultural workers, military, railroad employees and other categories of workers. In addition, participating employers have some flexibility in how they report the location and sector of employment, which may lead to inconsistencies in the data over time. There are two significant potential sources of error related to this issue:

(1) The NAICS code is self-reported, so employers may change their NAICS designation(s) over time for a variety of reasons. Some employers have multiple records at the same address, so that each reporting unit can be assigned the most appropriate NAICS designation. As employers fine-

tune their reporting for unemployment insurance purposes, comparisons over time may show shifts in the regional industry mix that do not represent any real changes in the jobs that people are doing.

(2) Firms that have employees spread across multiple site (for example, a large retail chain) typically report each location as a separate establishment. The multi-establishment reporting may not be consistent across different data sets, and has generally tended toward more detail over time. These inconsistencies may result in geographic shifts in the employment data when there have not been any real changes in where jobs are located.

Employment by industry

Total employment in the region was essentially unchanged in 2012 compared to 2006, though the Great Recession did lead to some major changes across industries. Private education recorded the highest growth rate at 25.4 percent over the period, while health and social assistance employers saw the largest net gain in employment, with just over 14,000 jobs added. Construction saw the largest decline, with a loss of around 9,600 jobs, or 20.2 percent of jobs in the industry as of 2006. The loss of construction jobs is indicative of the housing crash that brought residential construction nearly to a halt for several years.

Table 1: Three county employment by sector

General Sector	NAICS	Industry	2006 Emp	2012 Emp	Net Change	% Change	AAGR
		Total	832,364	831,184	-1,180	-0.1 %	0.0 %
Industrial	11, 21	Ag & Mining	10,106	8,907	-1,199	-11.9 %	-2.1 %
	23	Construction	47,607	37,972	-9,635	-20.2 %	-3.7 %
	31-33	Manufacturing	103,959	94,148	-9,811	-9.4 %	-1.6 %
	42	Wholesale	51,500	49,087	-2,413	-4.7 %	-0.8 %
	22, 48-49	Trans, Warehousing & Utilities	31,779	28,197	-3,582	-11.3 %	-2.0 %
Retail	44-45	Retail	86,921	84,475	-2,446	-2.8 %	-0.5 %
Service	51	Information	20,480	19,823	-657	-3.2 %	-0.5 %
	52	Finance & Insurance	38,814	35,131	-3,683	-9.5 %	-1.6 %
	53	Real Estate	15,570	13,322	-2,248	-14.4 %	-2.6 %
	54	Prof, Scientific & Tech Services	43,467	50,392	6,925	15.9 %	2.5 %
	55	Management	20,977	21,944	967	4.6 %	0.8 %
	56	Admin, Support & Waste	52,649	49,009	-3,640	-6.9 %	-1.2 %
	61	Education	14,986	18,787	3,801	25.4 %	3.8 %
	62	Health and Social Assistance	81,282	95,610	14,328	17.6 %	2.7 %
	71	Arts, Enter & Recreation	10,982	11,389	407	3.7 %	0.6 %
	72	Accommodation & Food	65,859	71,513	5,654	8.6 %	1.4 %
	81	Other Services	31,404	32,596	1,192	3.8 %	0.6 %
Gov	Gov	Government	103,736	108,582	4,846	4.7 %	0.8 %

Source: OLMIS

Aggregating to more broad industry groups, shown in Table 2, industrial and retail employment declined from 2006 to 2012 while service and government employment increased. This decline in industrial employment is a continuing trend that was also noted in the 2009 Urban Growth Report. One result of

this shift in the employment mix is a shift in what kinds of employers are occupying land and buildings in the region that are zoned for, or were historically used for, industrial purposes. Many areas in the region with industrial zoning are currently housing more commercial employment than industrial employment. This trend is quite visible in some formerly industrial neighborhoods such as the Central Eastside in Portland, where about two thirds of current employment has a nonindustrial NAICS classification. On the other hand, some of the large industrial parks managed by the Port of Portland, including Swan Island, Rivergate and Troutdale, are split with roughly two thirds of employment in industrial sectors and one third in commercial. Regionally, about half of the employment located in industrially zoned areas has an industrial NAICS designation (as defined in Table 1). Additional data about commercial employment in industrial zones are included at the end of this report.

Table 2: Three county employment by general sector groups

Ownership	General Sector	2006 Emp	2012 Emp	Net Change	% Change	AAGR
Private	Industrial	244,951	218,311	-26,640	-10.9 %	-1.9 %
	Retail	86,921	84,475	-2,446	-2.8 %	-0.5 %
	Service	396,470	419,516	23,046	5.8 %	0.9 %
Public	Gov	103,736	108,582	4,846	4.7 %	0.8 %

Source: OLMIS

UGB employment by subarea

Shifting the focus to the urban growth boundary, the region has been divided into nine subareas in order to examine the spatial distribution of employment in the region. The subareas are depicted in Map 1. These subareas can be aggregated into three broad ring geographies as follows:

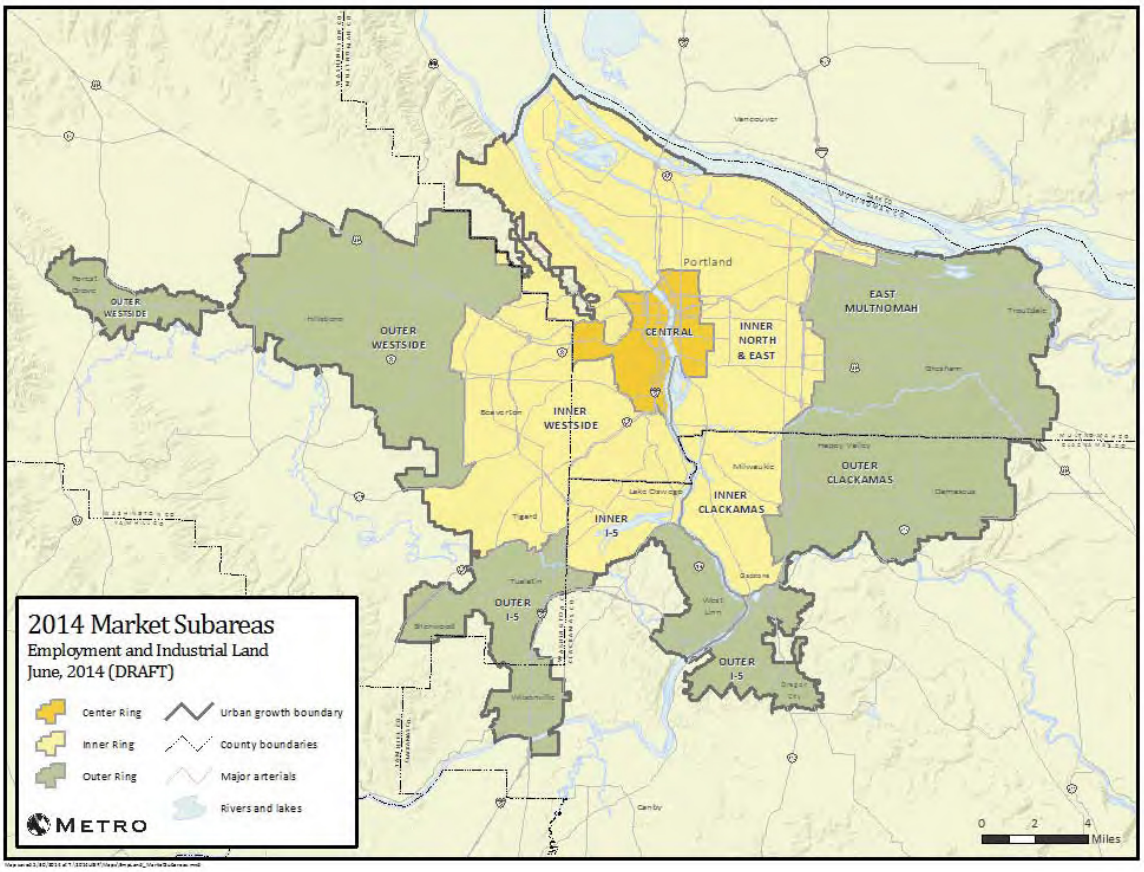
- **Central**: Central
- **Inner ring**: Inner North and Northeast, Inner Clackamas, Inner I-5, Inner Westside
- **Outer ring**: East Multnomah, Outer Clackamas, Outer I-5 / I-205, Outer Westside

The rationale for the subareas derives from the 1) semi-circular ring geometries; 2) market subarea differences within each ring; 3) and 2000 census tract delineations. The ring geometry recognizes relative differences in valuation of real estate and other economic factors with respect to proximity to a central business hub. Furthermore, as distance away from that center increases, the economic valuation and other economic factors are hypothesized to vary. The designation of market subareas for each ring further recognizes the heterogeneity inherent, particularly in real estate development patterns and valuations, within each ring. Delineation of the market subareas was based on grouping of census tracts which loosely seemed to have similar socio-economic characteristics and with the requirement that each subarea had to be contiguous and compact in shape.

The rings are set up so that floor area ratios and square foot per employee assumptions for the urban growth report analysis on future employment land need can be analyzed at more defined geographic precision. This addresses past concerns about the lack of variations in job density and land need

intensity due to the inherent uneven distribution that exists between urban and suburban development trends for industrial and commercial growth inside the UGB.

Map 1: Market subareas used for employment analysis



Employment statistics from the QCEW program get less accurate as we drill down into subarea and sector details due to the limitations discussed previously. The changes described in this section may be due to real shifts in employment or changes in reporting over time, and likely reflect a bit of both.

Figure 2 shows the total number of jobs in 2006 and 2012 by subarea, while Figure 3 includes the total percent change over the time period as well as the average annual growth rate. The central part of the region is still home to a significant number of jobs, but the subarea experienced a loss of about 2,300 jobs, or 1.2 percent, over the period from 2006 to 2012. The Inner I-5 area saw a decline in employment of roughly 2,200 jobs, or 11.0 percent of 2006 employment. Map 2 highlights this as the largest percentage loss of jobs in the region, though the total number of jobs located there is small compared to other subareas. This area was home to many firms involved in real estate and finance, industries that were hit hard by the housing collapse and recession. Many businesses in the area, like mortgage and title companies, contracted or closed over this time period and left the vacancy rate in the Kruse Way

offices at 22.4 percent in 2012. In the southeastern part of the region, the Outer Clackamas and Outer I-5 subareas together lost about 3,400 jobs or 3.2 percent. In contrast, the Outer Westside experienced the greatest increase in employment, gaining about 5,800 jobs, an increase of 5.6 percent. The East Multnomah subarea also gained jobs, increasing employment by 1,800 or 2.7 percent.

Figure 2: Total employment by subarea for 2006 and 2012

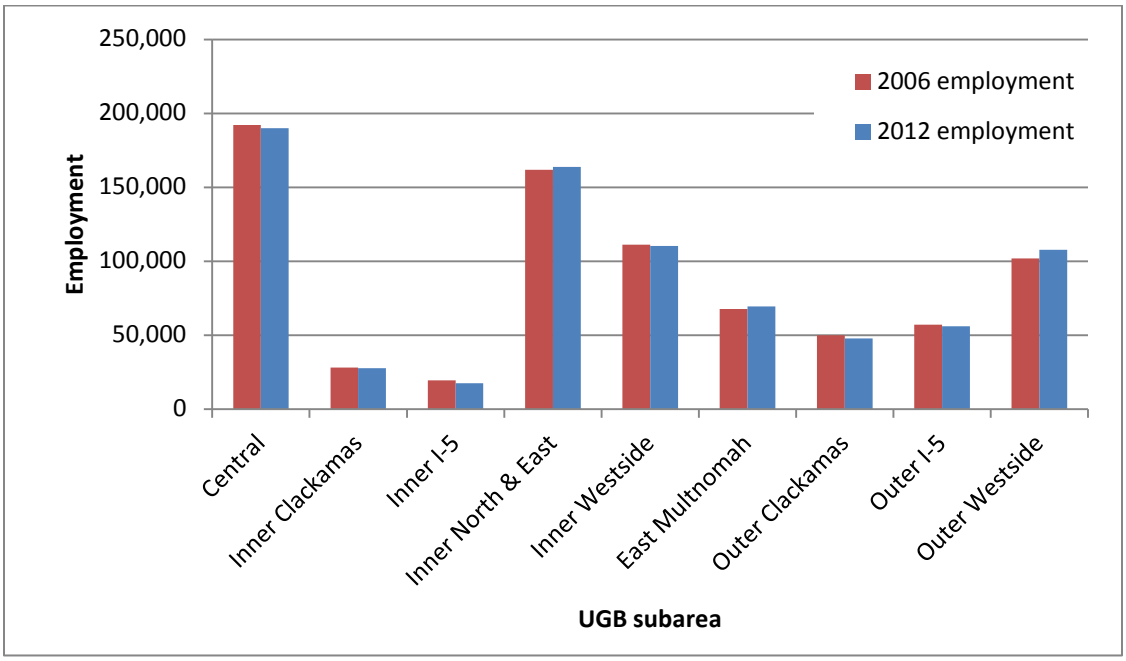
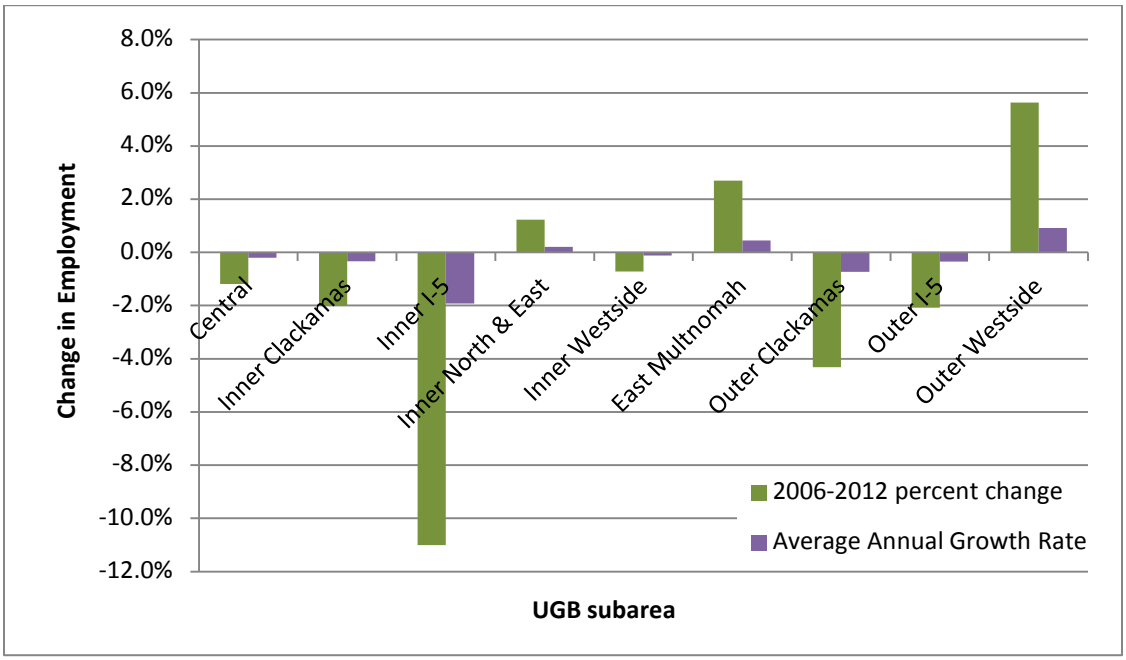
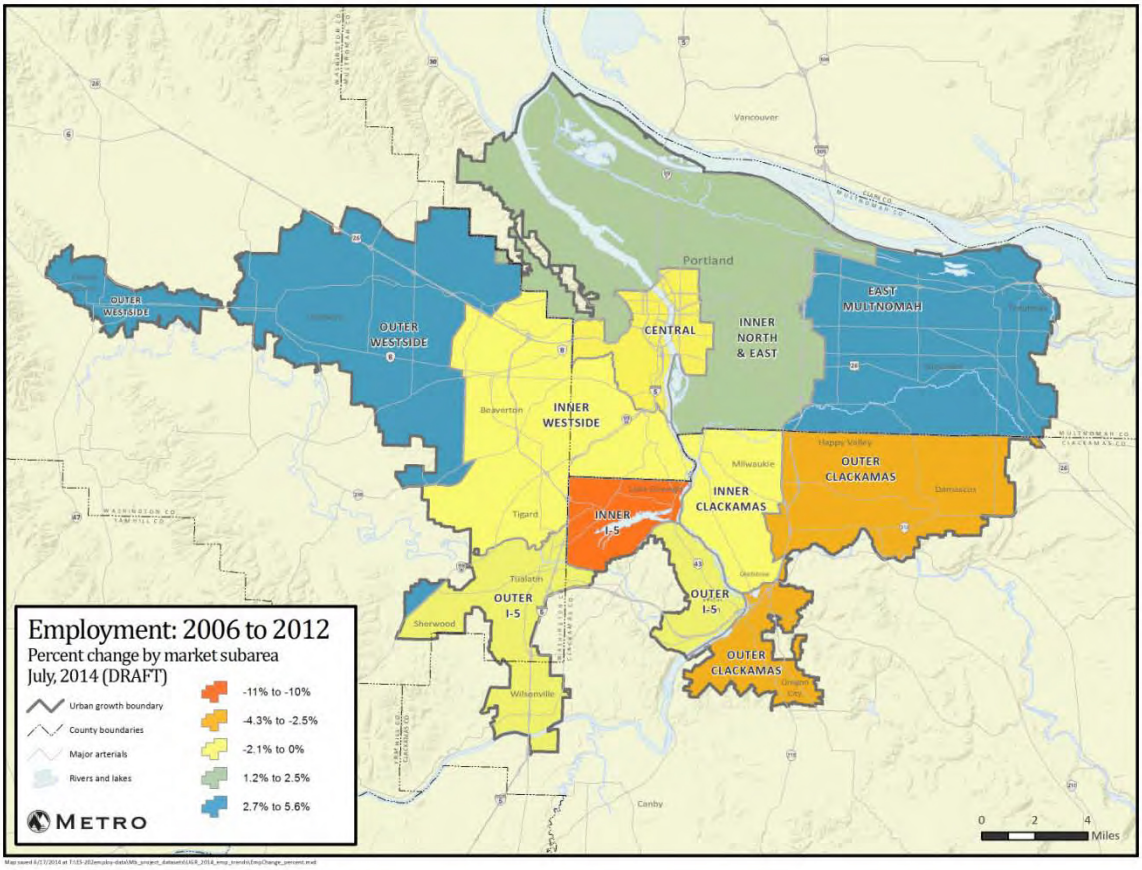


Figure 3: Percent change in employment and AAGR by subarea, 2006 to 2012



Map 2: Percent change in employment, 2006 to 2012, mapped by subarea



Industrial employment has declined throughout most of the region, particularly in the inner ring geography. The decline in industrial employment in the UGB of 22,900 jobs was mostly offset by an increase of 21,400 jobs in the service sector, as shown in Table 3. About one-third of the decline in industrial employment can be attributed to lost construction jobs, however all of the industrial sectors lost employment from 2006 to 2012. Geographically, the number of industrial jobs lost was most pronounced in Inner North & East and the Inner Westside, where industrial employment declined by about 15,400 jobs in the two subareas combined.

Table 3: Employment change by general sector and ring geography

Ring Geography	**Central**	**Inner**	**Outer**	**UGB Total**
Employment sector	Net change in employment 2006-2012			
Government	-500	2,600	2,100	4,200
Industrial	-2,500	-16,100	-4,300	-22,900
Retail	-300	-1,200	-900	-2,400
Services	800	13,200	7,300	21,400
Total	-2,300	-1,500	4,200	400
	Percent change 2006-2012			
Government	-1.1 %	11.7 %	6.5 %	4.4 %
Industrial	-11.9 %	-15.4 %	-4.3 %	-10.2 %
Retail	-2.1 %	-3.2 %	-2.7 %	-2.8 %
Services	0.7 %	8.5 %	6.5 %	5.5 %
Total	-1.2 %	-0.5 %	1.5 %	0.0 %

Employment in Title 4 Industrial and Employment Areas

Title 4 (Industrial and Other Employment Areas) of the Urban Growth Management Functional Plans seeks to protect industrial areas from conflicting commercial retail uses. Areas designated under Title 4 (see Map 3) are home to about a third of the region's employment. Table 4 summarizes the shares of employment by sector in Title 4 areas. From 2006 to 2012, there was a slight increase in the share of employment that is industrial. Total employment in areas designated as "Employment" or "Industrial" land increased over the study period while employment in "Regionally Significant Industrial Areas" and undesignated areas declined, as shown in Table 5.

Map 3: Title 4, Industrial and Other Employment Areas Map

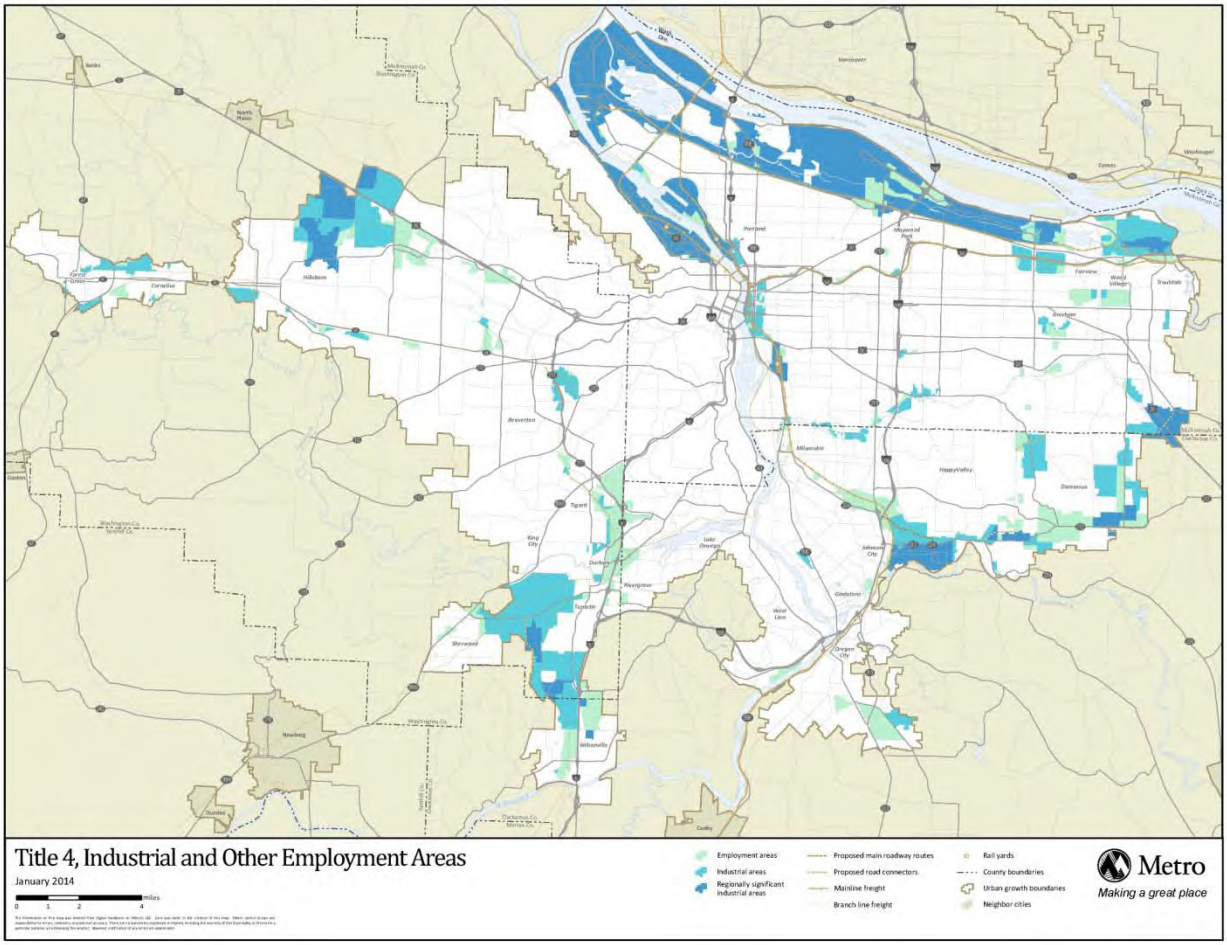


Table 4: Employment by sector in Title 4 areas

	Share of employment in Title 4 designated areas	
Sector	**2006**	**2012**
Government	11.5 %	14.9 %
Industrial	68.1 %	72.5 %
Retail	17.3 %	17.5 %
Services	17.8 %	19.4 %
Grand Total	31.3 %	32.2 %

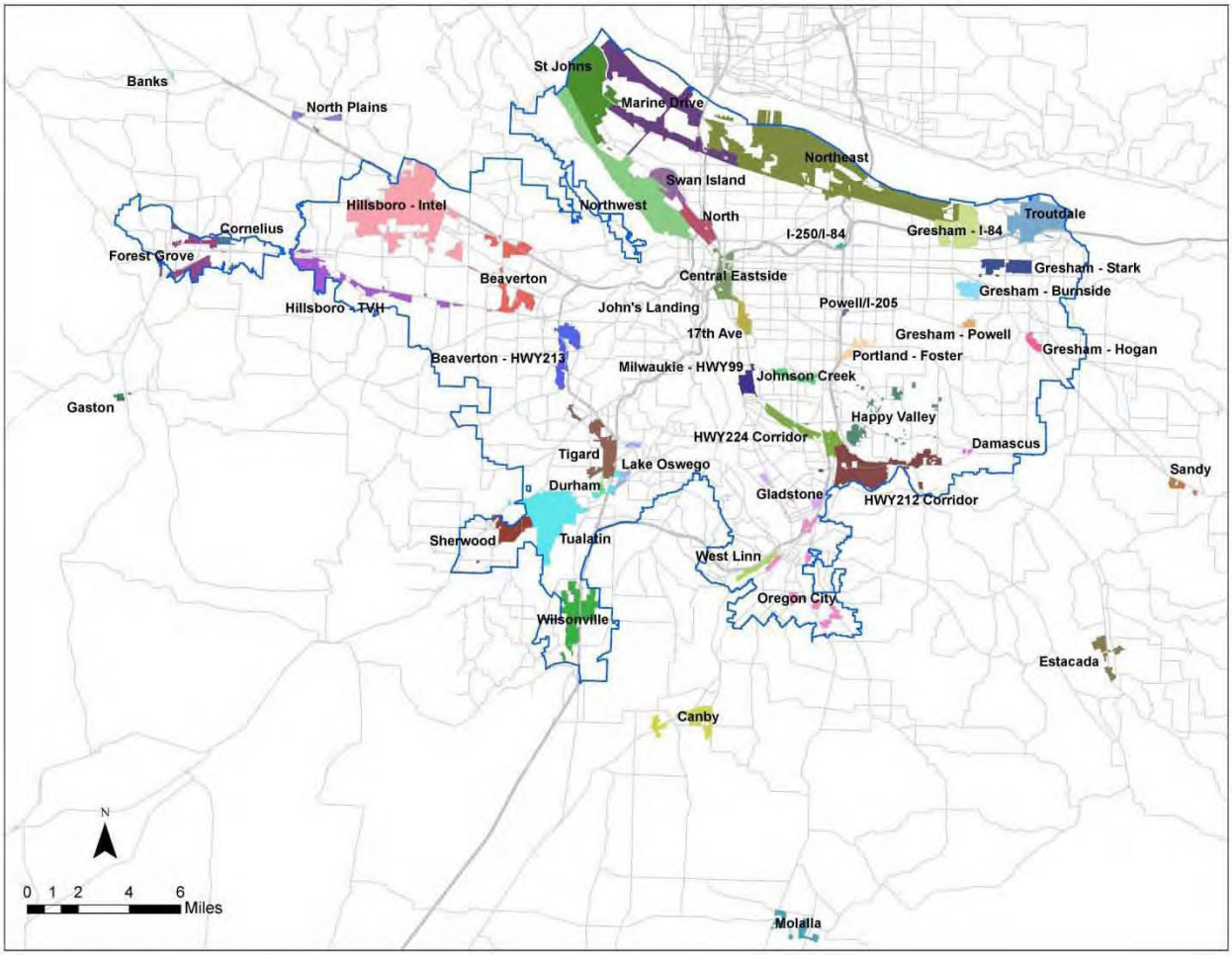
Table 5: Employment changes in Title 4 areas (2006 - 2012)

Title 4 designation	Employment	Industrial	RSIA	Non-Title 4	UGB Total
2012 employment	95,200	83,500	75,800	536,700	791,200
2012 employment share	12.0 %	10.6 %	9.6 %	67.8 %	100.0 %
Net change 2006-2012	3,300	6,600	-2,700	-6800	400
% change 2006-2012	3.61 %	8.55 %	-3.46 %	-1.25 %	0.0 %
Annualized growth 2006-2012	0.59 %	1.38 %	-0.59 %	-0.21 %	0.01 %

Commercial and industrial mix in industrial zones

Commercial employment in industrial zones is a common phenomenon and one that is not necessarily negative as some commercial uses may serve the needs of industrial employees or firms. This mix of employment uses in industrial zones is the rationale behind making some of the industrial redevelopment supply in the 2014 buildable land inventory available to meet forecast commercial employment demand (see demand analysis in Appendix 6). The following pie charts depict the share of industrial and commercial employment in various industrial zones in the three-county area for the year 2010 (depicted in Map 4).

Map 4: Industrial zones in the three-county area



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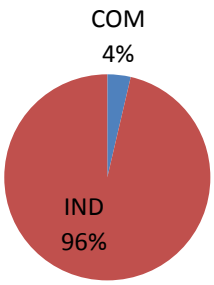

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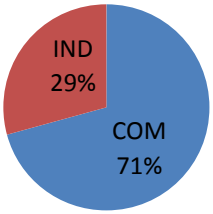

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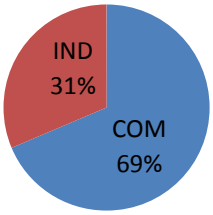

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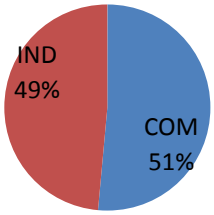

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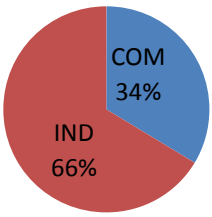

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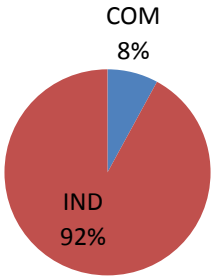

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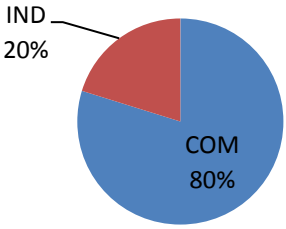

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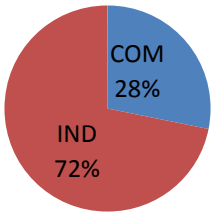

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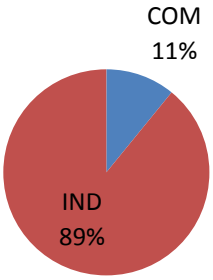

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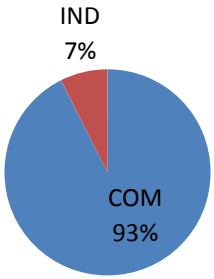

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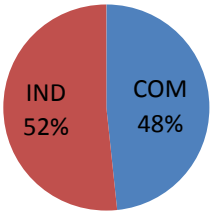

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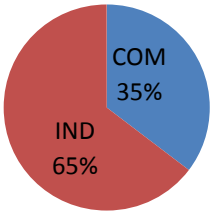

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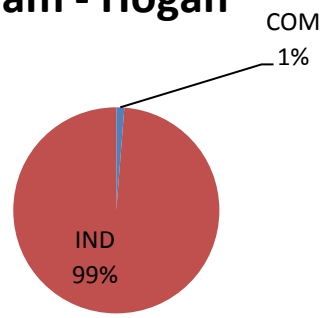

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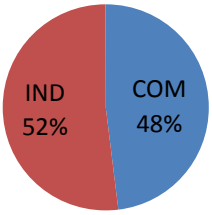

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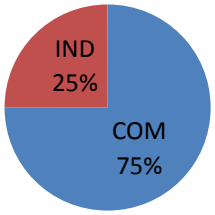

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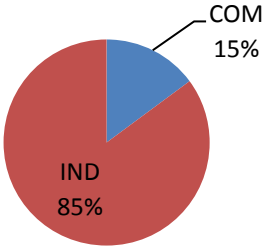

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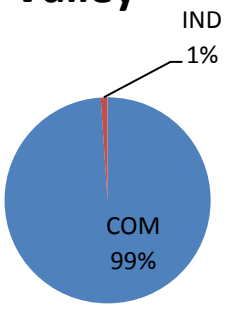

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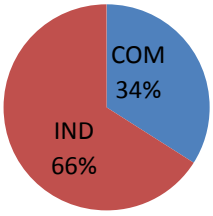

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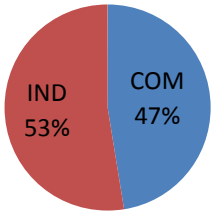

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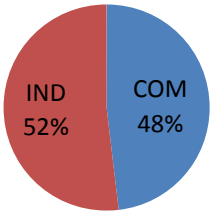

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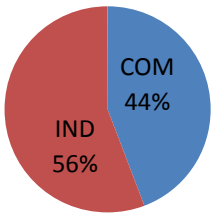

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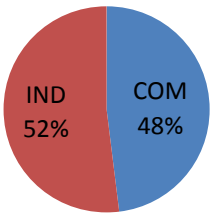

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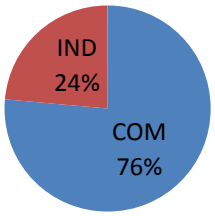

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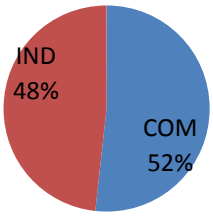

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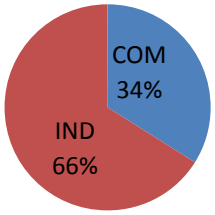

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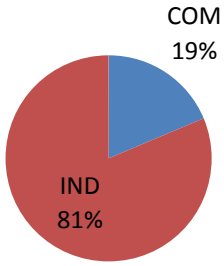

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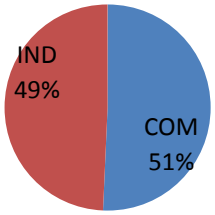

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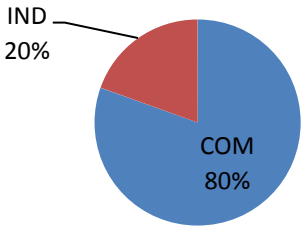

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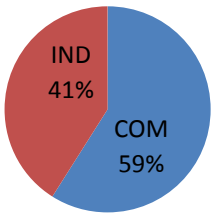

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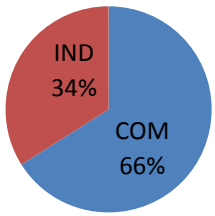

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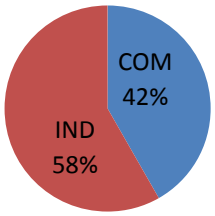
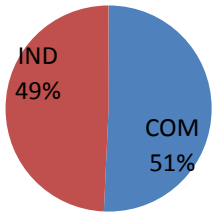
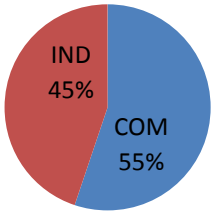


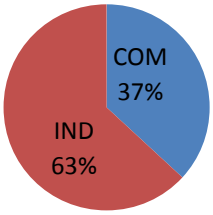
Portland - I-205/I-84
17 ac



Portland - John's Landing
2 ac



Portland - Northwest
4893 ac



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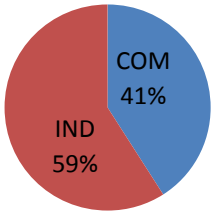

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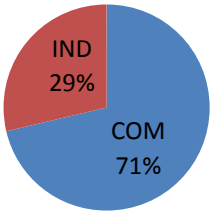

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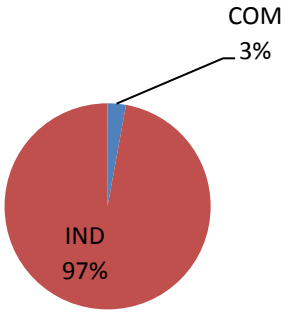

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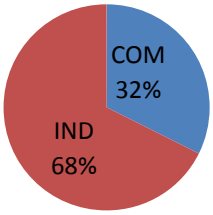

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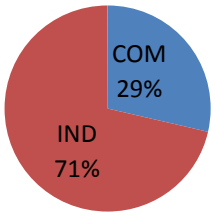

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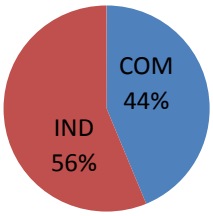

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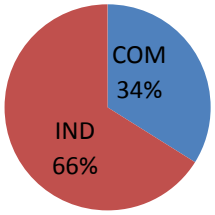

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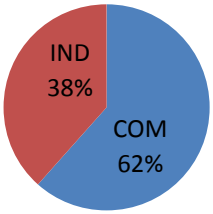
647 ac



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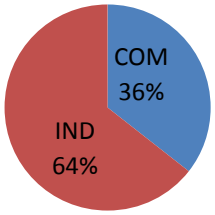

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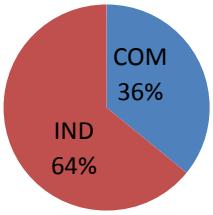

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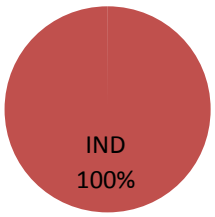

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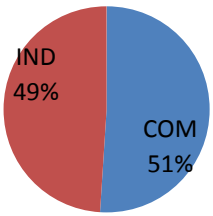

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Quarterly Census of Employment and Wages: Frequently Asked Questions (http://www.bls.gov/cew/cewfaq.htm)

Culverwell, Wendy. May 5, 2012. "Momentum gathers for Kruse Way" (http://www.bizjournals.com/portland/blog/2012/05/momentum-gathers-for-kruse-way.html)

Aggregate Covered Employment and Wages data available from OLMIS at http://www.qualityinfo.org/olmisj/CEP

Appendix 9
Employment land site characteristics

Background

Under Division 24 (Urban Growth Boundaries) of the Oregon Administrative Rules, Metro is required to complete an employment land inventory that describes site characteristics of buildable lands inside the urban growth boundary (as described in Division 9, Economic Development). Cities and counties, in the course of their own planning efforts, are responsible for determining whether sites are suitable for particular uses that match their economic development objectives. This is an appropriate approach given the regional scale of this inventory and the desire to not replicate or supplant local efforts.

The approach used for this analysis is also informed by Division 9 (Economic Development) of the Oregon Administrative Rules, that states "The effort necessary to comply… will vary depending on the size of the jurisdiction…" and that "a jurisdiction's planning effort is adequate if it uses the best available or readily collectible information..." This clause acknowledges that a detailed region-wide analysis of employment sites is not feasible either to complete or interpret in any meaningful fashion.

This analysis uses a general approach that has been developed in consultation with Oregon Department of Land Conservation and Development staff. Table 1 summarizes the site characteristics mentioned in the Administrative Rules and the various data points that have been used to summarize these characteristics. For practical reasons, this report presents regional maps and summary tables. Metro can provide its tax lot level buildable land inventory GIS database on request. Employment land is organized into three categories for this analysis:

- Commercial land
- General industrial land
- Large industrial sites (maps depict dots for each tax lot that comprises a large site; some sites may consist of multiple tax lots)

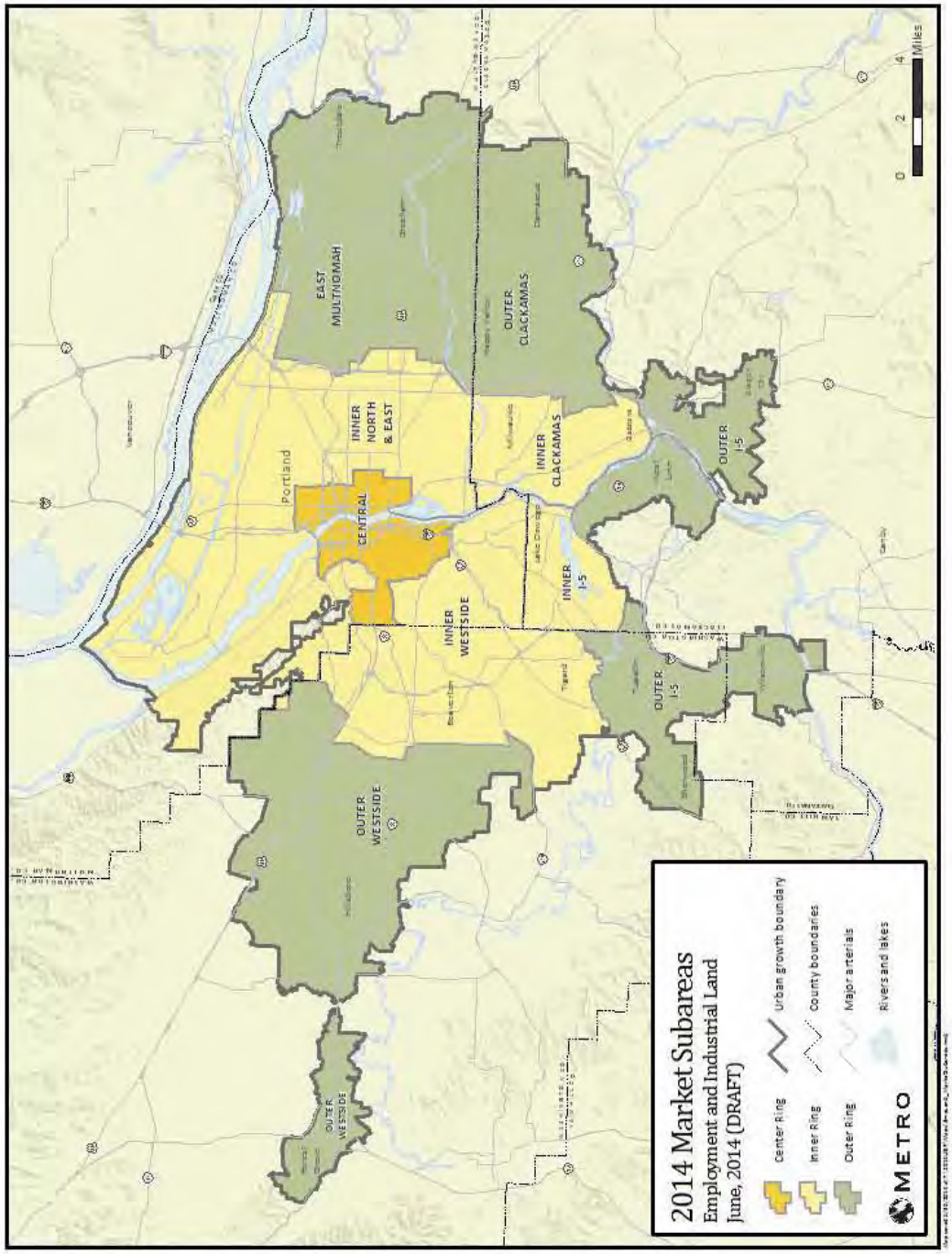
Table 1: summary of approach for describing site characteristics

OR Administrative Rules Division 9 – Economic Development	Metro employment land inventory approach
Description of minimum acreage or site configuration characteristics including shape and topography	Acreage – summary tables of net buildable acreages are provided. Metro can provide its tax-lot-level buildable land inventory GIS database on request. Shape - site shapes cannot be summarized in any meaningful fashion at the regional scale, but the GIS database includes a visual depiction of the shape of each tax lot in the inventory. Metro can provide its tax-lot-level buildable land inventory GIS database on request. Topography - portions of tax lots with slopes over 25% have been removed from the inventory since they are deemed unbuildable. This report describes, as a site characteristic, the portion of each inventoried tax lot that has a slope between 7-25%. This range was chosen because slopes over 7% are often regarded as an impediment to industrial uses with larger development footprints.
Visibility	This characteristic is taken to mean visibility from a public right of way. For each tax lot in the inventory, distance to the nearest major arterial is computed.
Specific types of public facilities, services or energy infrastructure	Region-wide data to address this site characteristic are not readily available. For public security reasons, Metro does not have access to data on where power and gas transmission lines are. Metro also do not have access to data on where water and sewer facilities are located. The inventory depicts the following: -Sewer district name -Water district name -Fire district name -Distance to closest major arterial
Proximity to a particular transportation or freight facility such as rail, marine ports and airports, multimodal freight or transshipment facilities, and major transportation routes.	-Distance to nearest rail terminal -Distance to transhipment facilities -Distance to major arterial -Distance to designated freight route -Distance to airport -Distance to marine terminals -Transit access index rating
Description of any development constraints or infrastructure needs that affect the buildable area of sites in the inventory	-Number of environmentally constrained acres (note – these acres are removed from buildable land inventory). -Inside or outside marine use restriction area -Inside or outside an aviation overlay zone -Average volume-to-capacity ratio for traffic in surrounding area -Portion of each tax lot that has a slope between 7-25%

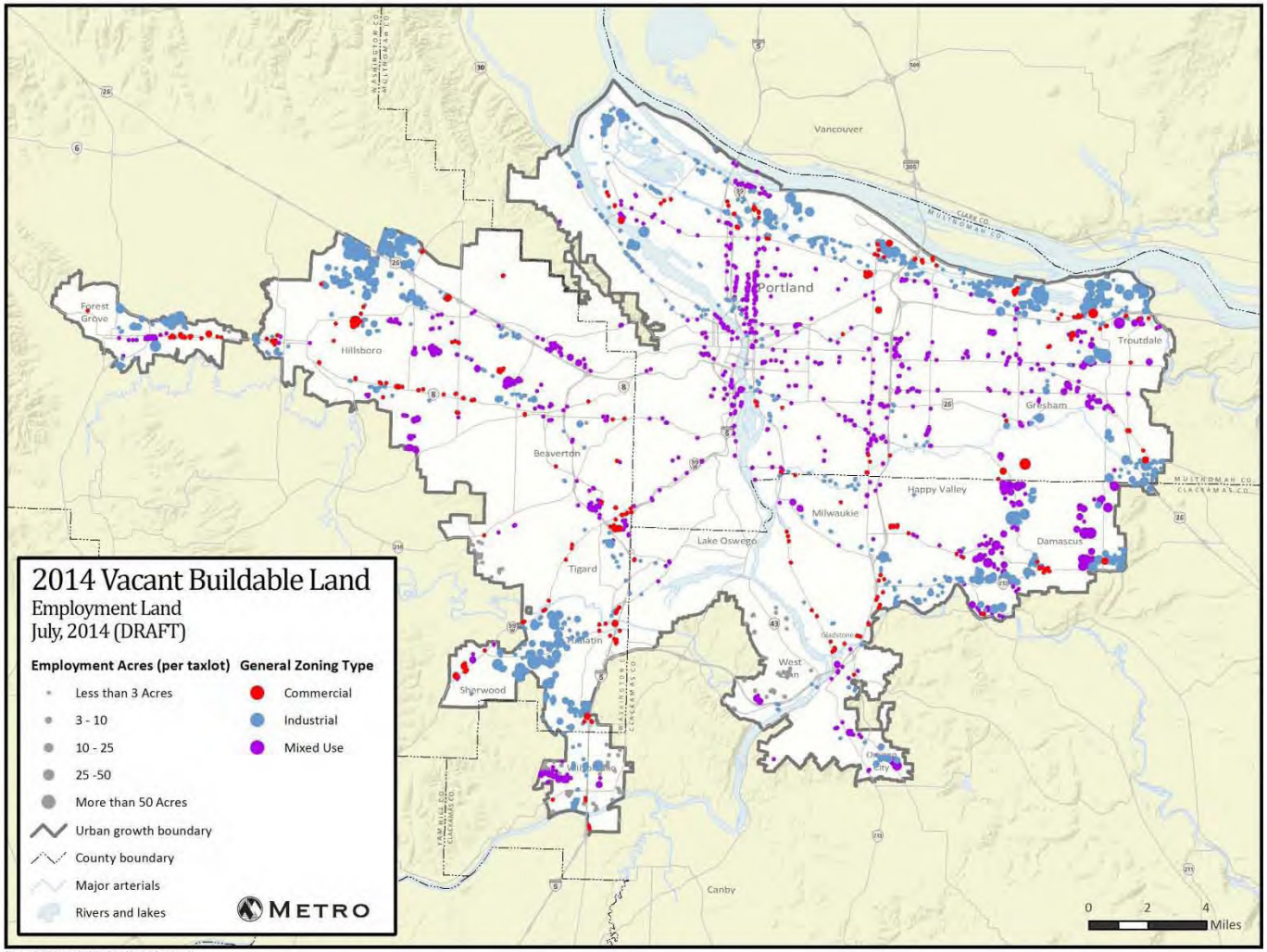
OR Administrative Rules Division 9 – Economic Development	Metro employment land inventory approach
	-Owner flagged for tax exempt status (removed from inventory if not available for employment use) -Land value per square foot (assessor data) -Vacant or redevelopment land category -Inside city (yes/no) -Estimate of future streets and sidewalks acreage needs for vacant tax lots. However, we should not that our method uses a regional approach and may not reflect the actual needs of specific sites.

Map 1 depicts the subareas used to organize this analysis.

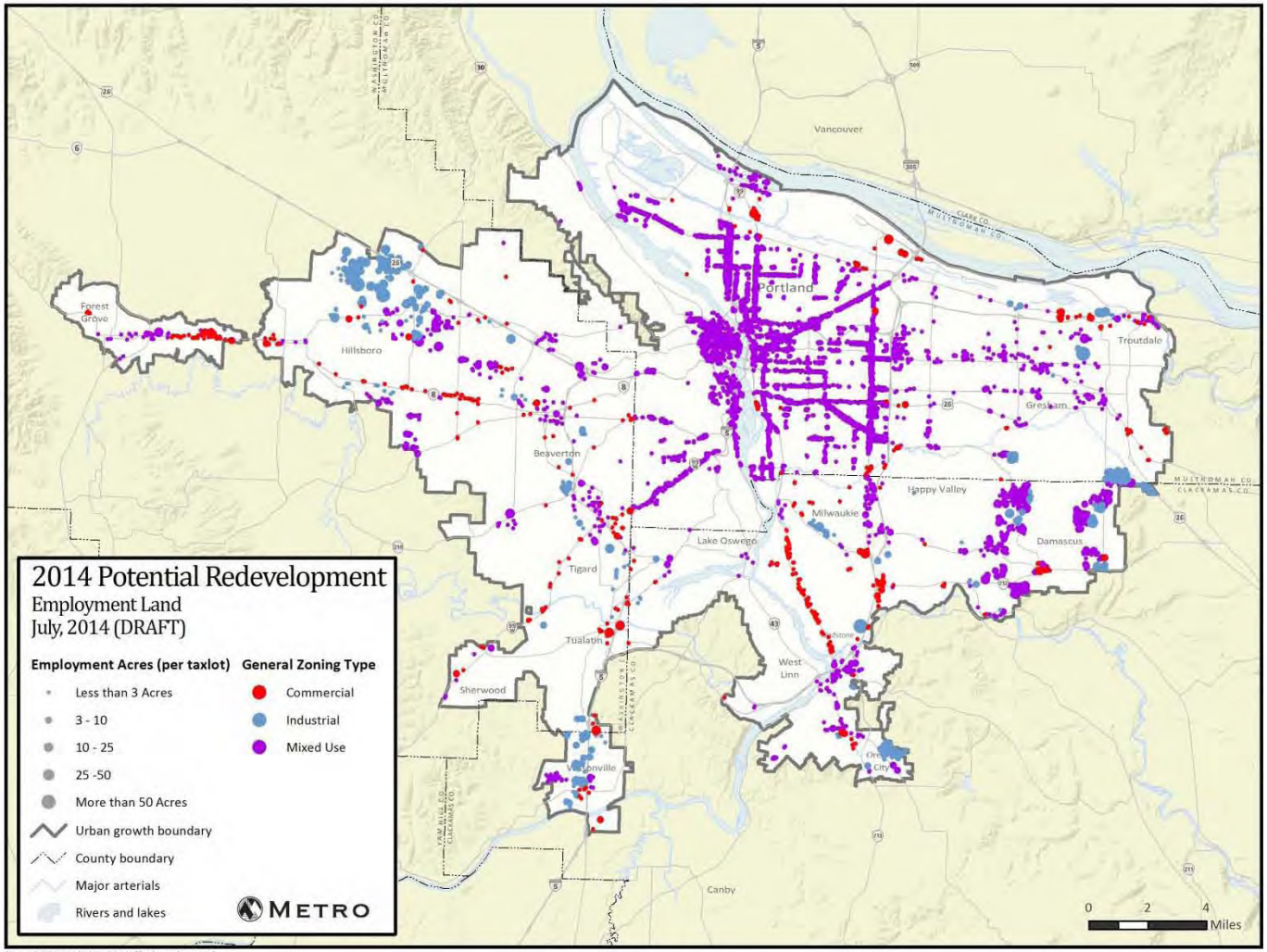
Map 1: Subareas used for employment site characteristics summarization



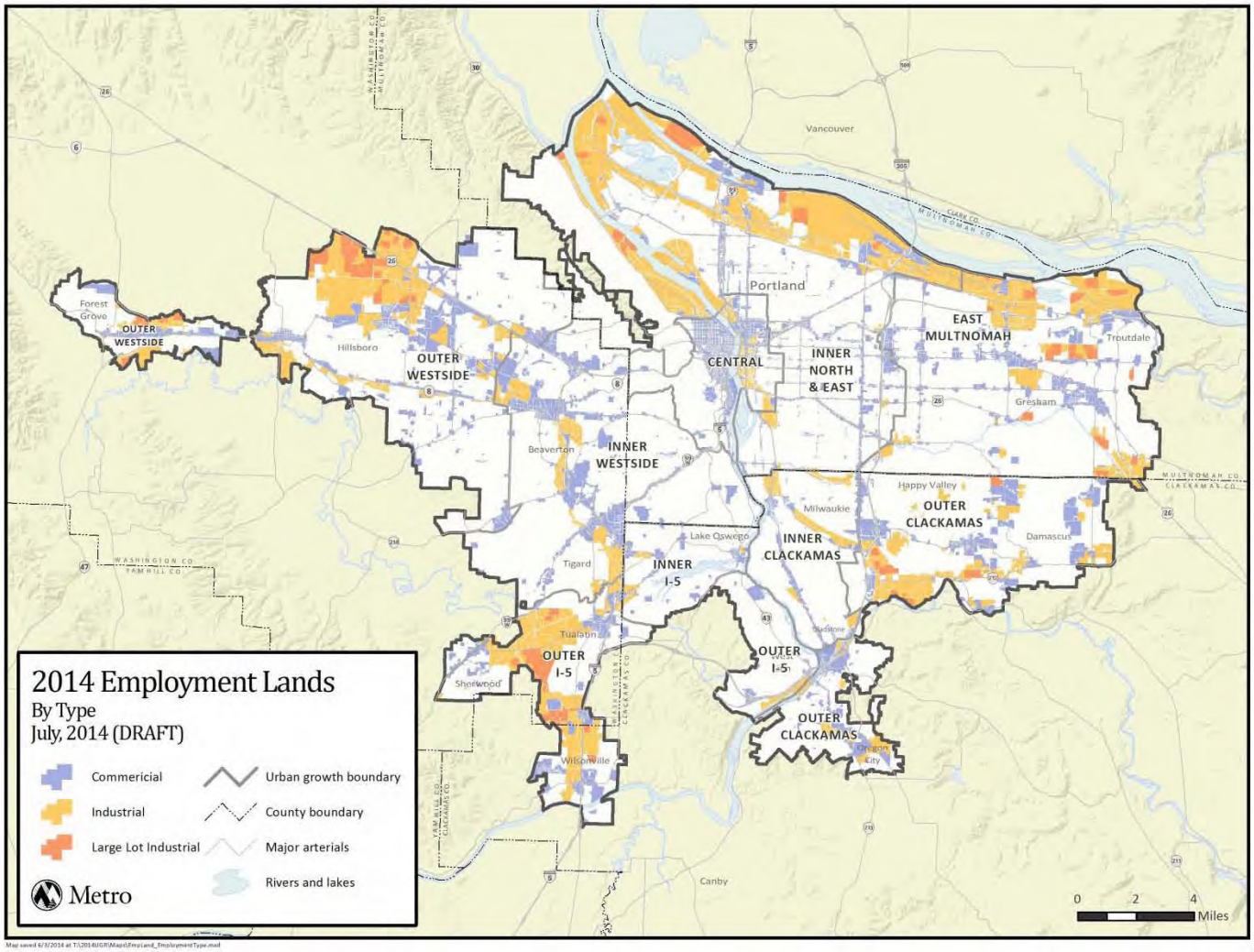
Map 2: vacant employment land



Map 3: Redevelopment candidate employment land



Map 4: Employment lands by type



Description of minimum acreage or site configuration characteristics including shape and topography

Table 2: Summary data on acres of buildable employment land inside the Metro urban growth boundary

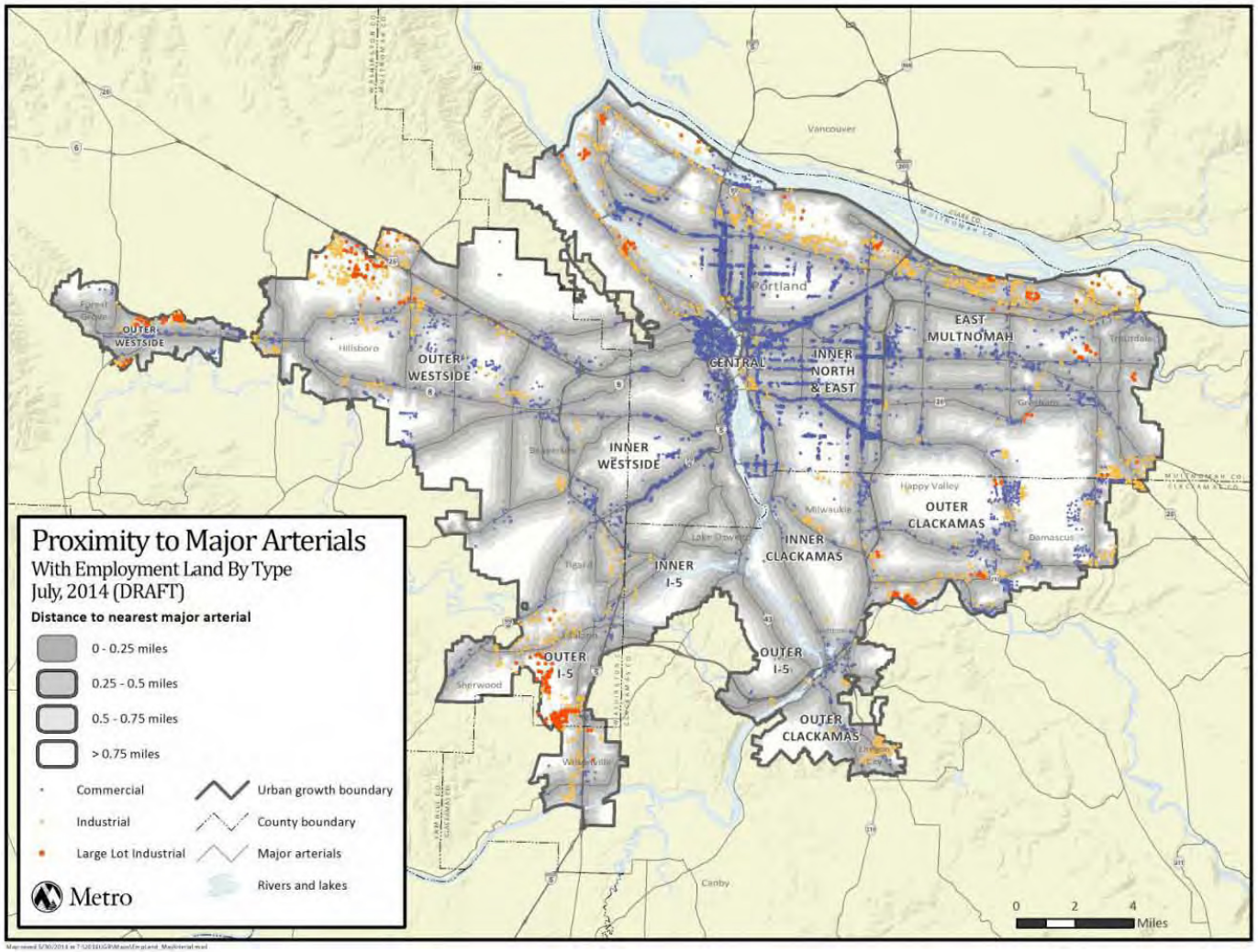
Market Subarea	Parcels	Acres
Central	**2061**	**278.47**
Commercial	1998	255.85
Industrial	63	22.62
East Mult Co	**1001**	**1835.68**
Commercial	702	473.64
Industrial	260	796.12
Large Lot Industrial	39	565.92
Inner Clackamas	**98**	**139.88**
Commercial	59	32.92
Industrial	39	106.97
Inner I-5	**26**	**27.67**
Commercial	18	17.11
Industrial	8	10.56
Inner North & East	**6843**	**2082.95**
Commercial	6277	588.04
Industrial	526	1019.74
Large Lot Industrial	40	475.18
Inner Westside	**605**	**461.25**
Commercial	549	335.55
Industrial	56	125.69
Outer Clackamas	**817**	**2456.37**
Commercial	561	1323.15
Industrial	220	973.11
Large Lot Industrial	36	160.11
Outer I-5	**317**	**930.83**
Commercial	58	71.99
Industrial	159	589.53
Large Lot Industrial	100	269.31
Outer Westside	**759**	**3113.06**
Commercial	382	591.93
Industrial	303	1421.44
Large Lot Industrial	74	1099.69
Grand Total	**12527**	**11326.17**

Site visibility

Table 3: Proximity to nearest major arterial street

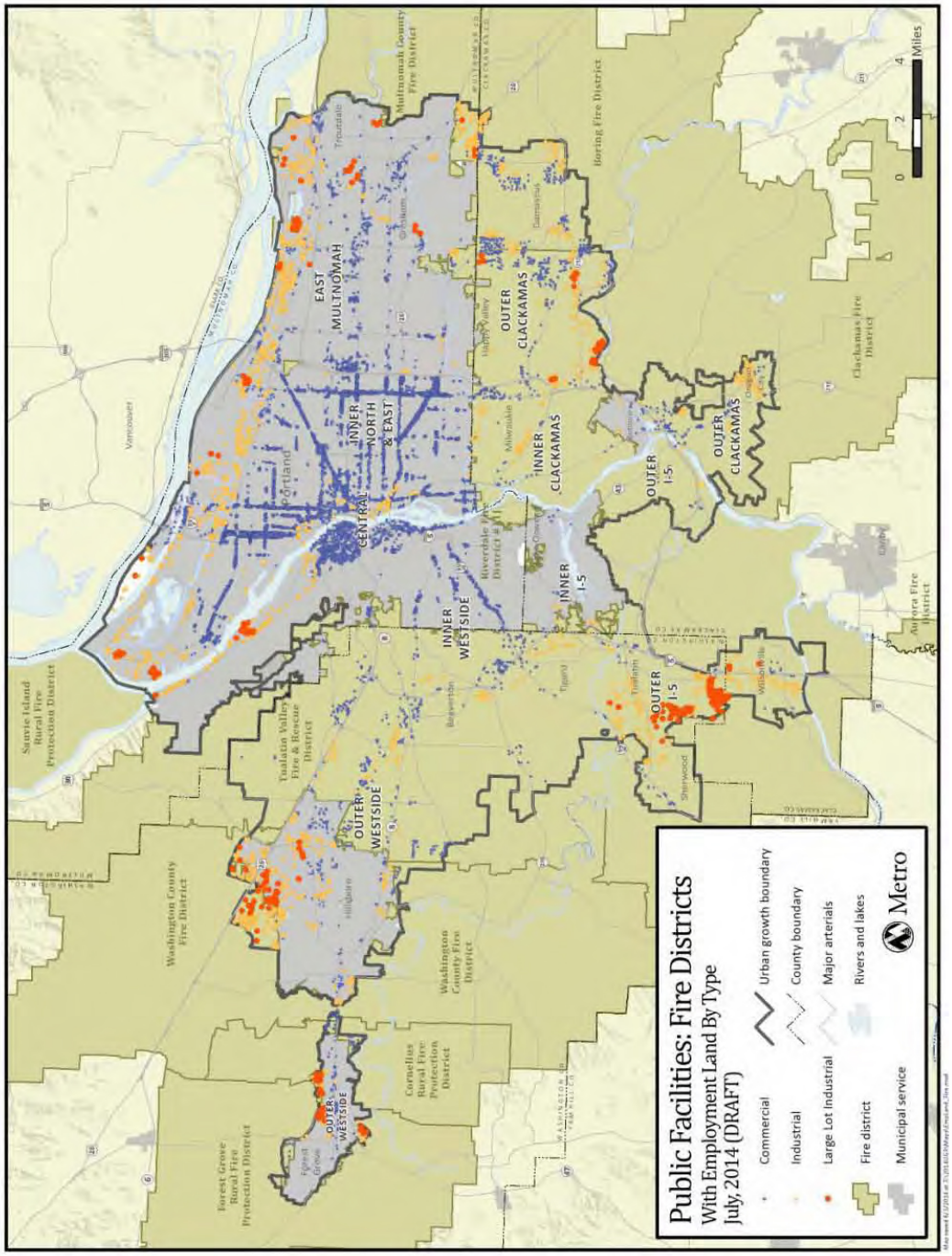
Market Subarea	< 1/4 Mile		1/4-1/2 Mile		1/2-3/4 Mile		3/4-1 Mile		> 1 Mile		Total	
	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres
Central	**1926**	**266.4**			**35**	**1.5**	**100**	**10.6**			**2061**	**278.5**
Commercial	1863	243.8			35	1.5	100	10.6			1998	255.8
Industrial	63	22.6									63	22.6
East Mult Co	**708**	**660.4**	**8**	**166.9**	**91**	**373.4**	**172**	**478.7**	**22**	**156.3**	**1001**	**1835.7**
Commercial	540	279.9			45	73.9	111	80.4	6	39.5	702	473.6
Industrial	161	347.8	5	67.9	34	119.4	49	210.1	11	50.9	260	796.1
Large Lot Industrial	7	32.7	3	99.0	12	180.1	12	188.2	5	65.9	39	565.9
Inner Clackamas	**67**	**115.2**	**6**	**0.4**	**4**	**1.9**	**20**	**22.2**	**1**	**0.2**	**98**	**139.9**
Commercial	55	31.8			1	0.7	2	0.2	1	0.2	59	32.9
Industrial	12	83.4	6	0.4	3	1.2	18	21.9			39	107.0
Inner I-5	**25**	**26.4**					**1**	**1.3**			**26**	**27.7**
Commercial	17	15.9					1	1.3			18	17.1
Industrial	8	10.6									8	10.6
Inner North & East	**5537**	**888.9**	**139**	**471.7**	**323**	**268.6**	**720**	**370.5**	**124**	**83.3**	**6843**	**2083.0**
Commercial	5204	451.0	118	18.1	248	16.2	599	90.4	108	12.4	6277	588.0
Industrial	326	407.4	17	161.5	64	221.9	104	158.1	15	70.9	526	1019.7
Large Lot Industrial	7	30.5	4	292.1	11	30.5	17	122.0	1	0.0	40	475.2
Inner Westside	**461**	**249.9**	**4**	**0.2**	**64**	**75.4**	**65**	**125.3**	**11**	**10.4**	**605**	**461.2**
Commercial	442	221.0	4	0.2	55	63.6	37	40.4	11	10.4	549	335.6
Industrial	19	29.0			9	11.9	28	84.9			56	125.7
Outer Clackamas	**441**	**808.9**	**30**	**235.3**	**120**	**502.5**	**183**	**685.6**	**43**	**224.1**	**817**	**2456.4**
Commercial	321	422.2	26	226.1	73	202.3	107	324.6	34	147.9	561	1323.1
Industrial	116	357.3	4	9.2	33	260.6	59	287.1	8	58.9	220	973.1
Large Lot Industrial	4	29.3			14	39.6	17	73.9	1	17.3	36	160.1
Outer I-5	**140**	**261.7**	**45**	**79.5**	**25**	**142.8**	**64**	**288.9**	**43**	**157.8**	**317**	**930.8**
Commercial	53	62.9					4	7.1	1	2.0	58	72.0
Industrial	76	197.4	8	35.3	17	69.3	44	248.9	14	38.7	159	589.5
Large Lot Industrial	11	1.5	37	44.3	8	73.5	16	32.9	28	117.2	100	269.3
Outer Westside	**333**	**596.9**	**124**	**1190.8**	**87**	**469.2**	**146**	**344.7**	**69**	**511.5**	**759**	**3113.1**
Commercial	220	256.0	23	49.2	49	89.9	63	114.0	27	82.9	382	591.9
Industrial	105	255.0	79	618.1	22	147.4	65	177.1	32	223.8	303	1421.4
Large Lot Industrial	8	85.9	22	523.5	16	231.9	18	53.6	10	204.8	74	1099.7
Grand Total	**9638**	**3874.6**	**356**	**2144.8**	**749**	**1835.4**	**1471**	**2327.7**	**313**	**1143.7**	**12527**	**11326.2**

Map 5: Proximity to major arterials

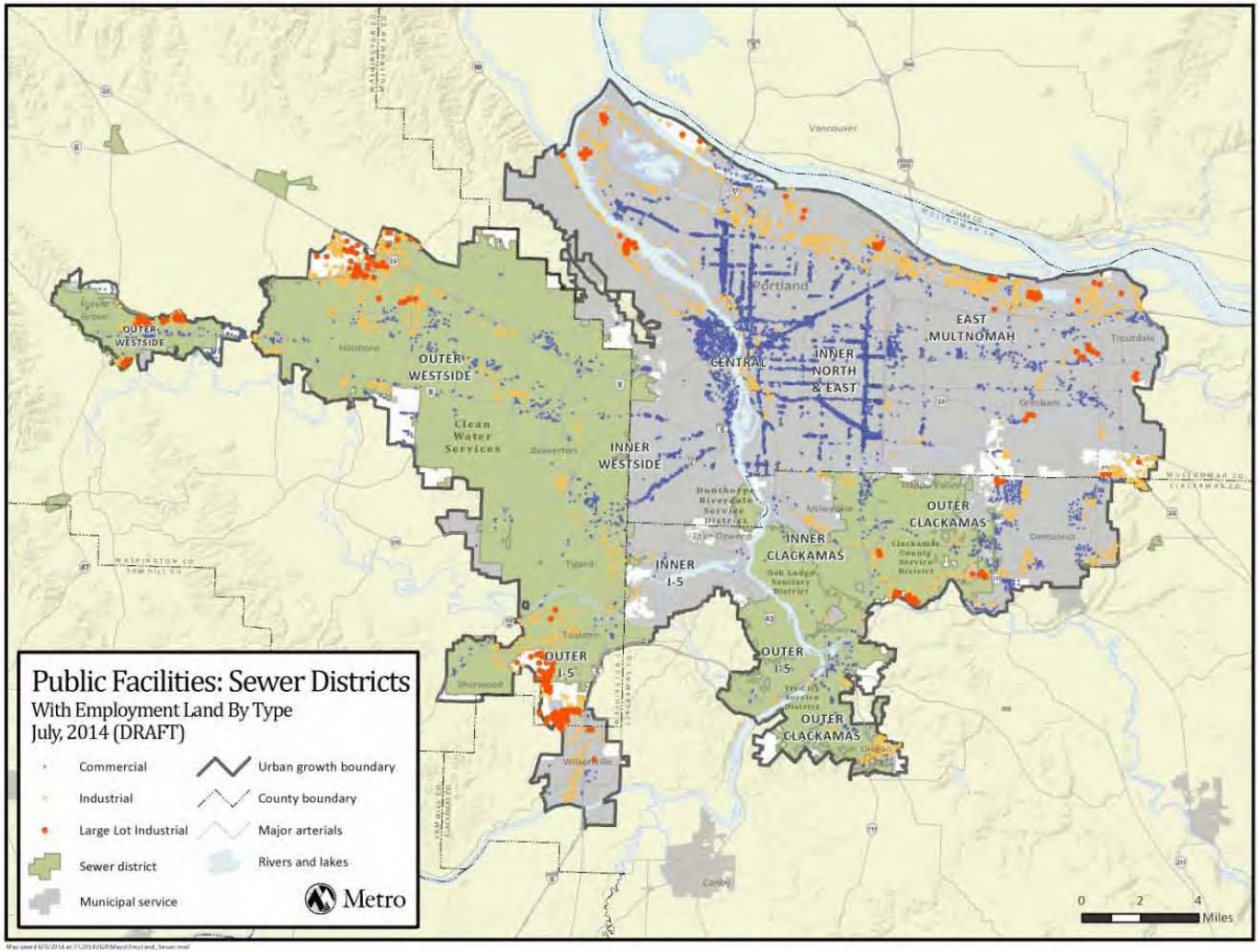


Specific types of public facilities, services or energy infrastructure

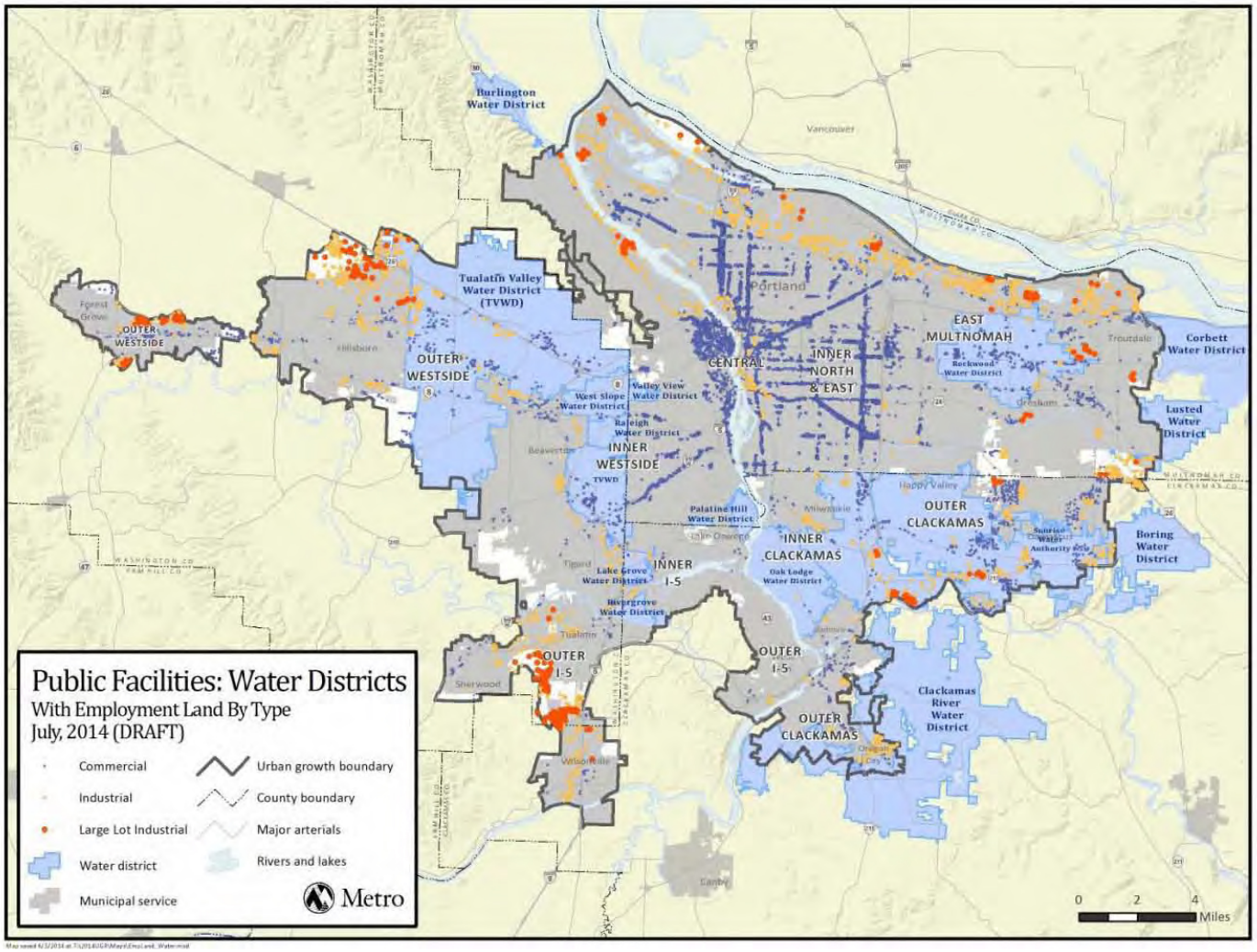
Map 6: Fire districts



Map 7: Sewer districts



Map 8: Water districts



Proximity to a particular transportation or freight facility such as rail, marine ports and airports, multimodal freight or transshipment facilities, and major transportation routes

Table 4: Proximity to rail terminals

Market Subarea	< 1 mile		1 - 2 miles		2 - 3 miles		Total	
	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres
Central	**2058**	**278.3**	**3**	**0.1**			**2061**	**278.5**
Commercial	1995	255.7	3	0.1			1998	255.8
Industrial	63	22.6					63	22.6
East Mult Co	**908**	**1656.1**	**92**	**179.2**	**1**	**0.3**	**1001**	**1835.7**
Commercial	618	436.5	84	37.1			702	473.6
Industrial	254	725.2	5	70.6	1	0.3	260	796.1
Large Lot Industrial	36	494.4	3	71.6			39	565.9
Inner Clackamas	**98**	**139.9**					**98**	**139.9**
Commercial	59	32.9					59	32.9
Industrial	39	107.0					39	107.0
Inner I-5	**12**	**11.7**	**9**	**13.4**	**5**	**2.7**	**26**	**27.7**
Commercial	4	1.1	9	13.4	5	2.7	18	17.1
Industrial	8	10.6					8	10.6
Inner North & East	**6479**	**1756.9**	**360**	**270.0**	**4**	**56.1**	**6843**	**2083.0**
Commercial	5944	559.3	331	28.6	2	0.1	6277	588.0
Industrial	498	846.7	27	150.6	1	22.4	526	1019.7
Large Lot Industrial	37	350.9	2	90.7	1	33.6	40	475.2
Inner Westside	**533**	**450.5**	**72**	**10.7**			**605**	**461.2**
Commercial	477	324.8	72	10.7			549	335.6
Industrial	56	125.7					56	125.7
Outer Clackamas	**747**	**2058.0**	**70**	**398.4**			**817**	**2456.4**
Commercial	505	1058.9	56	264.2			561	1323.1
Industrial	206	838.9	14	134.2			220	973.1
Large Lot Industrial	36	160.1					36	160.1
Outer I-5	**312**	**909.3**	**5**	**21.5**			**317**	**930.8**
Commercial	58	72.0					58	72.0
Industrial	157	571.1	2	18.4			159	589.5
Large Lot Industrial	97	266.2	3	3.1			100	269.3
Outer Westside	**692**	**2506.0**	**66**	**605.8**	**1**	**1.2**	**759**	**3113.1**
Commercial	339	508.1	42	82.6	1	1.2	382	591.9
Industrial	284	1144.8	19	276.6			303	1421.4
Large Lot Industrial	69	853.1	5	246.5			74	1099.7
Grand Total	**11839**	**9766.7**	**677**	**1499.1**	**11**	**60.4**	**12527**	**11326.2**

Map 9: Proximity to rail terminals

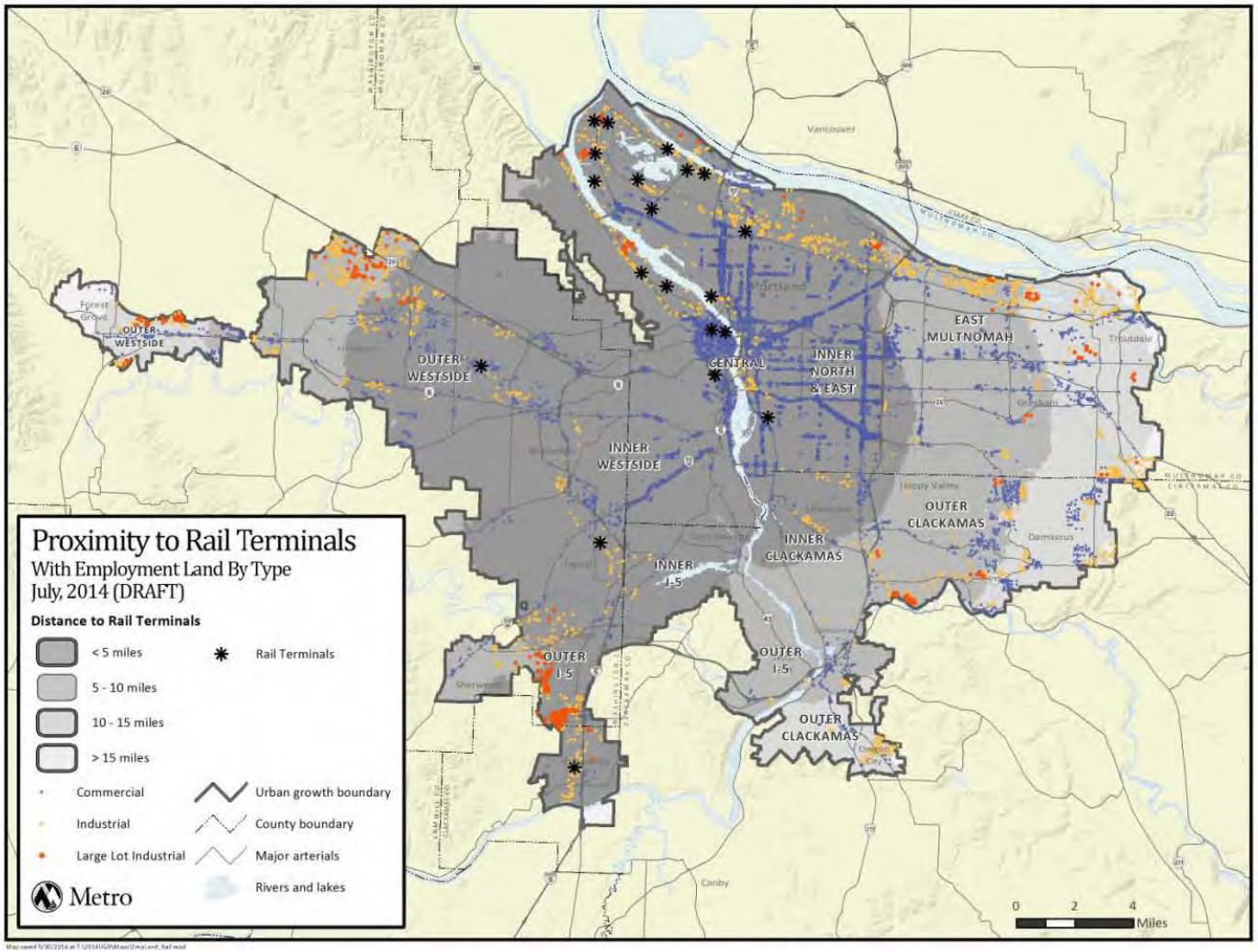


Table 5: Proximity to transhipment facilities

Market Subarea	< 2.5 miles		2.5 to 5 miles		5 to 7.5 miles		7.5 to 10 miles		>10 miles		Total	
	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres
Central	**1969**	**269.1**	**92**	**9.4**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**2061**	**278.5**
Commercial	1906	246.5	92	9.4	0	0.0	0	0.0	0	0.0	1998	255.8
Industrial	63	22.6	0	0.0	0	0.0	0	0.0	0	0.0	63	22.6
East Mult Co	**660**	**1127.9**	**274**	**428.3**	**67**	**279.5**	**0**	**0.0**	**0**	**0.0**	**1001**	**1835.7**
Commercial	461	271.5	235	186.3	6	15.8	0	0.0	0	0.0	702	473.6
Industrial	177	527.3	26	87.1	57	181.7	0	0.0	0	0.0	260	796.1
Large Lot Industrial	22	329.1	13	154.9	4	82.0	0	0.0	0	0.0	39	565.9
Inner Clackamas	**96**	**136.6**	**2**	**3.3**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**98**	**139.9**
Commercial	58	32.2	1	0.7	0	0.0	0	0.0	0	0.0	59	32.9
Industrial	38	104.3	1	2.6	0	0.0	0	0.0	0	0.0	39	107.0
Inner I-5	**20**	**24.6**	**6**	**3.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**26**	**27.7**
Commercial	12	14.1	6	3.0	0	0.0	0	0.0	0	0.0	18	17.1
Industrial	8	10.6	0	0.0	0	0.0	0	0.0	0	0.0	8	10.6
Inner North & East	**6456**	**1796.4**	**387**	**286.6**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**6843**	**2083.0**
Commercial	5895	539.3	382	48.7	0	0.0	0	0.0	0	0.0	6277	588.0
Industrial	522	948.6	4	71.1	0	0.0	0	0.0	0	0.0	526	1019.7
Large Lot Industrial	39	308.4	1	166.7	0	0.0	0	0.0	0	0.0	40	475.2
Inner Westside	**320**	**360.2**	**285**	**101.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**605**	**461.2**
Commercial	271	244.3	278	91.3	0	0.0	0	0.0	0	0.0	549	335.6
Industrial	49	116.0	7	9.7	0	0.0	0	0.0	0	0.0	56	125.7
Outer Clackamas	**318**	**512.0**	**303**	**1000.2**	**193**	**923.0**	**3**	**21.1**	**0**	**0.0**	**817**	**2456.4**
Commercial	208	224.1	220	549.2	132	532.6	1	17.3	0	0.0	561	1323.1
Industrial	77	167.1	80	411.7	61	390.5	2	3.8	0	0.0	220	973.1
Large Lot Industrial	33	120.8	3	39.3	0	0.0	0	0.0	0	0.0	36	160.1
Outer I-5	**295**	**901.5**	**21**	**29.4**	**0**	**0.0**	**0**	**0.0**	**1**	**0.0**	**317**	**930.8**
Commercial	39	44.6	18	27.4	0	0.0	0	0.0	1	0.0	58	72.0
Industrial	156	587.6	3	2.0	0	0.0	0	0.0	0	0.0	159	589.5
Large Lot Industrial	100	269.3	0	0.0	0	0.0	0	0.0	0	0.0	100	269.3
Outer Westside	**145**	**237.5**	**178**	**233.6**	**266**	**933.3**	**170**	**1708.7**	**0**	**0.0**	**759**	**3113.1**
Commercial	99	99.5	128	149.3	137	325.9	18	17.2	0	0.0	382	591.9
Industrial	23	44.7	46	82.5	122	388.2	112	906.1	0	0.0	303	1421.4
Large Lot Industrial	23	93.2	4	1.8	7	219.2	40	785.4	0	0.0	74	1099.7
Grand Total	**10279**	**5365.8**	**1548**	**2094.8**	**526**	**2135.8**	**173**	**1729.8**	**1**	**0.0**	**12527**	**11326.2**

Map 10: Proximity to transshipment facilities

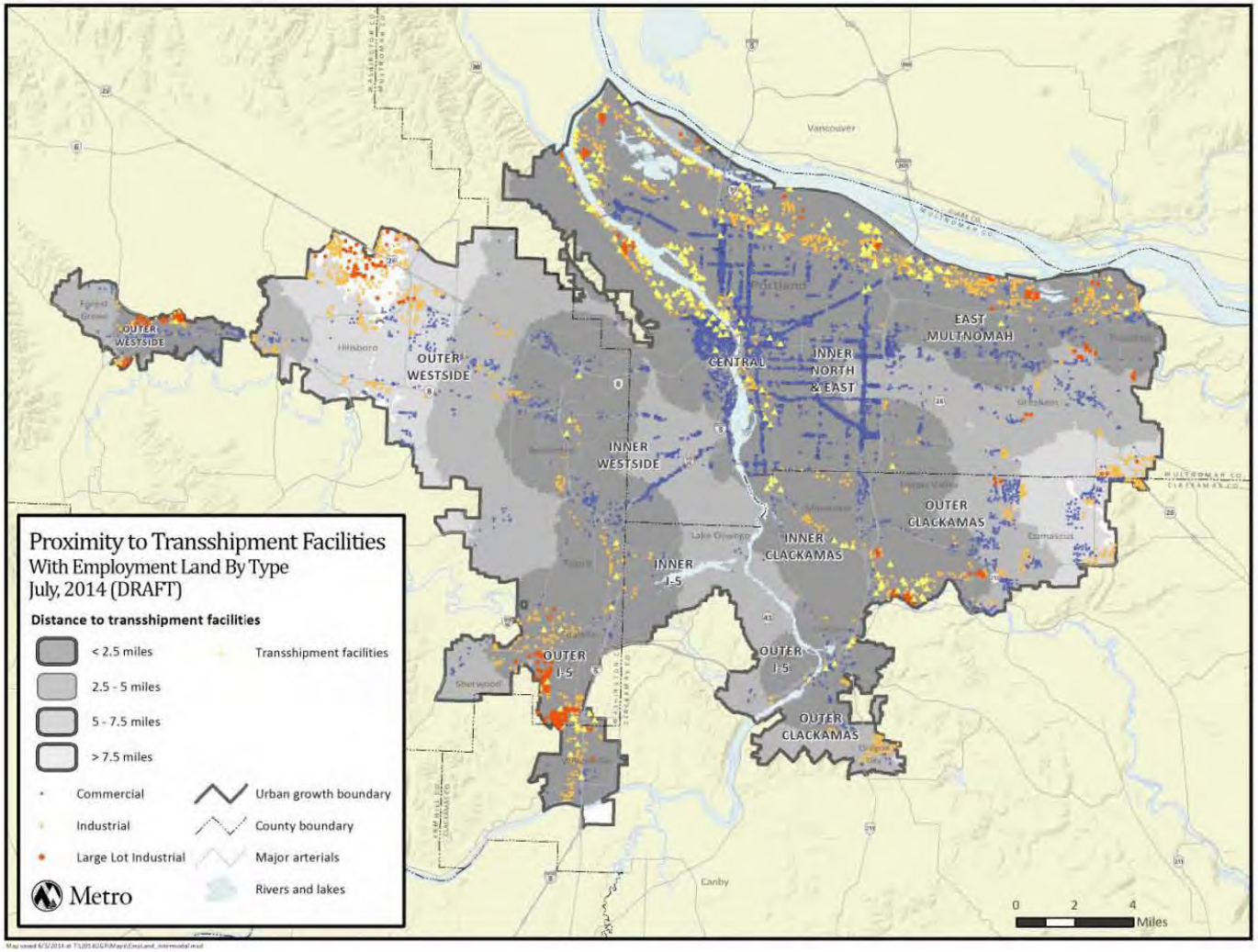


Table 6: Proximity to designated freight route

Row Labels	< 1 mile		1 - 2 miles		2 - 3 miles		Total	
	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres
Central	**2058**	**278.3**	**3**	**0.1**	**0**	**0.0**	**2061**	**278.5**
Commercial	1995	255.7	3	0.1	0	0.0	1998	255.8
Industrial	63	22.6	0	0.0	0	0.0	63	22.6
East Mult Co	**908**	**1656.1**	**92**	**179.2**	**1**	**0.3**	**1001**	**1835.7**
Commercial	618	436.5	84	37.1	0	0.0	702	473.6
Industrial	254	725.2	5	70.6	1	0.3	260	796.1
Large Lot Industrial	36	494.4	3	71.6	0	0.0	39	565.9
Inner Clackamas	**98**	**139.9**	**0**	**0.0**	**0**	**0.0**	**98**	**139.9**
Commercial	59	32.9	0	0.0	0	0.0	59	32.9
Industrial	39	107.0	0	0.0	0	0.0	39	107.0
Inner I-5	**12**	**11.7**	**9**	**13.4**	**5**	**2.7**	**26**	**27.7**
Commercial	4	1.1	9	13.4	5	2.7	18	17.1
Industrial	8	10.6	0	0.0	0	0.0	8	10.6
Inner North & East	**6479**	**1756.9**	**360**	**270.0**	**4**	**56.1**	**6843**	**2083.0**
Commercial	5944	559.3	331	28.6	2	0.1	6277	588.0
Industrial	498	846.7	27	150.6	1	22.4	526	1019.7
Large Lot Industrial	37	350.9	2	90.7	1	33.6	40	475.2
Inner Westside	**533**	**450.5**	**72**	**10.7**	**0**	**0.0**	**605**	**461.2**
Commercial	477	324.8	72	10.7	0	0.0	549	335.6
Industrial	56	125.7	0	0.0	0	0.0	56	125.7
Outer Clackamas	**747**	**2058.0**	**70**	**398.4**	**0**	**0.0**	**817**	**2456.4**
Commercial	505	1058.9	56	264.2	0	0.0	561	1323.1
Industrial	206	838.9	14	134.2	0	0.0	220	973.1
Large Lot Industrial	36	160.1	0	0.0	0	0.0	36	160.1
Outer I-5	**312**	**909.3**	**5**	**21.5**	**0**	**0.0**	**317**	**930.8**
Commercial	58	72.0	0	0.0	0	0.0	58	72.0
Industrial	157	571.1	2	18.4	0	0.0	159	589.5
Large Lot Industrial	97	266.2	3	3.1	0	0.0	100	269.3
Outer Westside	**692**	**2506.0**	**66**	**605.8**	**1**	**1.2**	**759**	**3113.1**
Commercial	339	508.1	42	82.6	1	1.2	382	591.9
Industrial	284	1144.8	19	276.6	0	0.0	303	1421.4
Large Lot Industrial	69	853.1	5	246.5	0	0.0	74	1099.7
Grand Total	**11839**	**9766.7**	**677**	**1499.1**	**11**	**60.4**	**12527**	**11326.2**

Map 11: Proximity to designated freight route

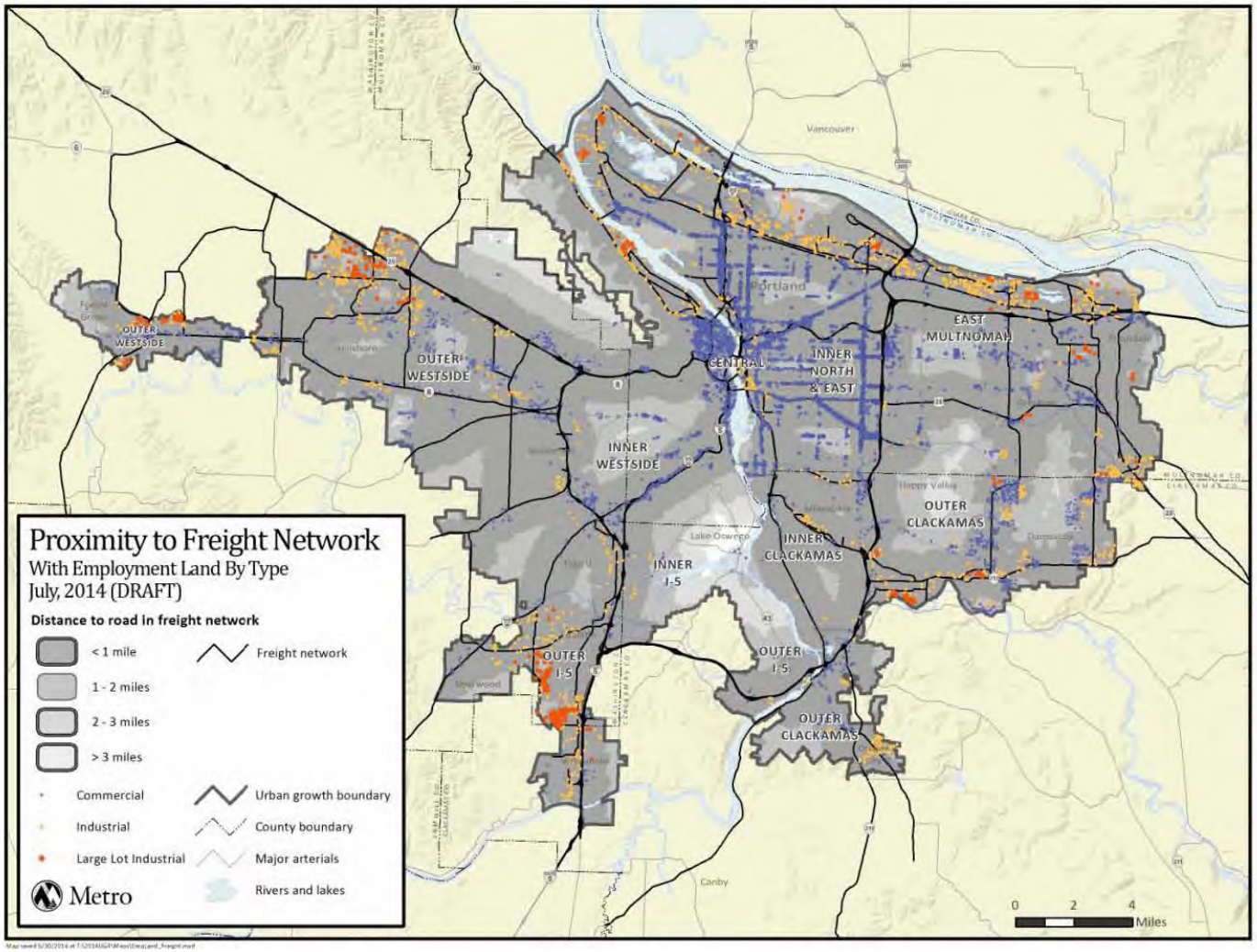


Table 7: Proximity to any airport

Row Labels	< 5 miles		5 to 10 miles		10 to 15 miles		15 to 20 miles		greater than 20 miles		Total	
	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres
Central	**22**	**1.1**	**56**	**6.1**	**0**	**0.0**	**1983**	**271.3**	**0**	**0.0**	**2061**	**278.5**
Commercial	22	1.1	56	6.1	0	0.0	1920	248.7	0	0.0	1998	255.8
Industrial	0	0.0	0	0.0	0	0.0	63	22.6	0	0.0	63	22.6
East Mult Co	**475**	**1149.1**	**0**	**0.0**	**0**	**0.0**	**526**	**686.6**	**0**	**0.0**	**1001**	**1835.7**
Commercial	314	293.9	0	0.0	0	0.0	388	179.8	0	0.0	702	473.6
Industrial	135	444.5	0	0.0	0	0.0	125	351.6	0	0.0	260	796.1
Large Lot Industrial	26	410.8	0	0.0	0	0.0	13	155.2	0	0.0	39	565.9
Inner Clackamas	**0**	**0.0**	**73**	**133.5**	**10**	**1.5**	**15**	**4.8**	**0**	**0.0**	**98**	**139.9**
Commercial	0	0.0	42	28.5	10	1.5	7	2.8	0	0.0	59	32.9
Industrial	0	0.0	31	105.0	0	0.0	8	2.0	0	0.0	39	107.0
Inner I-5	**0**	**0.0**	**16**	**15.4**	**10**	**12.2**	**0**	**0.0**	**0**	**0.0**	**26**	**27.7**
Commercial	0	0.0	13	10.2	5	7.0	0	0.0	0	0.0	18	17.1
Industrial	0	0.0	3	5.3	5	5.3	0	0.0	0	0.0	8	10.6
Inner North & East	**1696**	**927.0**	**307**	**263.8**	**0**	**0.0**	**4840**	**892.2**	**0**	**0.0**	**6843**	**2083.0**
Commercial	1424	205.4	175	11.0	0	0.0	4678	371.6	0	0.0	6277	588.0
Industrial	261	571.3	105	129.3	0	0.0	160	319.1	0	0.0	526	1019.7
Large Lot Industrial	11	150.3	27	123.5	0	0.0	2	201.4	0	0.0	40	475.2
Inner Westside	**0**	**0.0**	**483**	**248.7**	**0**	**0.0**	**122**	**212.6**	**0**	**0.0**	**605**	**461.2**
Commercial	0	0.0	445	149.5	0	0.0	104	186.0	0	0.0	549	335.6
Industrial	0	0.0	38	99.2	0	0.0	18	26.5	0	0.0	56	125.7
Outer Clackamas	**0**	**0.0**	**392**	**1009.0**	**132**	**219.4**	**261**	**1035.7**	**32**	**192.2**	**817**	**2456.4**
Commercial	0	0.0	263	501.1	96	101.1	193	679.1	9	41.9	561	1323.1
Industrial	0	0.0	96	387.2	36	118.3	65	317.3	23	150.3	220	973.1
Large Lot Industrial	0	0.0	33	120.8	0	0.0	3	39.3	0	0.0	36	160.1
Outer I-5	**0**	**0.0**	**27**	**114.8**	**254**	**707.6**	**0**	**0.0**	**36**	**108.4**	**317**	**930.8**
Commercial	0	0.0	5	10.8	39	41.2	0	0.0	14	19.9	58	72.0
Industrial	0	0.0	18	65.2	119	435.8	0	0.0	22	88.5	159	589.5
Large Lot Industrial	0	0.0	4	38.7	96	230.6	0	0.0	0	0.0	100	269.3
Outer Westside	**478**	**2600.3**	**23**	**28.3**	**2**	**4.2**	**256**	**480.3**	**0**	**0.0**	**759**	**3113.1**
Commercial	178	290.2	23	28.3	2	4.2	179	269.2	0	0.0	382	591.9
Industrial	253	1305.5	0	0.0	0	0.0	50	116.0	0	0.0	303	1421.4
Large Lot Industrial	47	1004.6	0	0.0	0	0.0	27	95.1	0	0.0	74	1099.7
Grand Total	**2671**	**4677.5**	**1377**	**1819.6**	**408**	**945.0**	**8003**	**3583.4**	**68**	**300.7**	**12527**	**11326.2**

Map 12: Proximity to any airport

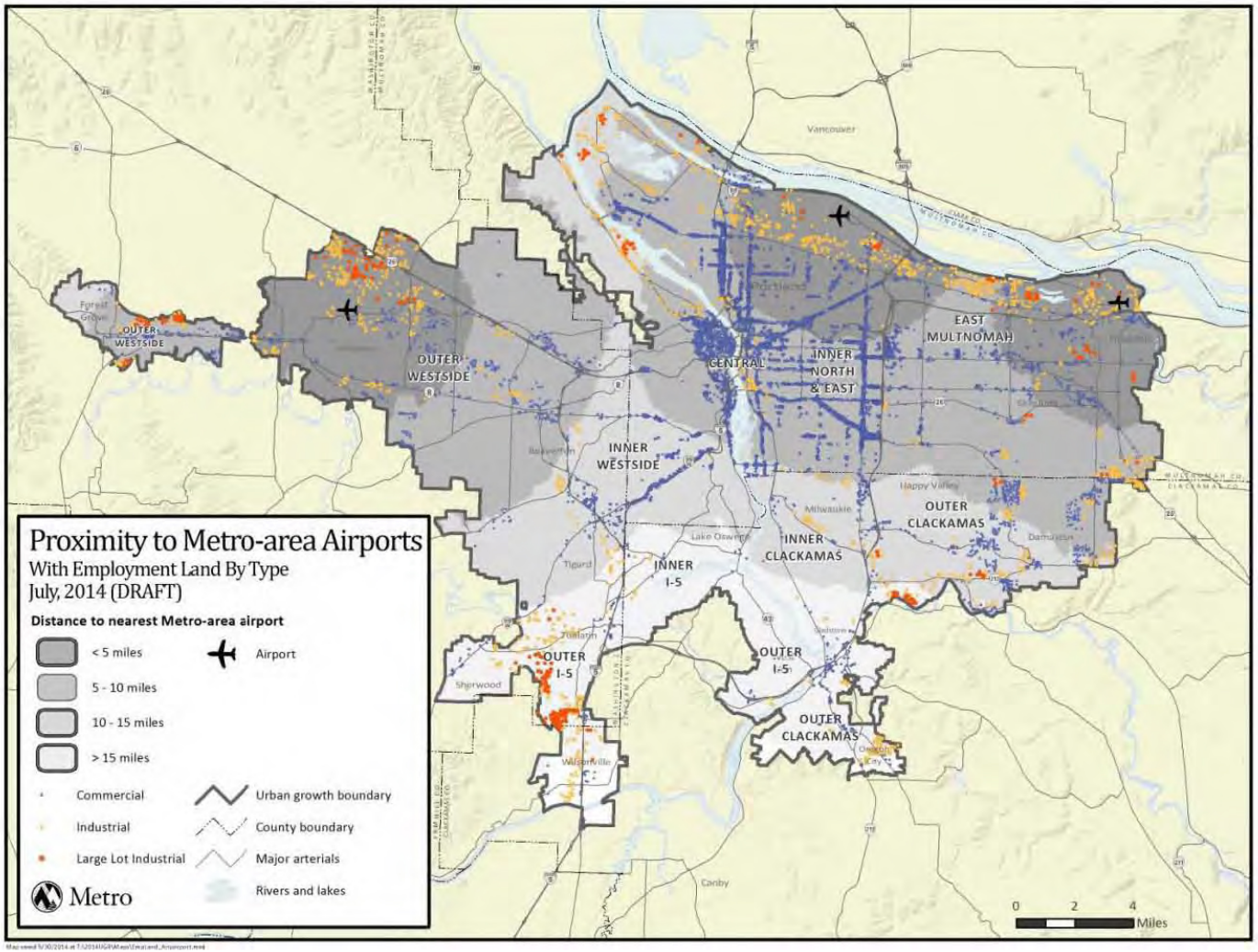


Table 8: Proximity to Portland International Airport

Row Labels	< 5 miles		5 to 10 miles		10 to 15 miles		15 to 20 miles		greater than 20 miles		Total	
	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres
Central	**22**	**1.1**	**56**	**6.1**	**0**	**0.0**	**1983**	**271.3**	**0**	**0.0**	**2061**	**278.5**
Commercial	22	1.1	56	6.1	0	0.0	1920	248.7	0	0.0	1998	255.8
Industrial	0	0.0	0	0.0	0	0.0	63	22.6	0	0.0	63	22.6
East Mult Co	**34**	**15.6**	**352**	**1119.5**	**3**	**11.1**	**612**	**689.5**	**0**	**0.0**	**1001**	**1835.7**
Commercial	34	15.6	201	277.3	0	0.0	467	180.8	0	0.0	702	473.6
Industrial	0	0.0	126	419.7	3	11.1	131	365.3	0	0.0	260	796.1
Large Lot Industrial	0	0.0	25	422.5	0	0.0	14	143.4	0	0.0	39	565.9
Inner Clackamas	**0**	**0.0**	**73**	**133.5**	**10**	**1.5**	**15**	**4.8**	**0**	**0.0**	**98**	**139.9**
Commercial	0	0.0	42	28.5	10	1.5	7	2.8	0	0.0	59	32.9
Industrial	0	0.0	31	105.0	0	0.0	8	2.0	0	0.0	39	107.0
Inner I-5	**0**	**0.0**	**11**	**14.5**	**15**	**13.2**	**0**	**0.0**	**0**	**0.0**	**26**	**27.7**
Commercial	0	0.0	10	9.9	8	7.2	0	0.0	0	0.0	18	17.1
Industrial	0	0.0	1	4.6	7	6.0	0	0.0	0	0.0	8	10.6
Inner North & East	**1696**	**927.0**	**309**	**264.0**	**0**	**0.0**	**4838**	**892.0**	**0**	**0.0**	**6843**	**2083.0**
Commercial	1424	205.4	177	11.2	0	0.0	4676	371.4	0	0.0	6277	588.0
Industrial	261	571.3	105	129.3	0	0.0	160	319.1	0	0.0	526	1019.7
Large Lot Industrial	11	150.3	27	123.5	0	0.0	2	201.4	0	0.0	40	475.2
Inner Westside	**0**	**0.0**	**569**	**375.0**	**36**	**86.2**	**0**	**0.0**	**0**	**0.0**	**605**	**461.2**
Commercial	0	0.0	537	302.5	12	33.0	0	0.0	0	0.0	549	335.6
Industrial	0	0.0	32	72.5	24	53.2	0	0.0	0	0.0	56	125.7
Outer Clackamas	**0**	**0.0**	**435**	**1220.0**	**335**	**1039.4**	**15**	**4.7**	**32**	**192.2**	**817**	**2456.4**
Commercial	0	0.0	316	812.4	221	464.2	15	4.7	9	41.9	561	1323.1
Industrial	0	0.0	90	321.0	107	501.8	0	0.0	23	150.3	220	973.1
Large Lot Industrial	0	0.0	29	86.7	7	73.5	0	0.0	0	0.0	36	160.1
Outer I-5	**0**	**0.0**	**0**	**0.0**	**86**	**241.7**	**0**	**0.0**	**231**	**689.1**	**317**	**930.8**
Commercial	0	0.0	0	0.0	28	30.1	0	0.0	30	41.9	58	72.0
Industrial	0	0.0	0	0.0	54	172.9	0	0.0	105	416.6	159	589.5
Large Lot Industrial	0	0.0	0	0.0	4	38.7	0	0.0	96	230.6	100	269.3
Outer Westside	**0**	**0.0**	**30**	**39.3**	**400**	**1771.4**	**0**	**0.0**	**329**	**1302.3**	**759**	**3113.1**
Commercial	0	0.0	23	17.6	217	400.8	0	0.0	142	173.5	382	591.9
Industrial	0	0.0	7	21.7	150	880.7	0	0.0	146	519.0	303	1421.4
Large Lot Industrial	0	0.0	0	0.0	33	489.9	0	0.0	41	609.8	74	1099.7
Grand Total	**1752**	**943.7**	**1835**	**3171.9**	**885**	**3164.6**	**7463**	**1862.3**	**592**	**2183.7**	**12527**	**11326.2**

Map 13: Proximity to Portland International Airport

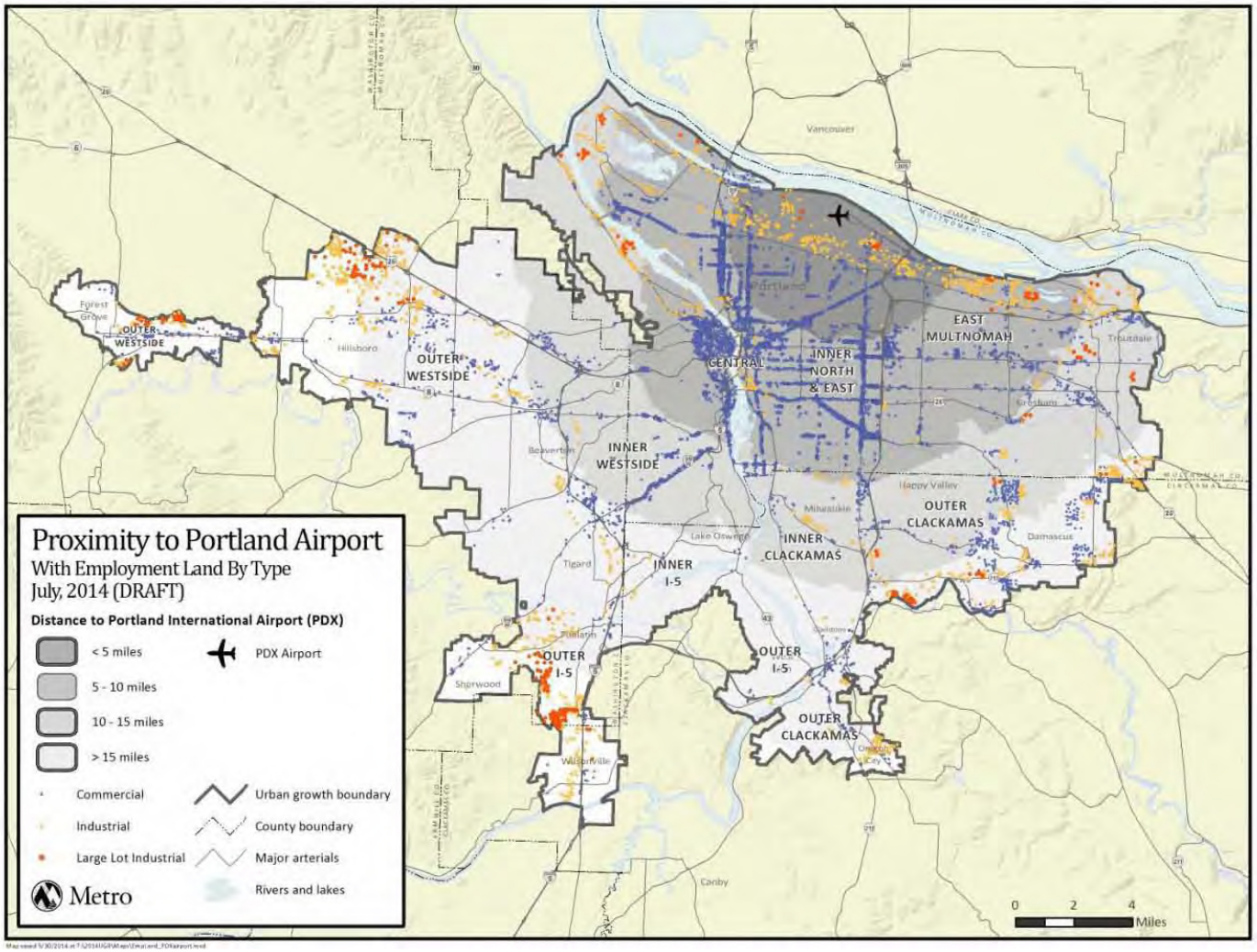


Table 9: Proximity to marine facilities

Row Labels	< 5 miles		10 to 15 miles		15 to 20 miles		5 to 10 miles		greater than 20 miles		Total	
	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres
Central	**2061**	**278.5**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**2061**	**278.5**
Commercial	1998	255.8	0	0.0	0	0.0	0	0.0	0	0.0	1998	255.8
Industrial	63	22.6	0	0.0	0	0.0	0	0.0	0	0.0	63	22.6
East Mult Co	**0**	**0.0**	**472**	**1365.9**	**23**	**128.9**	**506**	**340.9**	**0**	**0.0**	**1001**	**1835.7**
Commercial	0	0.0	266	320.2	1	3.1	435	150.3	0	0.0	702	473.6
Industrial	0	0.0	172	555.0	21	94.7	67	146.4	0	0.0	260	796.1
Large Lot Industrial	0	0.0	34	490.7	1	31.1	4	44.1	0	0.0	39	565.9
Inner Clackamas	**15**	**5.8**	**11**	**58.9**	**0**	**0.0**	**72**	**75.2**	**0**	**0.0**	**98**	**139.9**
Commercial	9	5.4	10	1.5	0	0.0	40	25.9	0	0.0	59	32.9
Industrial	6	0.4	1	57.4	0	0.0	32	49.2	0	0.0	39	107.0
Inner I-5	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**26**	**27.7**	**0**	**0.0**	**26**	**27.7**
Commercial	0	0.0	0	0.0	0	0.0	18	17.1	0	0.0	18	17.1
Industrial	0	0.0	0	0.0	0	0.0	8	10.6	0	0.0	8	10.6
Inner North & East	**6273**	**1466.3**	**0**	**0.0**	**0**	**0.0**	**570**	**616.6**	**0**	**0.0**	**6843**	**2083.0**
Commercial	5830	473.6	0	0.0	0	0.0	447	114.4	0	0.0	6277	588.0
Industrial	413	602.0	0	0.0	0	0.0	113	417.7	0	0.0	526	1019.7
Large Lot Industrial	30	390.7	0	0.0	0	0.0	10	84.5	0	0.0	40	475.2
Inner Westside	**349**	**91.7**	**3**	**19.3**	**0**	**0.0**	**253**	**350.3**	**0**	**0.0**	**605**	**461.2**
Commercial	349	91.7	3	19.3	0	0.0	197	224.6	0	0.0	549	335.6
Industrial	0	0.0	0	0.0	0	0.0	56	125.7	0	0.0	56	125.7
Outer Clackamas	**0**	**0.0**	**629**	**1999.7**	**59**	**311.8**	**129**	**144.8**	**0**	**0.0**	**817**	**2456.4**
Commercial	0	0.0	463	1189.1	10	55.9	88	78.1	0	0.0	561	1323.1
Industrial	0	0.0	144	677.4	49	255.9	27	39.8	0	0.0	220	973.1
Large Lot Industrial	0	0.0	22	133.2	0	0.0	14	26.9	0	0.0	36	160.1
Outer I-5	**0**	**0.0**	**265**	**798.2**	**40**	**116.0**	**11**	**16.7**	**1**	**0.0**	**317**	**930.8**
Commercial	0	0.0	35	39.1	14	22.0	8	10.9	1	0.0	58	72.0
Industrial	0	0.0	130	489.8	26	94.0	3	5.8	0	0.0	159	589.5
Large Lot Industrial	0	0.0	100	269.3	0	0.0	0	0.0	0	0.0	100	269.3
Outer Westside	**18**	**11.4**	**224**	**911.9**	**140**	**268.3**	**375**	**1918.6**	**2**	**2.8**	**759**	**3113.1**
Commercial	18	11.4	104	172.2	82	101.0	176	304.4	2	2.8	382	591.9
Industrial	0	0.0	112	421.2	31	72.2	160	928.0	0	0.0	303	1421.4
Large Lot Industrial	0	0.0	8	318.4	27	95.1	39	686.2	0	0.0	74	1099.7
Grand Total	**8716**	**1853.8**	**1604**	**5153.8**	**262**	**825.0**	**1942**	**3490.7**	**3**	**2.8**	**12527**	**11326.2**

Map 14: Proximity to marine facilities

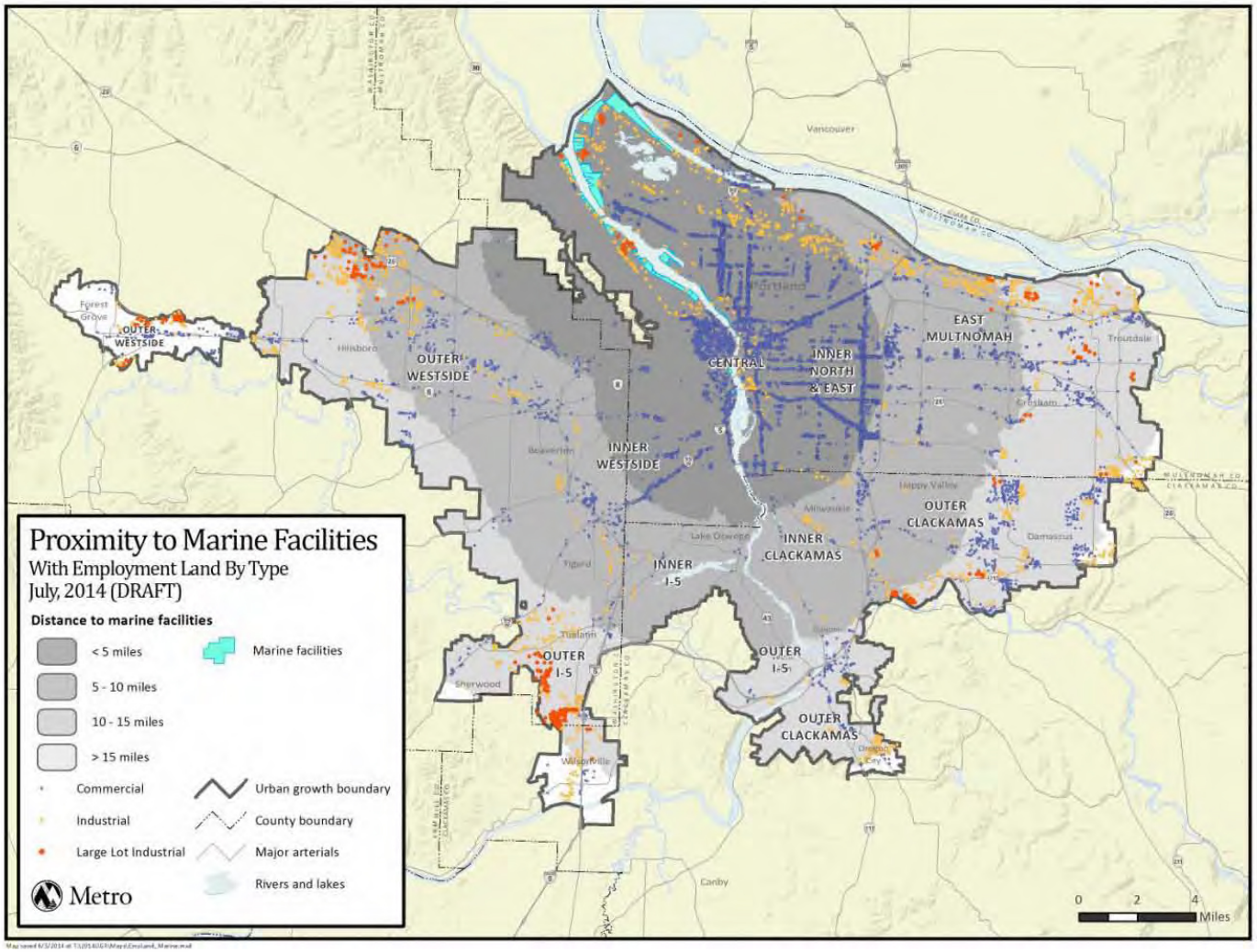
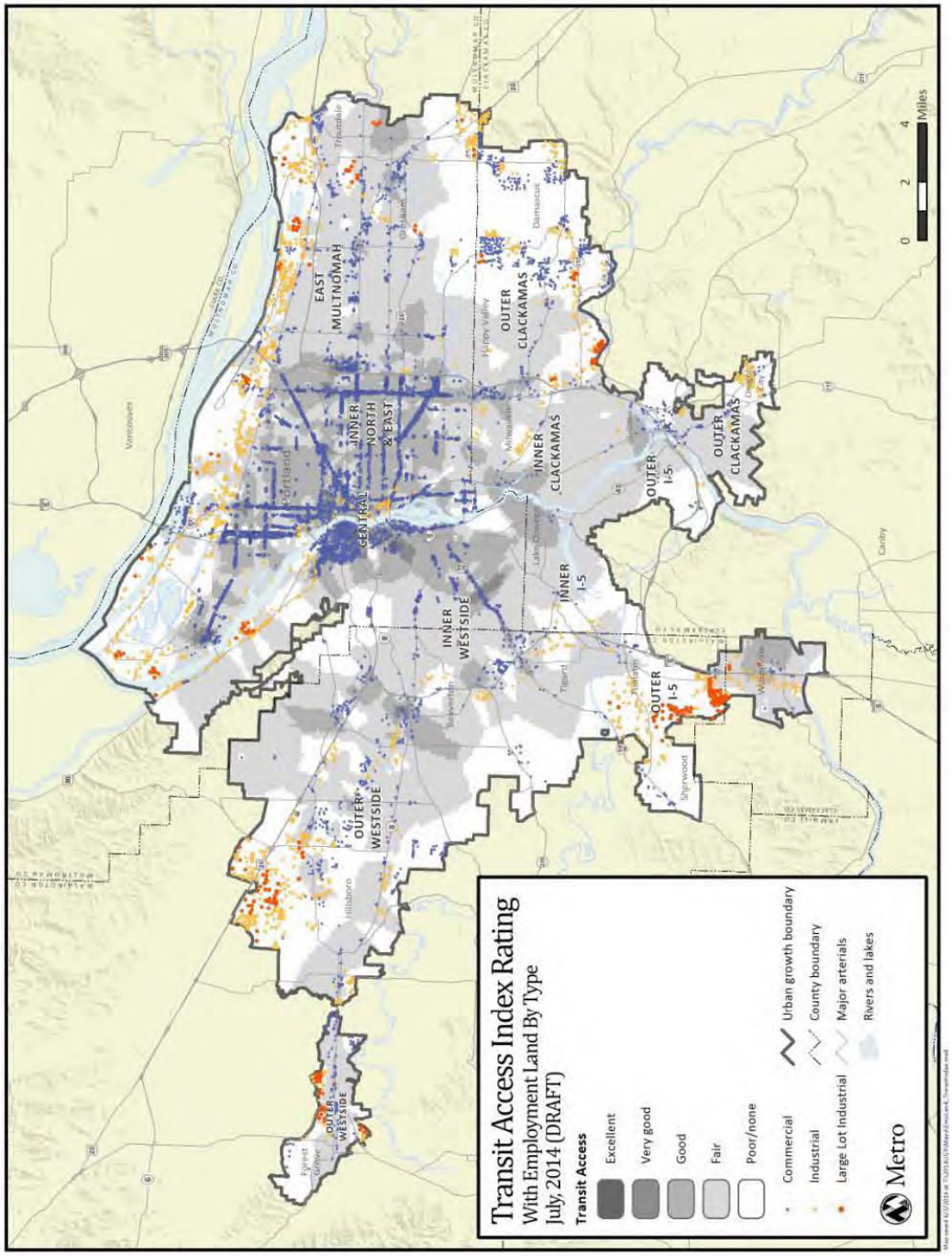


Table 10: Transit access index

Row Labels	Excellent		Very Good		Good		Fair		Poor/No Access		Total	
	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres
Central	**69**	**8.0**	**483**	**77.2**	**1002**	**115.6**	**97**	**24.6**	**410**	**53.0**	**2061**	**278.5**
Commercial	69	8.0	459	72.6	973	102.6	95	21.6	402	51.0	1998	255.8
Industrial	0	0.0	24	4.5	29	13.1	2	3.1	8	1.9	63	22.6
East Mult Co	**0**	**0.0**	**461**	**262.1**	**96**	**20.8**	**435**	**1552.0**	**9**	**0.7**	**1001**	**1835.7**
Commercial	0	0.0	444	224.0	96	20.8	153	228.1	9	0.7	702	473.6
Industrial	0	0.0	17	38.1	0	0.0	243	758.0	0	0.0	260	796.1
Large Lot Industrial	0	0.0	0	0.0	0	0.0	39	565.9	0	0.0	39	565.9
Inner Clackamas	**0**	**0.0**	**34**	**23.4**	**23**	**7.2**	**41**	**109.3**	**0**	**0.0**	**98**	**139.9**
Commercial	0	0.0	31	22.4	23	7.2	5	3.3	0	0.0	59	32.9
Industrial	0	0.0	3	1.0	0	0.0	36	106.0	0	0.0	39	107.0
Inner I-5	**0**	**0.0**	**3**	**3.4**	**2**	**0.6**	**21**	**23.7**	**0**	**0.0**	**26**	**27.7**
Commercial	0	0.0	3	3.4	2	0.6	13	13.1	0	0.0	18	17.1
Industrial	0	0.0	0	0.0	0	0.0	8	10.6	0	0.0	8	10.6
Inner North & East	**0**	**0.0**	**2050**	**197.5**	**3201**	**251.0**	**1387**	**1620.0**	**205**	**14.4**	**6843**	**2083.0**
Commercial	0	0.0	1969	164.0	3198	248.7	907	161.0	203	14.3	6277	588.0
Industrial	0	0.0	81	33.5	3	2.2	440	983.8	2	0.2	526	1019.7
Large Lot Industrial	0	0.0	0	0.0	0	0.0	40	475.2	0	0.0	40	475.2
Inner Westside	**0**	**0.0**	**274**	**134.6**	**156**	**38.7**	**156**	**281.8**	**19**	**6.2**	**605**	**461.2**
Commercial	0	0.0	264	118.8	155	38.0	111	172.5	19	6.2	549	335.6
Industrial	0	0.0	10	15.8	1	0.7	45	109.3	0	0.0	56	125.7
Outer Clackamas	**0**	**0.0**	**97**	**78.3**	**12**	**9.6**	**708**	**2368.4**	**0**	**0.0**	**817**	**2456.4**
Commercial	0	0.0	91	70.5	12	9.6	458	1243.0	0	0.0	561	1323.1
Industrial	0	0.0	6	7.8	0	0.0	214	965.3	0	0.0	220	973.1
Large Lot Industrial	0	0.0	0	0.0	0	0.0	36	160.1	0	0.0	36	160.1
Outer I-5	**0**	**0.0**	**58**	**122.4**	**6**	**11.6**	**253**	**796.9**	**0**	**0.0**	**317**	**930.8**
Commercial	0	0.0	16	15.9	1	4.4	41	51.7	0	0.0	58	72.0
Industrial	0	0.0	26	75.6	5	7.2	128	506.8	0	0.0	159	589.5
Large Lot Industrial	0	0.0	16	30.9	0	0.0	84	238.4	0	0.0	100	269.3
Outer Westside	**0**	**0.0**	**129**	**127.7**	**8**	**2.5**	**622**	**2982.9**	**0**	**0.0**	**759**	**3113.1**
Commercial	0	0.0	115	108.7	8	2.5	259	480.8	0	0.0	382	591.9
Industrial	0	0.0	14	19.0	0	0.0	289	1402.4	0	0.0	303	1421.4
Large Lot Industrial	0	0.0	0	0.0	0	0.0	74	1099.7	0	0.0	74	1099.7
Grand Total	**69**	**8.0**	**3589**	**1026.7**	**4506**	**457.5**	**3720**	**9759.6**	**643**	**74.4**	**12527**	**11326.2**

Map 15: Transit access index



Description of any development constraints or infrastructure needs that affect the buildable area of sites in the inventory

The methodology used for the buildable land inventory removes environmentally constrained acres.

Table 11: Environmentally constrained acres removed from buildable land inventory

	Acres of Environmentally Constrained Land
Central	**71.26**
Commercial	69.71
Industrial	1.56
East Mult Co	**477.20**
Commercial	104.78
Industrial	261.39
Large Lot Industrial	111.03
Inner Clackamas	**30.54**
Commercial	6.51
Industrial	24.03
Inner I-5	**4.58**
Commercial	2.44
Industrial	2.13
Inner North & East	**1,541.21**
Commercial	178.78
Industrial	901.95
Large Lot Industrial	460.48
Inner Westside	**163.23**
Commercial	107.47
Industrial	55.76
Outer Clackamas	**651.57**
Commercial	390.51
Industrial	228.82
Large Lot Industrial	32.23
Outer I-5	**241.22**
Commercial	21.06
Industrial	175.34
Large Lot Industrial	44.82
Outer Westside	**518.17**
Commercial	134.56
Industrial	226.63
Large Lot Industrial	156.98
Grand Total	**3,698.98**

Table 12 describes constraints from slopes. Areas with slopes over 25 percent are removed from the buildable land inventory. For this site characteristics analysis, areas with slopes over 7% are identified.

Unconstrained: 10% or less of the taxlot has steep slopes
Partially Constrained: 10.01% to 50% of the taxlot has steep slopes
Constrained: 50 to 89.99% of the lot has steep slopes
Heavily Constrained: Greater than 90% of the site has steep slopes

Table 12: Steep (>7%) slope constraints (slopes over 25% are removed from buildable land inventory)

	Unconstrained		Partially constrained		Constrained		Heavily constrained		Total	
Row Labels	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres
Central	**230**	**29.6**	**407**	**29.7**	**317**	**74.8**	**1107**	**144.3**	**2061**	**278.5**
Commercial	218	28.4	395	29.0	308	66.6	1077	131.8	1998	255.8
Industrial	12	1.2	12	0.7	9	8.2	30	12.6	63	22.6
East Mult Co	**94**	**245.4**	**62**	**52.5**	**202**	**815.6**	**634**	**691.3**	**992**	**1804.9**
Commercial	43	62.9	42	24.2	88	151.9	529	234.6	702	473.6
Industrial	49	132.4	20	28.3	100	397.3	91	238.1	260	796.1
Large Lot Industrial	2	50.1			14	266.3	14	218.7	30	535.1
Inner Clackamas	**14**	**2.8**	**9**	**4.1**	**26**	**99.4**	**49**	**33.6**	**98**	**139.9**
Commercial	7	1.4	3	2.9	13	9.3	36	19.3	59	32.9
Industrial	7	1.4	6	1.2	13	90.0	13	14.4	39	107.0
Inner I-5	**10**	**7.9**	**2**	**0.7**	**6**	**10.9**	**8**	**8.2**	**26**	**27.7**
Commercial	10	7.9			4	6.1	4	3.1	18	17.1
Industrial			2	0.7	2	4.8	4	5.1	8	10.6
Inner North & East	**337**	**101.8**	**764**	**67.9**	**848**	**1161.5**	**4885**	**751.8**	**6834**	**2083.0**
Commercial	254	39.6	674	53.0	650	131.8	4699	363.7	6277	588.0
Industrial	80	57.2	88	13.6	186	664.3	172	284.6	526	1019.7
Large Lot Industrial	3	4.9	2	1.3	12	365.5	14	103.5	31	475.2
Inner Westside	**140**	**92.6**	**143**	**33.0**	**167**	**164.1**	**155**	**171.6**	**605**	**461.2**
Commercial	122	50.8	142	32.8	145	115.1	140	136.8	549	335.6
Industrial	18	41.7	1	0.2	22	49.0	15	34.7	56	125.7
Outer Clackamas	**156**	**516.5**	**123**	**241.3**	**251**	**888.5**	**261**	**783.6**	**791**	**2429.9**
Commercial	112	290.3	81	129.8	186	525.8	182	377.3	561	1323.1
Industrial	39	158.8	42	111.5	65	362.7	74	340.1	220	973.1
Large Lot Industrial	5	67.4					5	66.2	10	133.6
Outer I-5	**41**	**198.2**	**21**	**18.4**	**90**	**396.3**	**90**	**318.0**	**242**	**930.8**
Commercial	7	8.3	13	11.8	13	19.7	25	32.2	58	72.0
Industrial	27	80.7	6	2.1	67	291.3	59	215.4	159	589.5
Large Lot Industrial	7	109.2	2	4.5	10	85.2	6	70.4	25	269.3
Outer Westside	**72**	**87.6**	**27**	**90.8**	**181**	**1205.9**	**460**	**1728.8**	**740**	**3113.1**
Commercial	42	34.8	22	75.4	76	155.6	242	326.2	382	591.9
Industrial	28	51.4	5	15.4	96	730.7	174	624.0	303	1421.4
Large Lot Industrial	2	1.5			9	319.6	44	778.6	55	1099.7
Grand Total	**1094**	**1282.5**	**1558**	**538.4**	**2088**	**4816.9**	**7649**	**4631.1**	**12389**	**11268.8**

Table 13: Marine use restrictions

Row Labels	No Marine Restrictions		Marine Restrictions		Total	
	Parcels	Acres	Parcels	Acres	Parcels	Acres
Central	**2060**	**278.4**	**1**	**0.0**	**2061**	**278.5**
Commercial	1997	255.8	1	0.0	1998	255.8
Industrial	63	22.6	0	0.0	63	22.6
East Mult Co	**922**	**1636.5**	**79**	**199.2**	**1001**	**1835.7**
Commercial	695	457.6	7	16.0	702	473.6
Industrial	191	636.5	69	159.7	260	796.1
Large Lot Industrial	36	542.5	3	23.5	39	565.9
Inner Clackamas	**98**	**139.9**	**0**	**0.0**	**98**	**139.9**
Commercial	59	32.9	0	0.0	59	32.9
Industrial	39	107.0	0	0.0	39	107.0
Inner I-5	**26**	**27.7**	**0**	**0.0**	**26**	**27.7**
Commercial	18	17.1	0	0.0	18	17.1
Industrial	8	10.6	0	0.0	8	10.6
Inner North & East	**6186**	**949.7**	**657**	**1133.2**	**6843**	**2083.0**
Commercial	6127	499.4	150	88.6	6277	588.0
Industrial	45	182.6	481	837.2	526	1019.7
Large Lot Industrial	14	267.7	26	207.5	40	475.2
Inner Westside	**605**	**461.2**	**0**	**0.0**	**605**	**461.2**
Commercial	549	335.6	0	0.0	549	335.6
Industrial	56	125.7	0	0.0	56	125.7
Outer Clackamas	**817**	**2456.4**	**0**	**0.0**	**817**	**2456.4**
Commercial	561	1323.1	0	0.0	561	1323.1
Industrial	220	973.1	0	0.0	220	973.1
Large Lot Industrial	36	160.1	0	0.0	36	160.1
Outer I-5	**317**	**930.8**	**0**	**0.0**	**317**	**930.8**
Commercial	58	72.0	0	0.0	58	72.0
Industrial	159	589.5	0	0.0	159	589.5
Large Lot Industrial	100	269.3	0	0.0	100	269.3
Outer Westside	**759**	**3113.1**	**0**	**0.0**	**759**	**3113.1**
Commercial	382	591.9	0	0.0	382	591.9
Industrial	303	1421.4	0	0.0	303	1421.4
Large Lot Industrial	74	1099.7	0	0.0	74	1099.7
Grand Total	**11790**	**9993.7**	**737**	**1332.4**	**12527**	**11326.2**

Map 16: Marine use restrictions

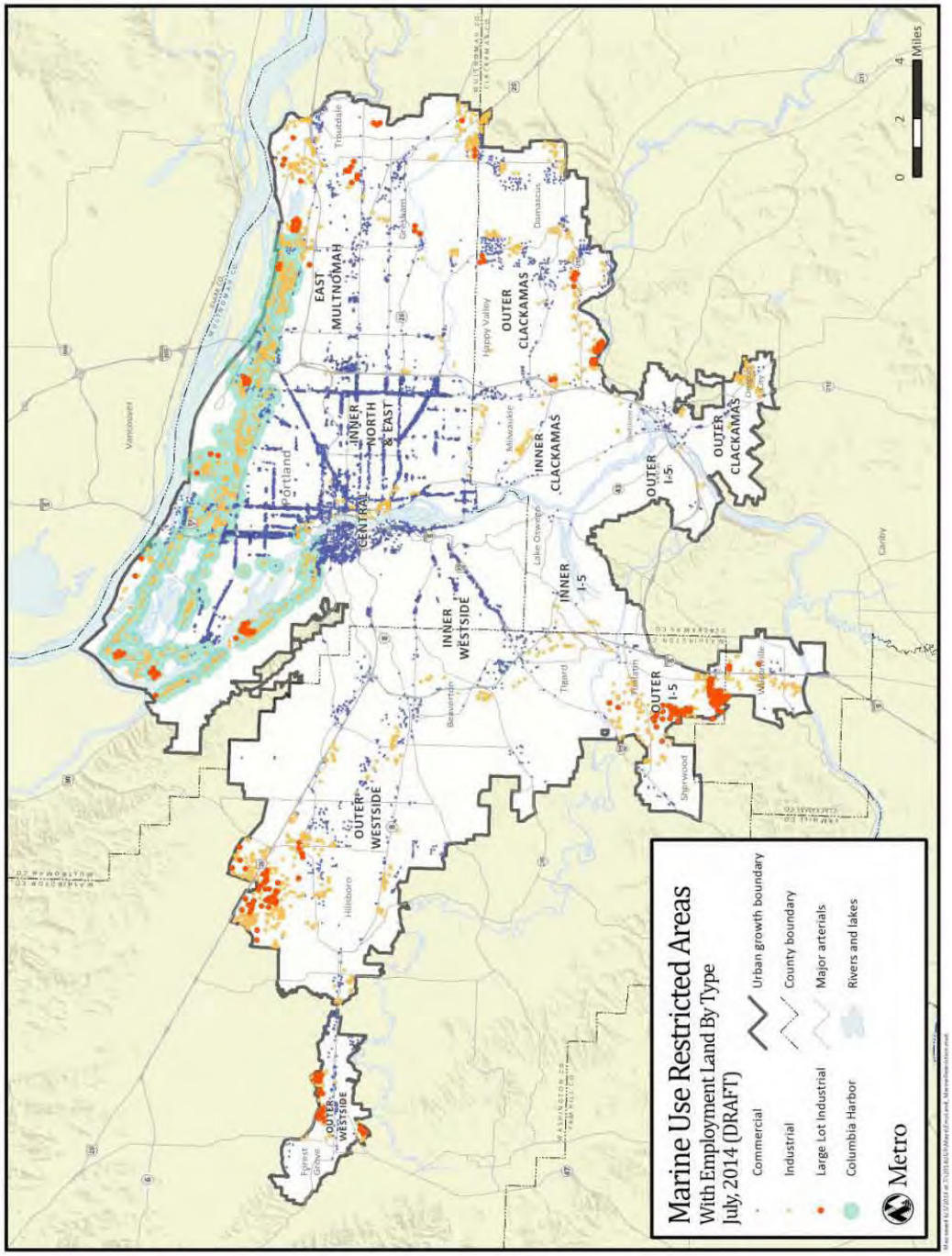


Table 14: Aviation overlay zones

Row Labels	No Aviation Overlay		Aviation Overlay Zone		Total	
	Parcels	Acres	Parcels	Acres	Parcels	Acres
Central	**2061**	**278.5**	**0**	**0.0**	**2061**	**278.5**
Commercial	1998	255.8	0	0.0	1998	255.8
Industrial	63	22.6	0	0.0	63	22.6
East Mult Co	**702**	**985.9**	**299**	**849.8**	**1001**	**1835.7**
Commercial	560	305.4	142	168.2	702	473.6
Industrial	117	368.4	143	427.7	260	796.1
Large Lot Industrial	25	312.1	14	253.9	39	565.9
Inner Clackamas	**98**	**139.9**	**0**	**0.0**	**98**	**139.9**
Commercial	59	32.9	0	0.0	59	32.9
Industrial	39	107.0	0	0.0	39	107.0
Inner I-5	**26**	**27.7**	**0**	**0.0**	**26**	**27.7**
Commercial	18	17.1	0	0.0	18	17.1
Industrial	8	10.6	0	0.0	8	10.6
Inner North & East	**5351**	**874.4**	**1492**	**1208.6**	**6843**	**2083.0**
Commercial	5138	369.5	1139	218.5	6277	588.0
Industrial	189	226.6	337	793.2	526	1019.7
Large Lot Industrial	24	278.3	16	196.9	40	475.2
Inner Westside	**605**	**461.2**	**0**	**0.0**	**605**	**461.2**
Commercial	549	335.6	0	0.0	549	335.6
Industrial	56	125.7	0	0.0	56	125.7
Outer Clackamas	**817**	**2456.4**	**0**	**0.0**	**817**	**2456.4**
Commercial	561	1323.1	0	0.0	561	1323.1
Industrial	220	973.1	0	0.0	220	973.1
Large Lot Industrial	36	160.1	0	0.0	36	160.1
Outer I-5	**317**	**930.8**	**0**	**0.0**	**317**	**930.8**
Commercial	58	72.0	0	0.0	58	72.0
Industrial	159	589.5	0	0.0	159	589.5
Large Lot Industrial	100	269.3	0	0.0	100	269.3
Outer Westside	**632**	**2049.4**	**127**	**1063.6**	**759**	**3113.1**
Commercial	371	544.5	11	47.5	382	591.9
Industrial	207	909.8	96	511.6	303	1421.4
Large Lot Industrial	54	595.2	20	504.5	74	1099.7
Grand Total	**10609**	**8204.2**	**1918**	**3122.0**	**12527**	**11326.2**

Map 17: Aviation overlay zones

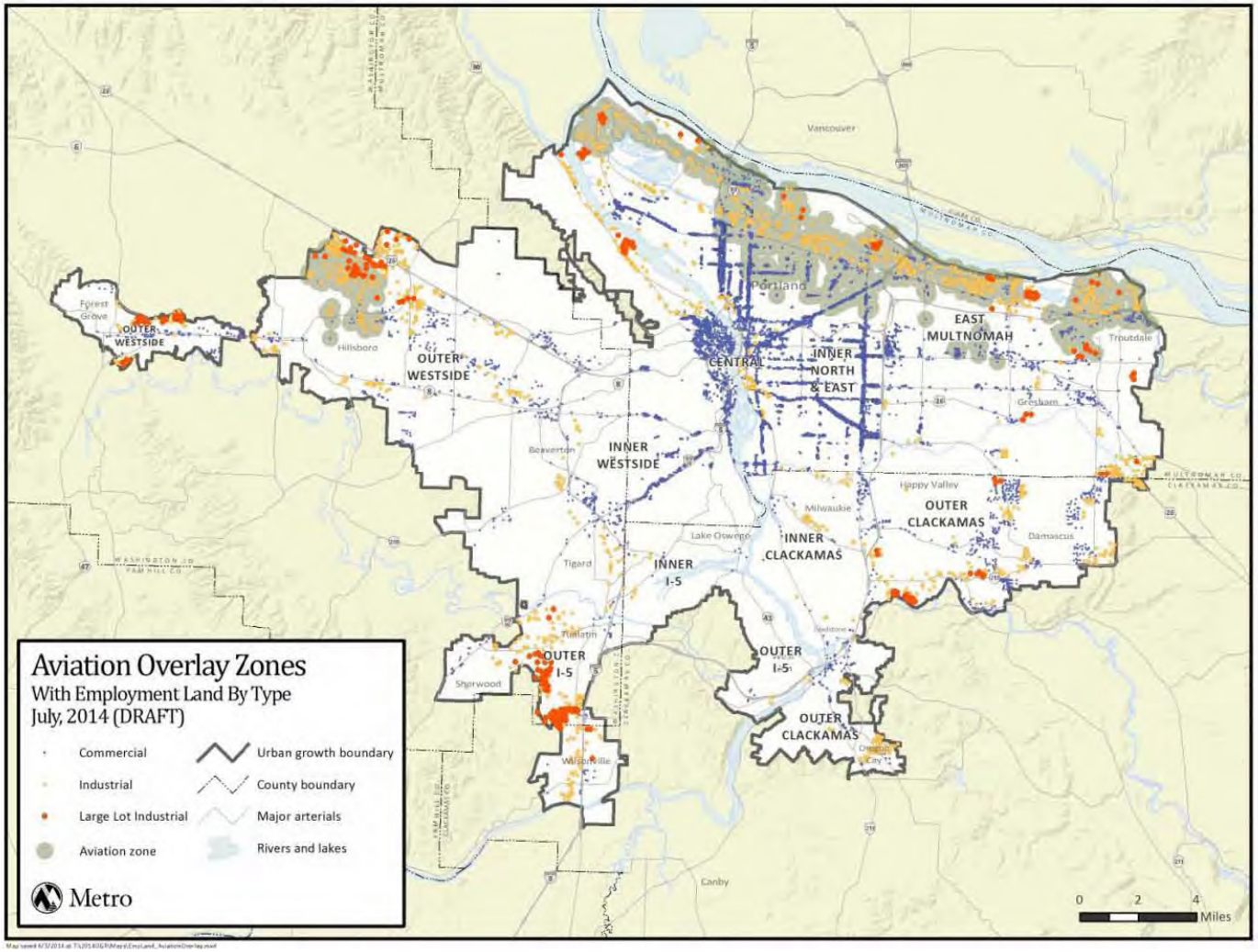


Table 15: Acreages by category of land in buildable land inventory

Row Labels	Developed		Redevelopable		Vacant		Total	
	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres
Central	**120**	**57.4**	**1723.0**	**605.9**	**218**	**70.2**	**2061**	**733.6**
Commercial	94	38.4	1723.0	605.9	181	64.1	1998	708.4
Industrial	26	19.0			37	6.1	63	25.1
East Mult Co	**56**	**475.9**	**463.0**	**708.9**	**482**	**1452.4**	**1001**	**2637.2**
Commercial	14	25.1	416.0	395.5	272	353.8	702	774.4
Industrial	34	159.4	45.0	215.3	181	602.2	260	976.9
Large Lot Industrial	8	291.4	2.0	98.1	29	496.5	39	886.0
Inner Clackamas			**44.0**	**139.0**	**54**	**27.0**	**98**	**166.0**
Commercial			31.0	29.1	28	18.0	59	47.1
Industrial			13.0	109.8	26	9.0	39	118.9
Inner I-5			**15.0**	**29.3**	**11**	**8.3**	**26**	**37.6**
Commercial			11.0	19.4	7	6.4	18	25.8
Industrial			4.0	9.8	4	1.9	8	11.7
Inner North & East	**290**	**2697.4**	**5767.0**	**1362.7**	**786**	**748.2**	**6843**	**4808.3**
Commercial	79	118.9	5767.0	1362.7	431	144.7	6277	1626.3
Industrial	192	2153.0			334	419.1	526	2572.1
Large Lot Industrial	19	425.5			21	184.4	40	609.9
Inner Westside	**6**	**41.9**	**437.0**	**381.9**	**162**	**290.3**	**605**	**714.1**
Commercial	6	41.9	406.0	289.1	137	243.5	549	574.4
Industrial			31.0	92.8	25	46.8	56	139.7
Outer Clackamas	**37**	**271.1**	**476.0**	**1749.0**	**304**	**1445.5**	**817**	**3465.6**
Commercial			398.0	1285.2	163	722.2	561	2007.3
Industrial	11	64.8	77.0	445.0	132	571.4	220	1081.2
Large Lot Industrial	26	206.3	1.0	18.9	9	151.9	36	377.1
Outer I-5	**74**	**504.1**	**47.0**	**230.9**	**196**	**844.0**	**317**	**1579.1**
Commercial			13.0	32.9	45	87.7	58	120.7
Industrial			33.0	196.9	126	458.1	159	655.0
Large Lot Industrial	74	504.1	1.0	1.1	25	298.2	100	803.4
Outer Westside	**22**	**294.7**	**269.0**	**1628.4**	**449**	**2273.0**	**740**	**4196.1**
Commercial	1	10.9	164.0	475.3	217	732.6	382	1218.7
Industrial	2	7.1	91.0	842.1	191	669.9	284	1519.2
Large Lot Industrial	19	276.8	14.0	311.0	41	870.5	74	1458.2
Grand Total	**605**	**4342.5**	**9241.0**	**6836.0**	**2662**	**7159.0**	**12508**	**18337.5**

Map 18: Mean volume-to-capacity ratio for major roadways and arterials

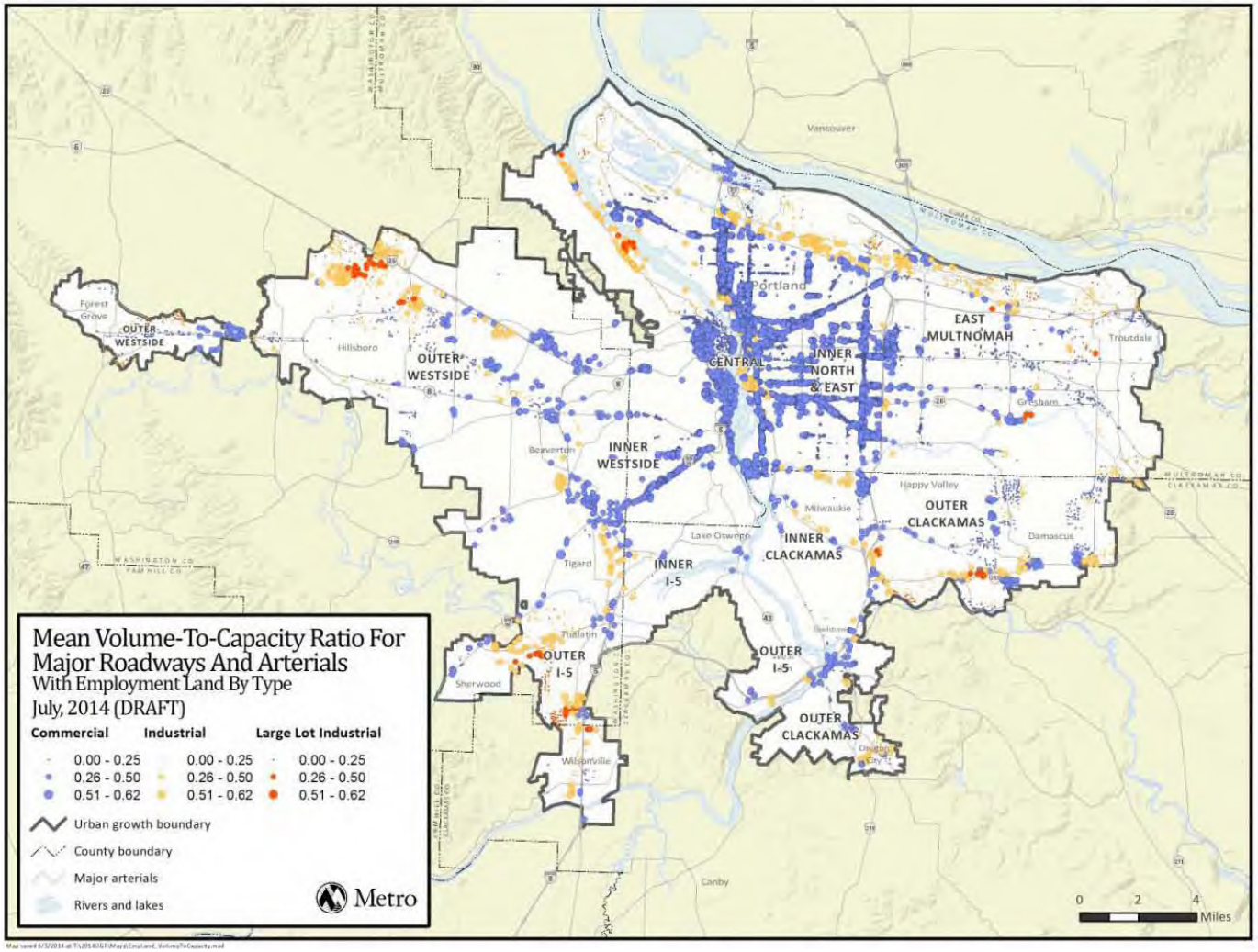


Table 16: Incorporation status (land inside city boundary)

Row Labels	Incorporated Area		Unincorporated Area		Total	
	Parcels	Acres	Parcels	Acres	Parcels	Acres
Central	**2061**	**278.5**			**2061**	**278.5**
Commercial	1998	255.8			1998	255.8
Industrial	63	22.6			63	22.6
East Mult Co	**914**	**1489.4**	**87**	**346.3**	**1001**	**1835.7**
Commercial	683	421.6	19	52.0	702	473.6
Industrial	195	583.8	65	212.3	260	796.1
Large Lot Industrial	36	483.9	3	82.0	39	565.9
Inner Clackamas	**48**	**112.8**	**50**	**27.1**	**98**	**139.9**
Commercial	22	11.9	37	21.0	59	32.9
Industrial	26	100.9	13	6.0	39	107.0
Inner I-5	**26**	**27.7**			**26**	**27.7**
Commercial	18	17.1			18	17.1
Industrial	8	10.6			8	10.6
Inner North & East	**6832**	**1782.8**	**11**	**300.2**	**6843**	**2083.0**
Commercial	6277	588.0			6277	588.0
Industrial	517	921.0	9	98.7	526	1019.7
Large Lot Industrial	38	273.8	2	201.4	40	475.2
Inner Westside	**575**	**428.3**	**30**	**32.9**	**605**	**461.2**
Commercial	525	313.4	24	22.1	549	335.6
Industrial	50	114.9	6	10.8	56	125.7
Outer Clackamas	**664**	**2124.0**	**153**	**332.4**	**817**	**2456.4**
Commercial	490	1244.0	71	79.1	561	1323.1
Industrial	163	774.7	57	198.4	220	973.1
Large Lot Industrial	11	105.2	25	54.9	36	160.1
Outer I-5	**203**	**600.6**	**114**	**330.3**	**317**	**930.8**
Commercial	55	67.6	3	4.4	58	72.0
Industrial	124	459.4	35	130.1	159	589.5
Large Lot Industrial	24	73.5	76	195.8	100	269.3
Outer Westside	**505**	**1920.4**	**254**	**1192.6**	**759**	**3113.1**
Commercial	227	327.9	155	264.0	382	591.9
Industrial	228	1084.7	75	336.8	303	1421.4
Large Lot Industrial	50	507.9	24	591.8	74	1099.7
Grand Total	**11828**	**8764.4**	**699**	**2561.8**	**12527**	**11326.2**

Map 19: Incorporation status (land inside city boundary)

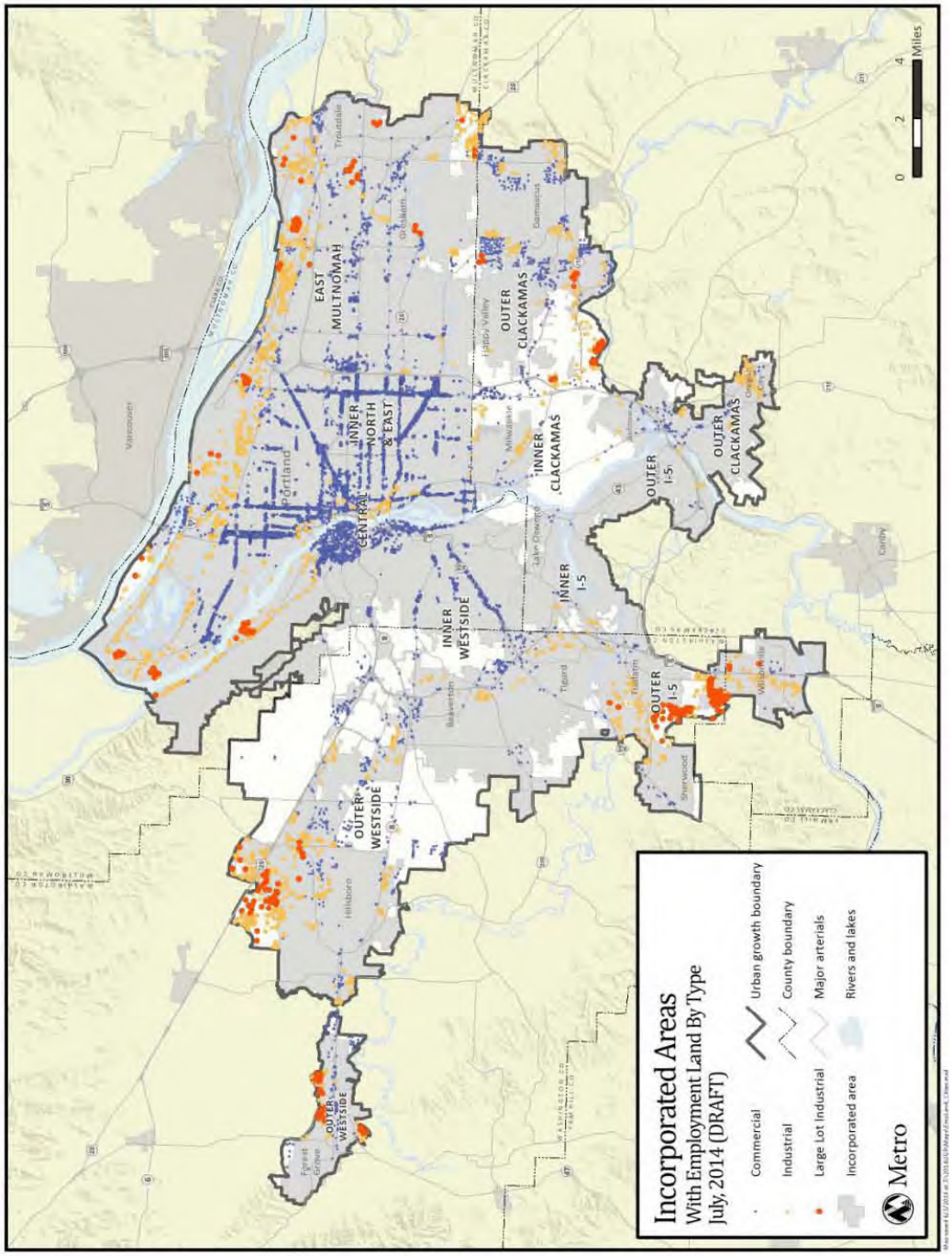


Table 17: Average land value per square foot

	Average Land Value/Sq. Ft.
Central	**$ 46.45**
Commercial	$ 47.38
Industrial	$ 18.35
East Mult Co	**$ 8.28**
Commercial	$ 10.30
Industrial	$ 3.35
Large Lot Industrial	$ 3.41
Inner Clackamas	**$ 5.45**
Commercial	$ 7.04
Industrial	$ 3.26
Inner I-5	**$ 6.23**
Commercial	$ 6.90
Industrial	$ 4.66
Inner North & East	**$ 20.15**
Commercial	$ 21.51
Industrial	$ 5.97
Large Lot Industrial	$ 3.83
Inner Westside	**$ 17.17**
Commercial	$ 18.27
Industrial	$ 4.36
Outer Clackamas	**$ 2.42**
Commercial	$ 2.62
Industrial	$ 1.97
Large Lot Industrial	$ 2.06
Outer I-5	**$ 4.52**
Commercial	$ 10.57
Industrial	$ 3.68
Large Lot Industrial	$ 2.11
Outer Westside	**$ 5.55**
Commercial	$ 6.99
Industrial	$ 4.12
Large Lot Industrial	$ 2.37
Grand Total	**$ 20.99**

Map 20: Land value per square foot

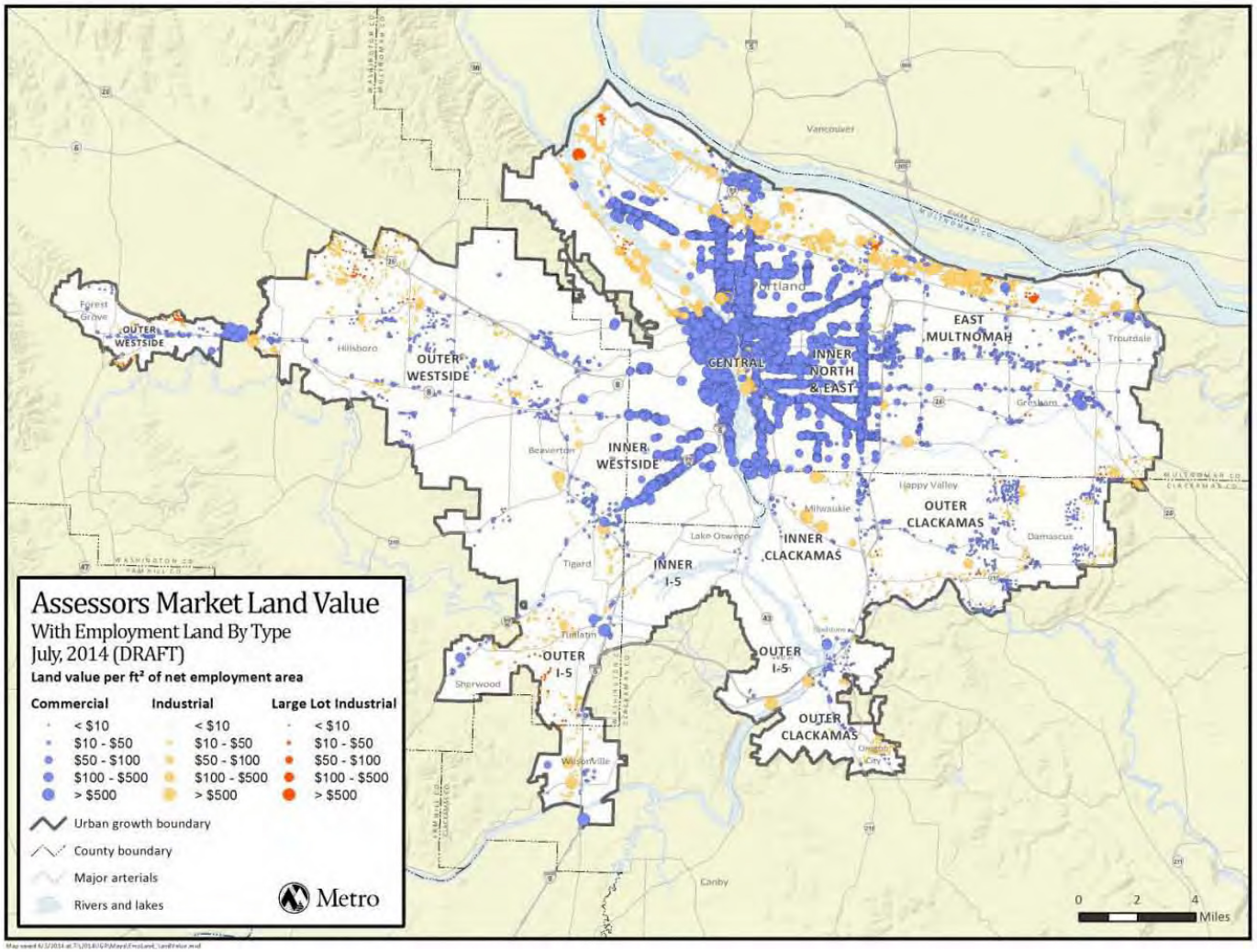


Table 18: Estimated acres for future rights-of-way on buildable land

	Estimated Acres for Future ROW
Central	**77.4**
Commercial	74.8
Industrial	2.5
East Mult Co	**278.9**
Commercial	121.7
Industrial	97.7
Large Lot Industrial	59.5
Inner Clackamas	**18.5**
Commercial	6.6
Industrial	11.9
Inner I-5	**5.7**
Commercial	4.5
Industrial	1.2
Inner North & East	**469.5**
Commercial	132.0
Industrial	263.7
Large Lot Industrial	73.9
Inner Westside	**103.5**
Commercial	89.5
Industrial	14.0
Outer Clackamas	**495.4**
Commercial	363.3
Industrial	108.1
Large Lot Industrial	24.0
Outer I-5	**116.6**
Commercial	21.2
Industrial	65.5
Large Lot Industrial	29.9
Outer Westside	**496.9**
Commercial	217.1
Industrial	158.5
Large Lot Industrial	121.3
Grand Total	**2,062.4**

Appendix 10:
Regional opportunity maps

Though much of the UGR's analysis is guided by Statewide Planning Goals, statutes, and administrative rules, it is also the policy of the Metro Council to exercise its powers to achieve the following six outcomes, characteristics of a successful region:

1. People live, work and play in vibrant communities where their everyday needs are easily accessible.

2. Current and future residents benefit from the region's sustained economic competitiveness and prosperity.

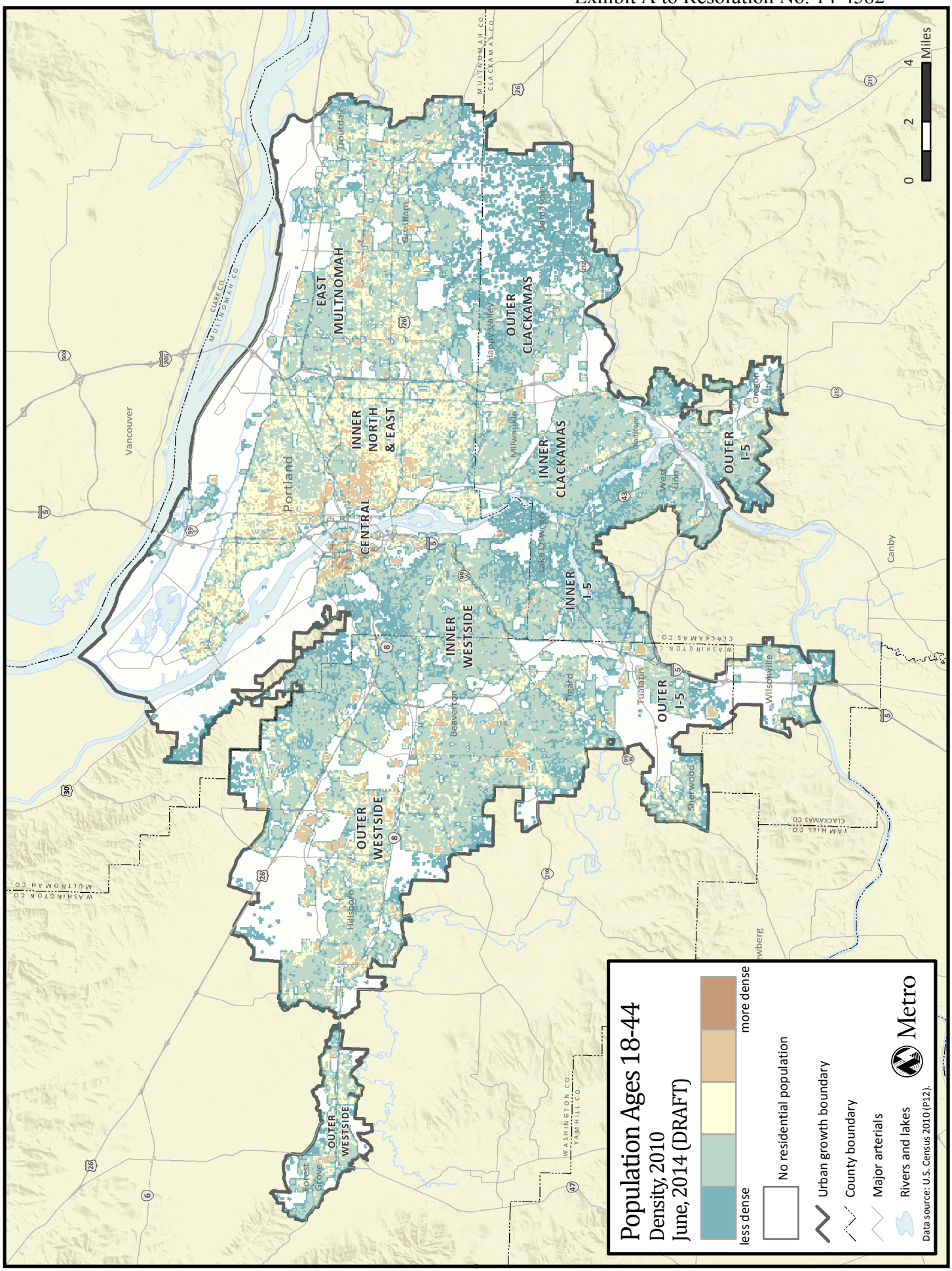
3. People have safe and reliable transportation choices that enhance their quality of life.

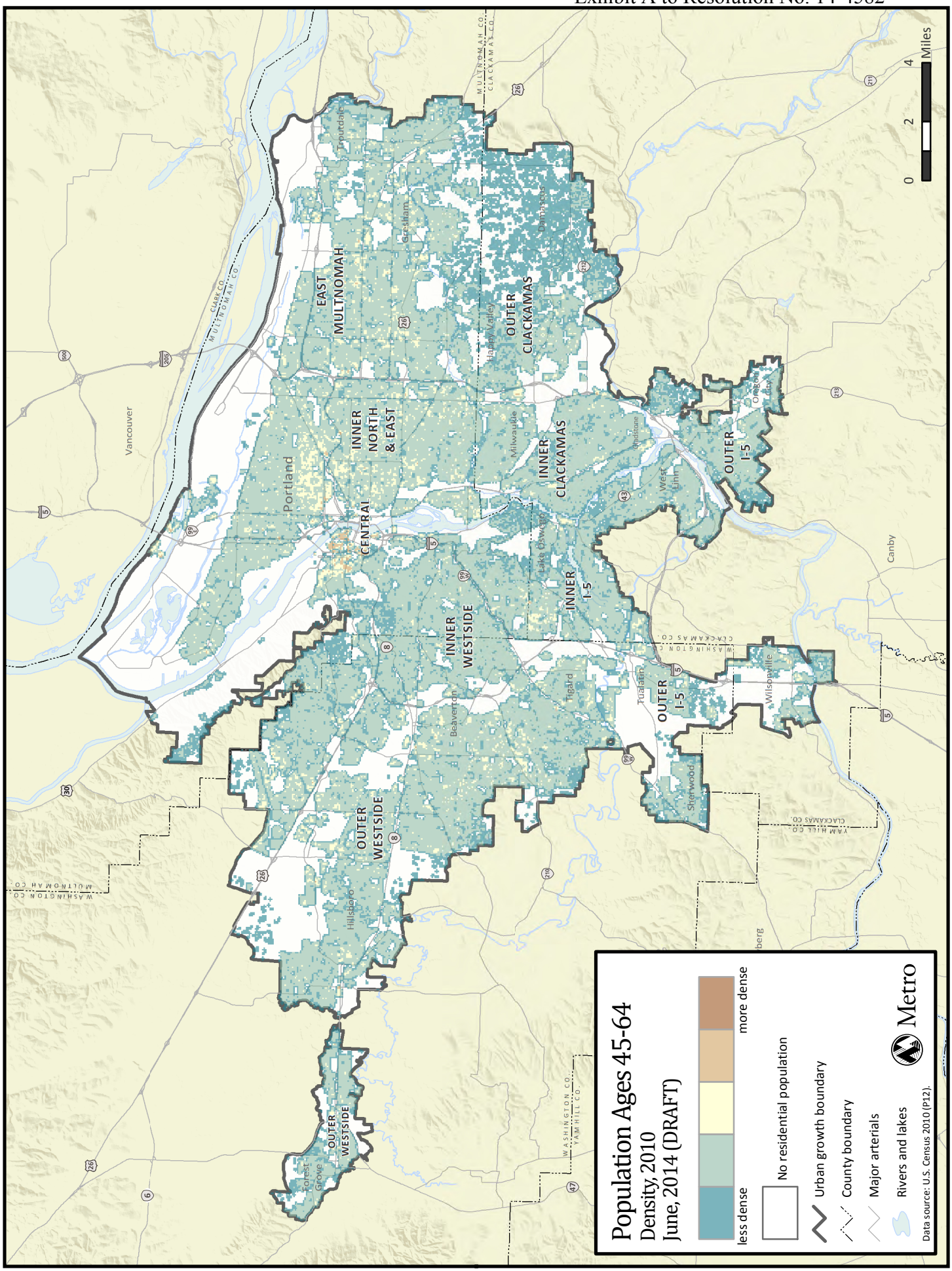
4. The region is a leader in minimizing contributions to global warming.

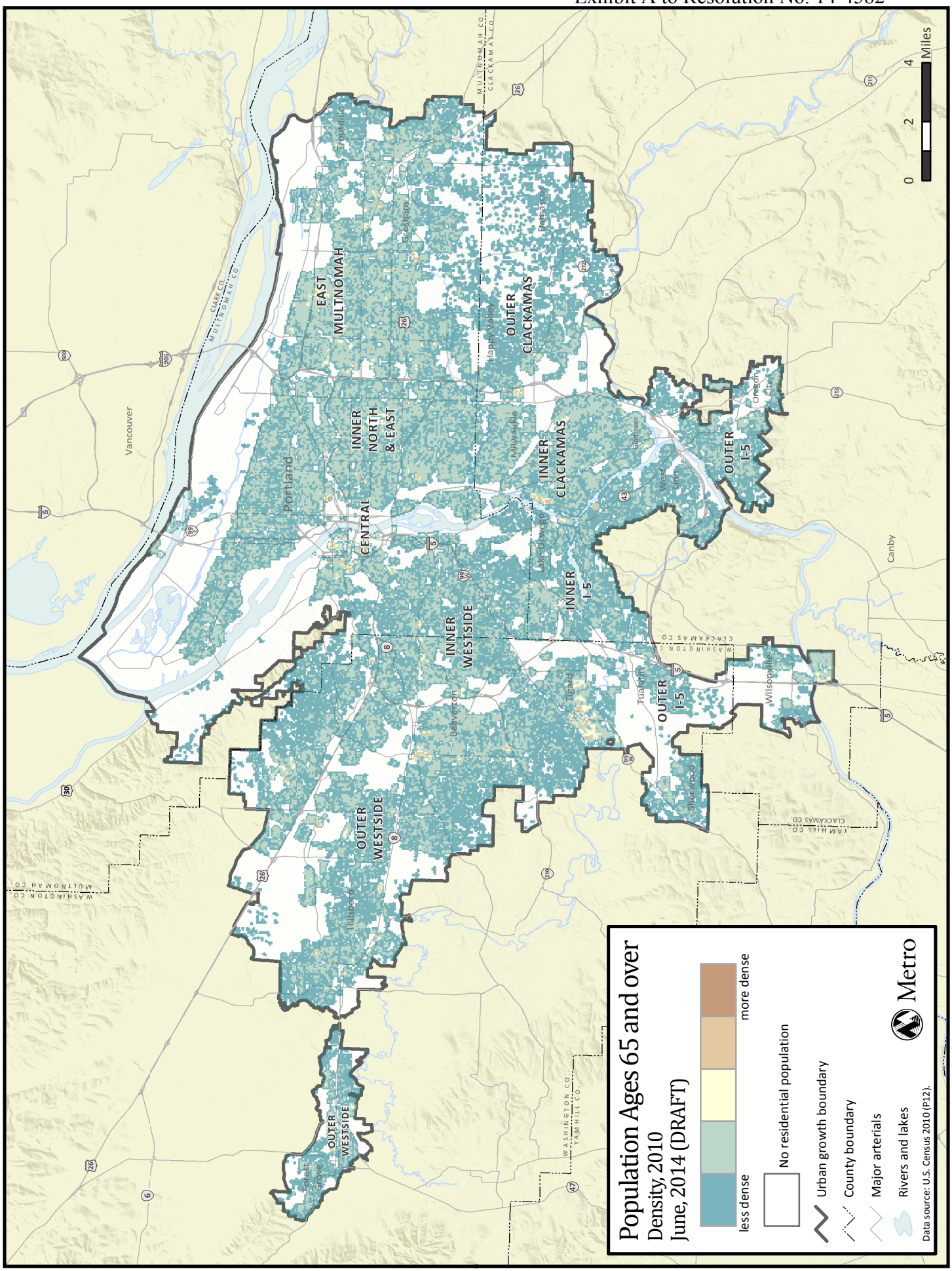
5. Current and future generations enjoy clean air, clean water and healthy ecosystems.

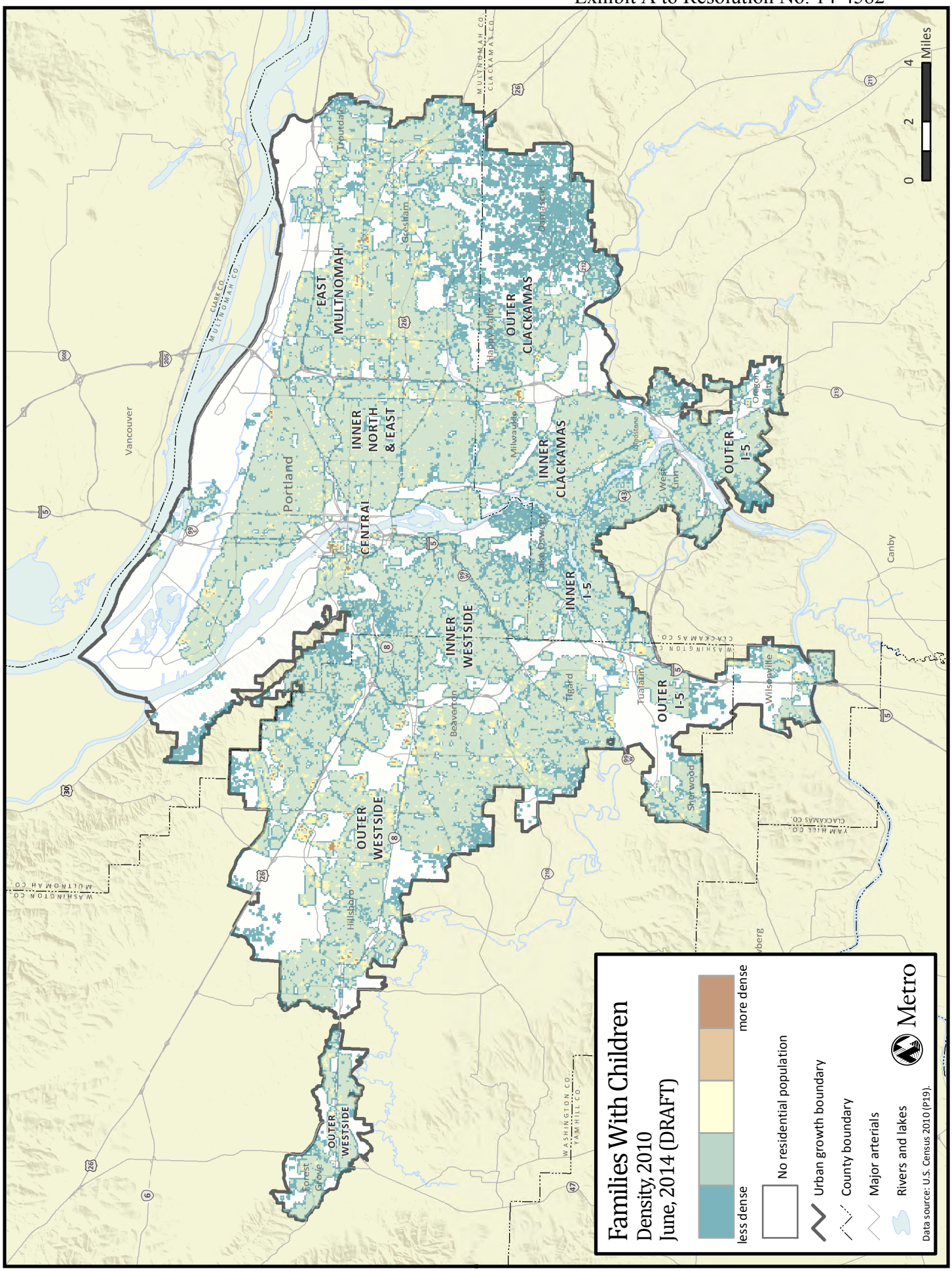
6. The benefits and burdens of growth and change are distributed equitably.

The UGR's primary focus is on housing and employment growth capacity. Using Regional Equity Atlas data developed in partnership with the Coalition for a Livable Future and Portland State University, this appendix provides a series of maps that describe demographic conditions, access to housing, and access to employment. This appendix is intended to be descriptive, not prescriptive, and does not provide interpretation of these maps or policy recommendations. The maps are intended as another source of information that can inform the Metro Council's outcomes-based growth management decision as well as work done by local jurisdictions, service providers, and private-sector partners. Additional background information on data sources can be found at: https://clfuture.org/programs/regional-equity-atlas/about-indicators/indicator-metadata-data-links-documentation


Population Ages 18-44
Density, 2010
June, 2014 (DRAFT)
less dense
more dense
No residential population
Urban growth boundary
County boundary
Major arterials
Rivers and lakes
Metro
Data source: U.S. Census 2010 (P12).
Map saved 6/3/2014 at T:\2014\GIS\Maps\Age18-44Density.mxd
0
2
4
Miles
EAST MULTNOMAH
INNER NORTH & EAST
CENTRAL
INNER WESTSIDE
OUTER WESTSIDE
OUTER CLACKAMAS
INNER CLACKAMAS
INNER I-5
OUTER I-5
Portland
Vancouver
Troutdale
Gresham
Damascus
Happy Valley
Milwaukie
Lake Oswego
Beaverton
Tigard
Tualatin
Wilsonville
Sherwood
West Linn
Oregon City
Canby
Hillsboro
Forest Grove
MULTNOMAH CO
CLARK CO
CLACKAMAS CO
WASHINGTON CO
YAMHILL CO


Population Ages 45-64
Density, 2010
June, 2014 (DRAFT)
less dense
more dense
No residential population
Urban growth boundary
County boundary
Major arterials
Rivers and lakes
Metro
Data source: U.S. Census 2010 (P12).
0
2
4
Miles
EAST MULTNOMAH
INNER NORTH & EAST
CENTRAL
INNER WESTSIDE
OUTER WESTSIDE
OUTER CLACKAMAS
INNER CLACKAMAS
INNER I-5
OUTER I-5
Portland
Vancouver
Gresham
Troutdale
Milwaukie
Lake Oswego
Tigard
Tualatin
Beaverton
Hillsboro
Forest Grove
Sherwood
Wilsonville
West Linn
Oregon City
Canby
MULTNOMAH CO
CLARK CO
CLACKAMAS CO
WASHINGTON CO
YAMHILL CO


Population Ages 65 and over
Density, 2010
June, 2014 (DRAFT)
less dense
more dense
No residential population
Urban growth boundary
County boundary
Major arterials
Rivers and lakes
Data source: U.S. Census 2010 (P12).
Metro
0
2
4
Miles
EAST MULTNOMAH
INNER NORTH & EAST
CENTRAL
INNER WESTSIDE
OUTER WESTSIDE
OUTER CLACKAMAS
INNER CLACKAMAS
INNER I-5
OUTER I-5
Portland
Vancouver
Gresham
Troutdale
Milwaukie
Lake Oswego
Beaverton
Tigard
Tualatin
Wilsonville
Sherwood
Hillsboro
Forest Grove
West Linn
Oregon City
Canby
MULTNOMAH CO
CLARK CO
CLACKAMAS CO
WASHINGTON CO
YAMHILL CO



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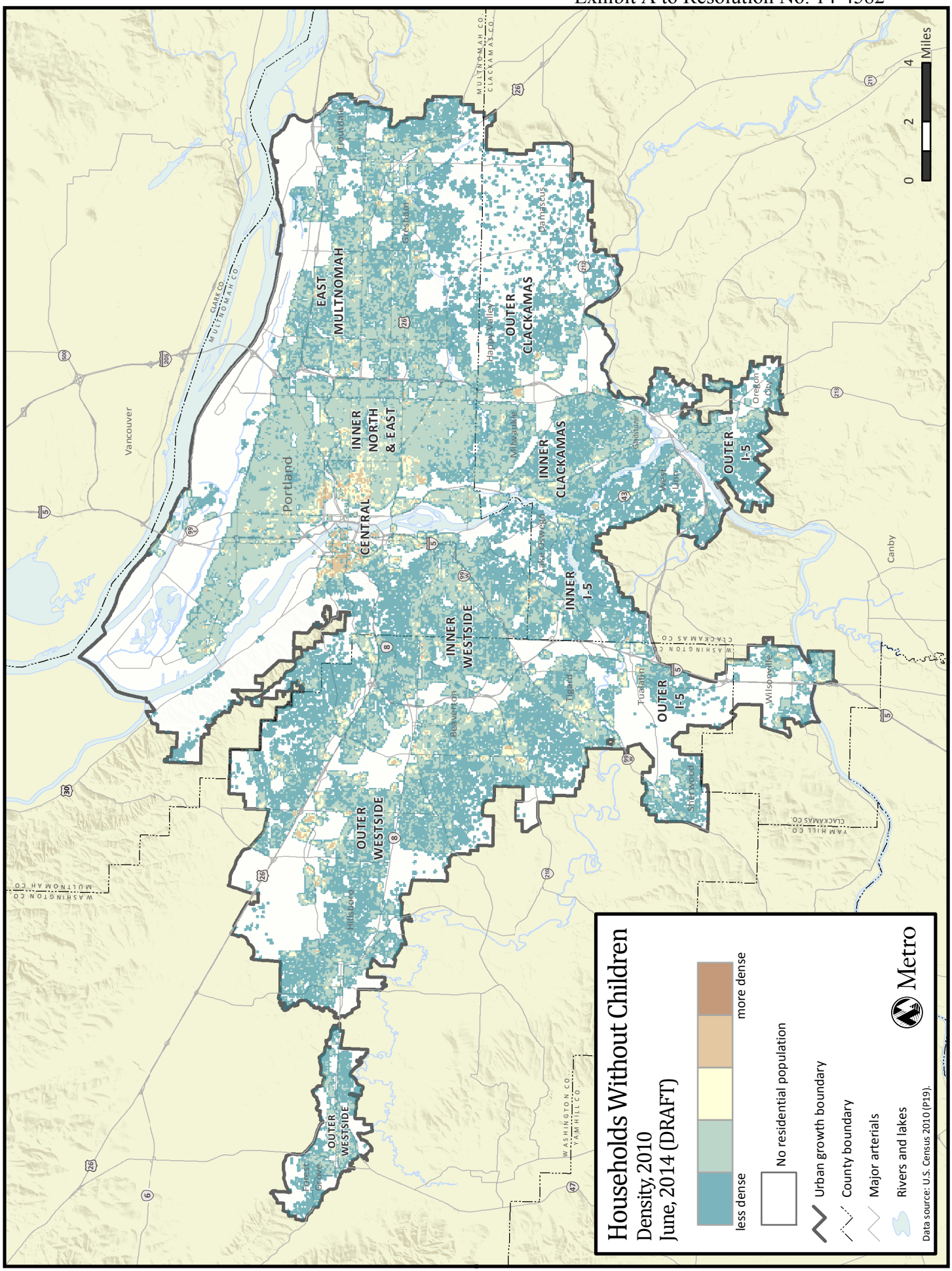
Households Without Children
Density, 2010
June, 2014 (DRAFT)
less dense
more dense
No residential population
Urban growth boundary
County boundary
Major arterials
Rivers and lakes
Data source: U.S. Census 2010 (P19).
Metro
0
2
4
Miles
EAST MULTNOMAH
INNER NORTH & EAST
CENTRAL
INNER WESTSIDE
OUTER WESTSIDE
OUTER CLACKAMAS
INNER CLACKAMAS
INNER I-5
OUTER I-5
Portland
Vancouver
Troutdale
Gresham
Damascus
Happy Valley
Milwaukie
Gladstone
West Linn
Oregon City
Lake Oswego
Beaverton
Tigard
Tualatin
Wilsonville
Sherwood
Hillsboro
Forest Grove
Canby
MULTNOMAH CO
CLARK CO
CLACKAMAS CO
WASHINGTON CO
YAMHILL CO
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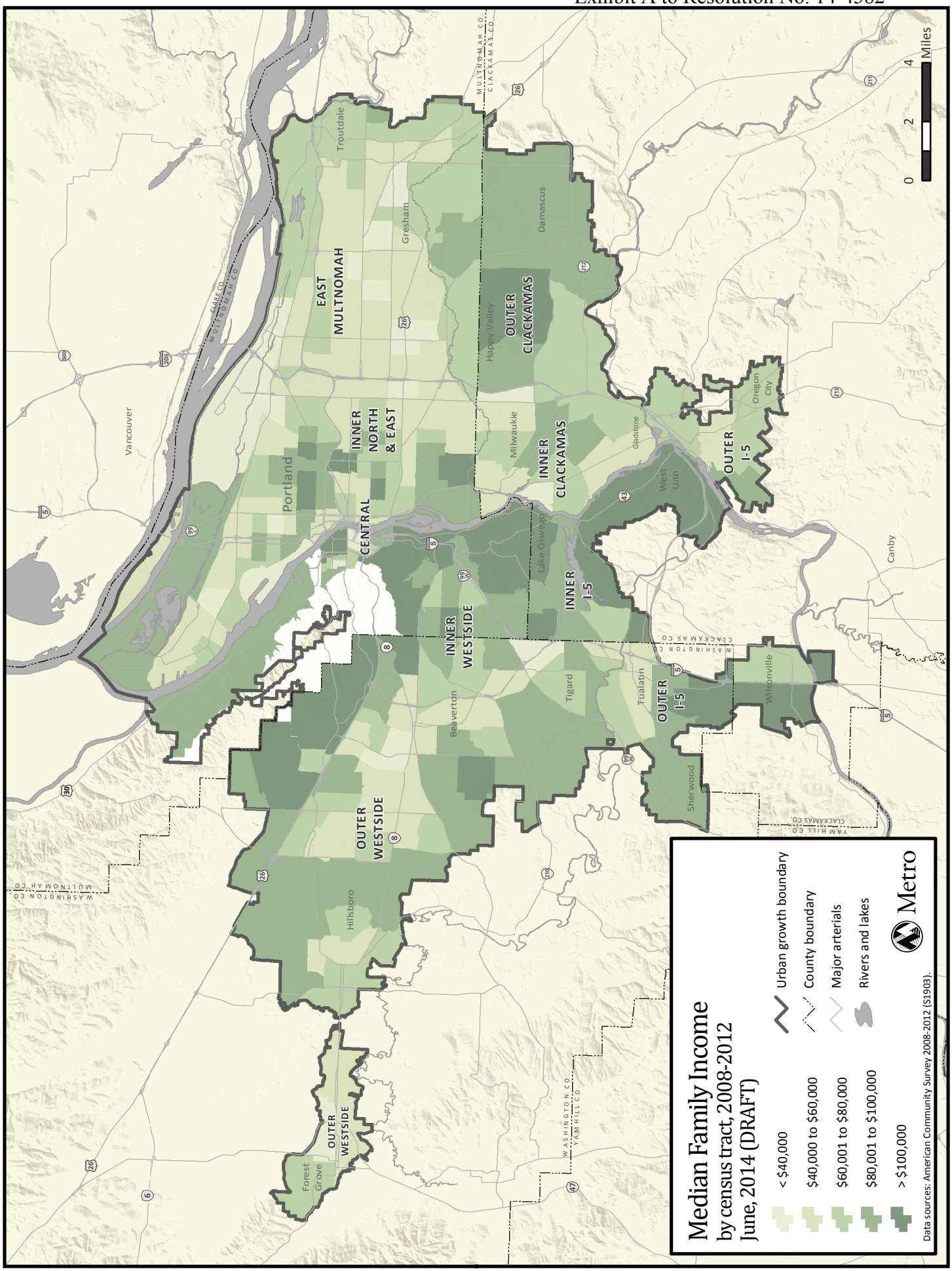
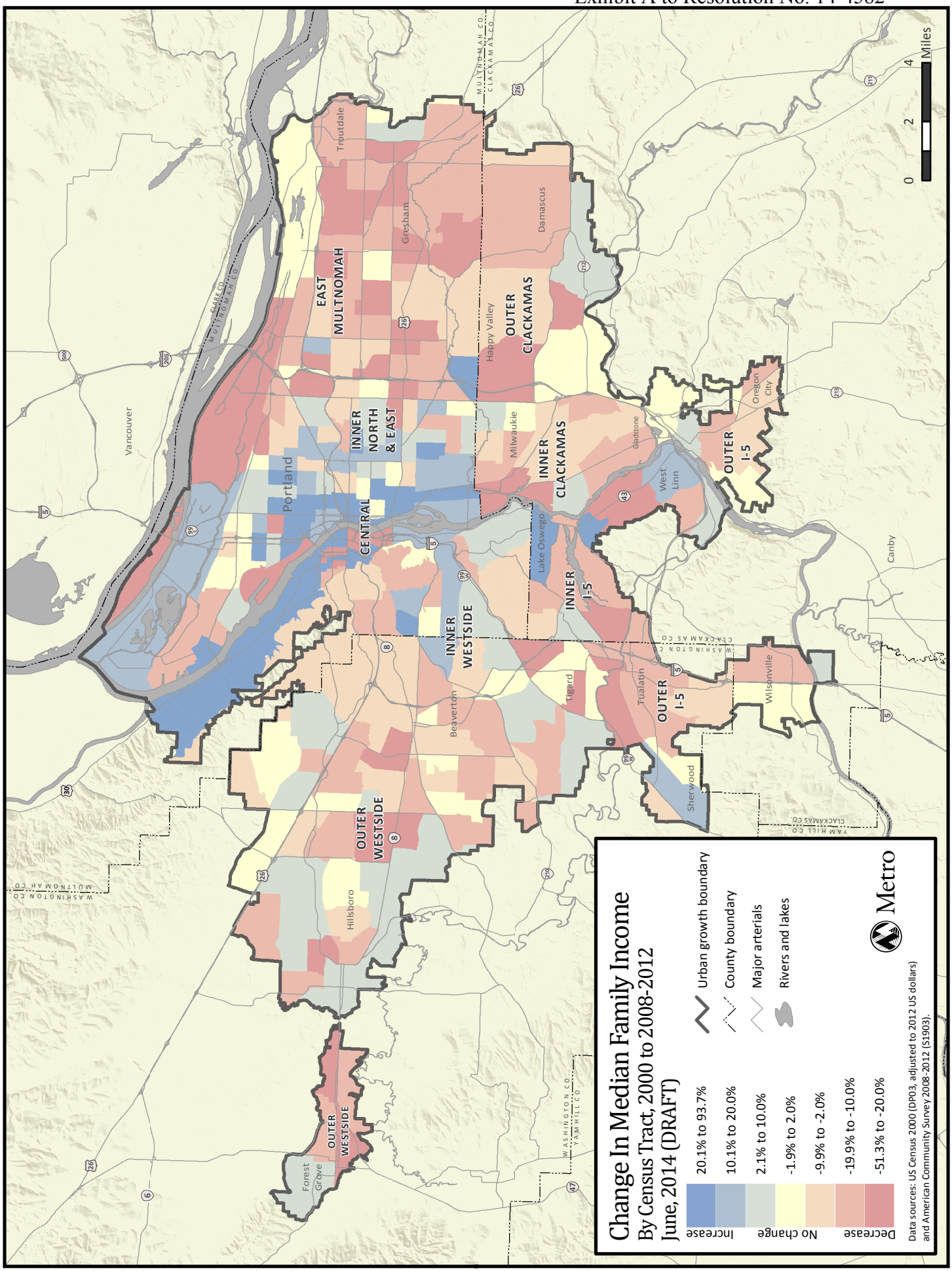

Median Family Income
by census tract, 2008-2012
June, 2014 (DRAFT)
< $40,000
$40,000 to $60,000
$60,001 to $80,000
$80,001 to $100,000
> $100,000
Urban growth boundary
County boundary
Major arterials
Rivers and lakes
Metro
Data sources: American Community Survey 2008-2012 (S1903).
Map saved 6/3/2014 at T:\2014UGR\Maps\MedianFamilyIncome.mxd
0
2
4
Miles
EAST MULTNOMAH
INNER NORTH & EAST
CENTRAL
INNER WESTSIDE
OUTER WESTSIDE
OUTER CLACKAMAS
INNER CLACKAMAS
INNER I-5
OUTER I-5
Portland
Vancouver
Troutdale
Gresham
Happy Valley
Damascus
Milwaukie
Gladstone
Oregon City
West Linn
Lake Oswego
Beaverton
Tigard
Tualatin
Wilsonville
Sherwood
Hillsboro
Forest Grove
Canby
MULTNOMAH CO
CLARK CO
CLACKAMAS CO
WASHINGTON CO
YAMHILL CO



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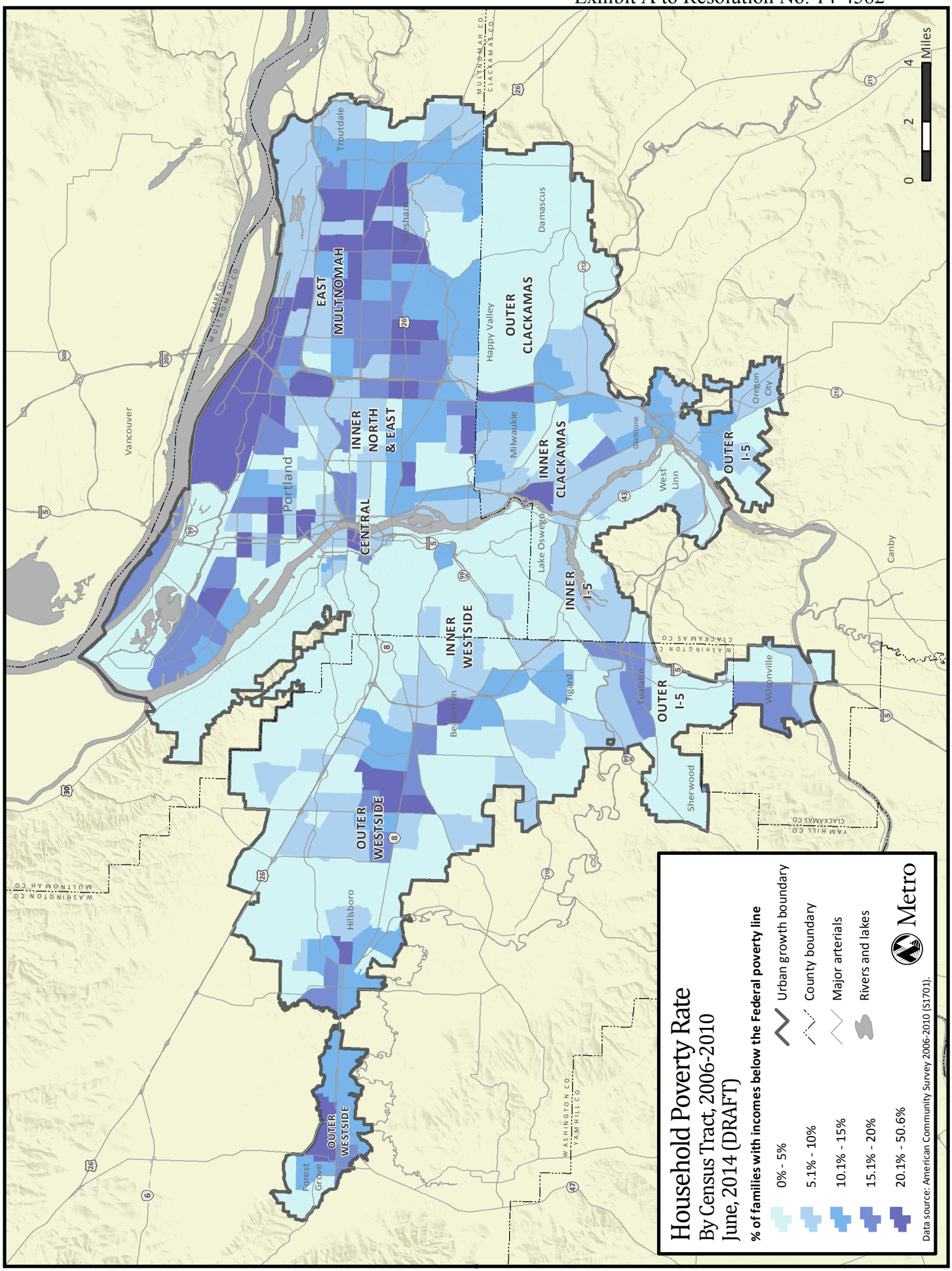

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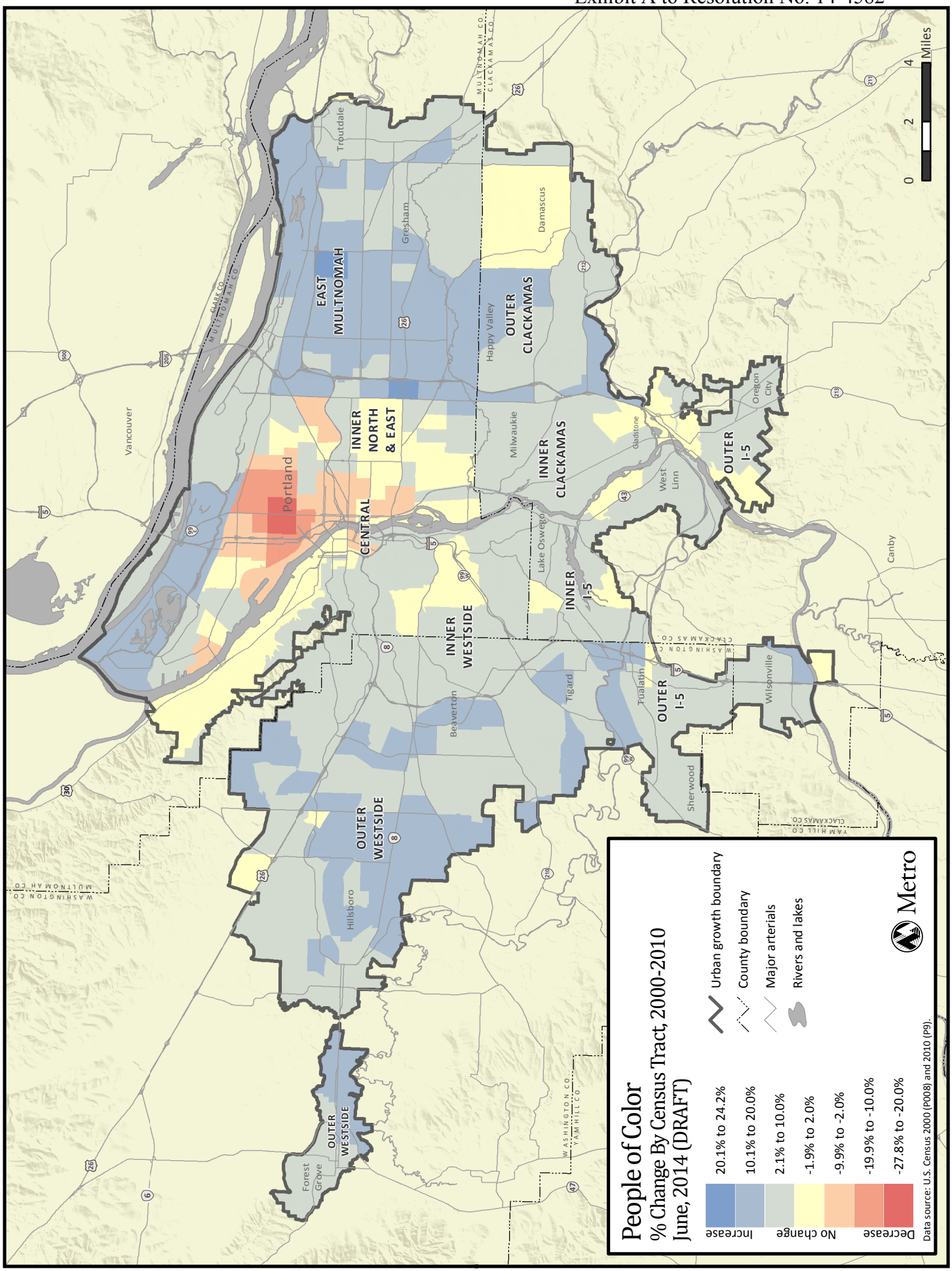
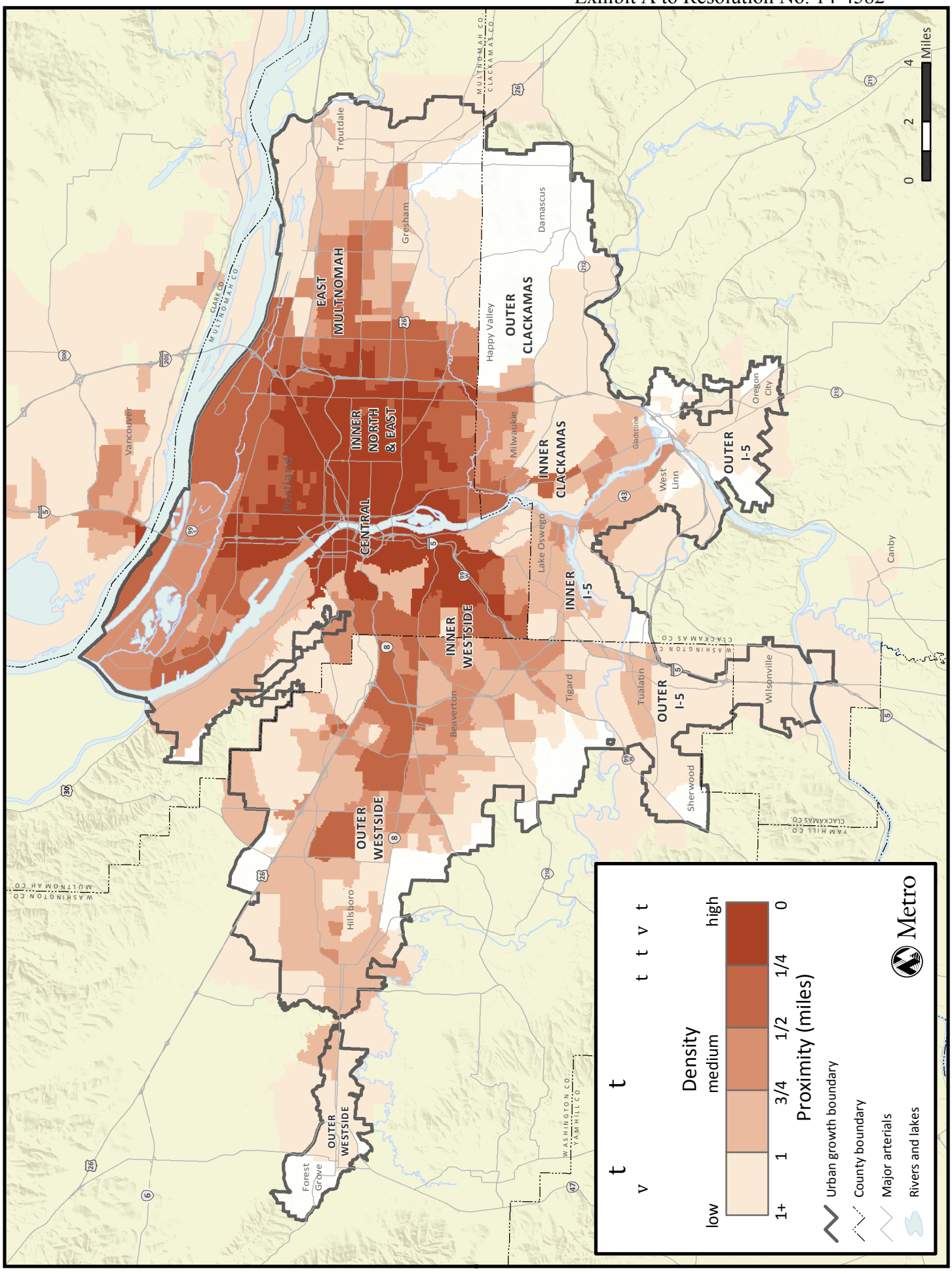

People of Color
% Change By Census Tract, 2000-2010
June, 2014 (DRAFT)
20.1% to 24.2%
10.1% to 20.0%
2.1% to 10.0%
-1.9% to 2.0%
-9.9% to -2.0%
-19.9% to -10.0%
-27.8% to -20.0%
Increase
No change
Decrease
Urban growth boundary
County boundary
Major arterials
Rivers and lakes
Metro
Data source: U.S. Census 2000 (P008) and 2010 (P9).
Data source: U.S. Census Bureau Summary File 1, 2000 and 2010. Map saved 6/3/2014 at T:\2014UGR\Maps\PctChange_PeopleOfColor_2000_2010.mxd
EAST MULTNOMAH
INNER NORTH & EAST
CENTRAL
INNER WESTSIDE
OUTER WESTSIDE
OUTER CLACKAMAS
INNER CLACKAMAS
INNER I-5
OUTER I-5
Portland
Vancouver
Troutdale
Gresham
Damascus
Happy Valley
Milwaukie
Gladstone
Oregon City
West Linn
Lake Oswego
Tigard
Tualatin
Beaverton
Hillsboro
Forest Grove
Sherwood
Wilsonville
Canby
0
2
4
Miles



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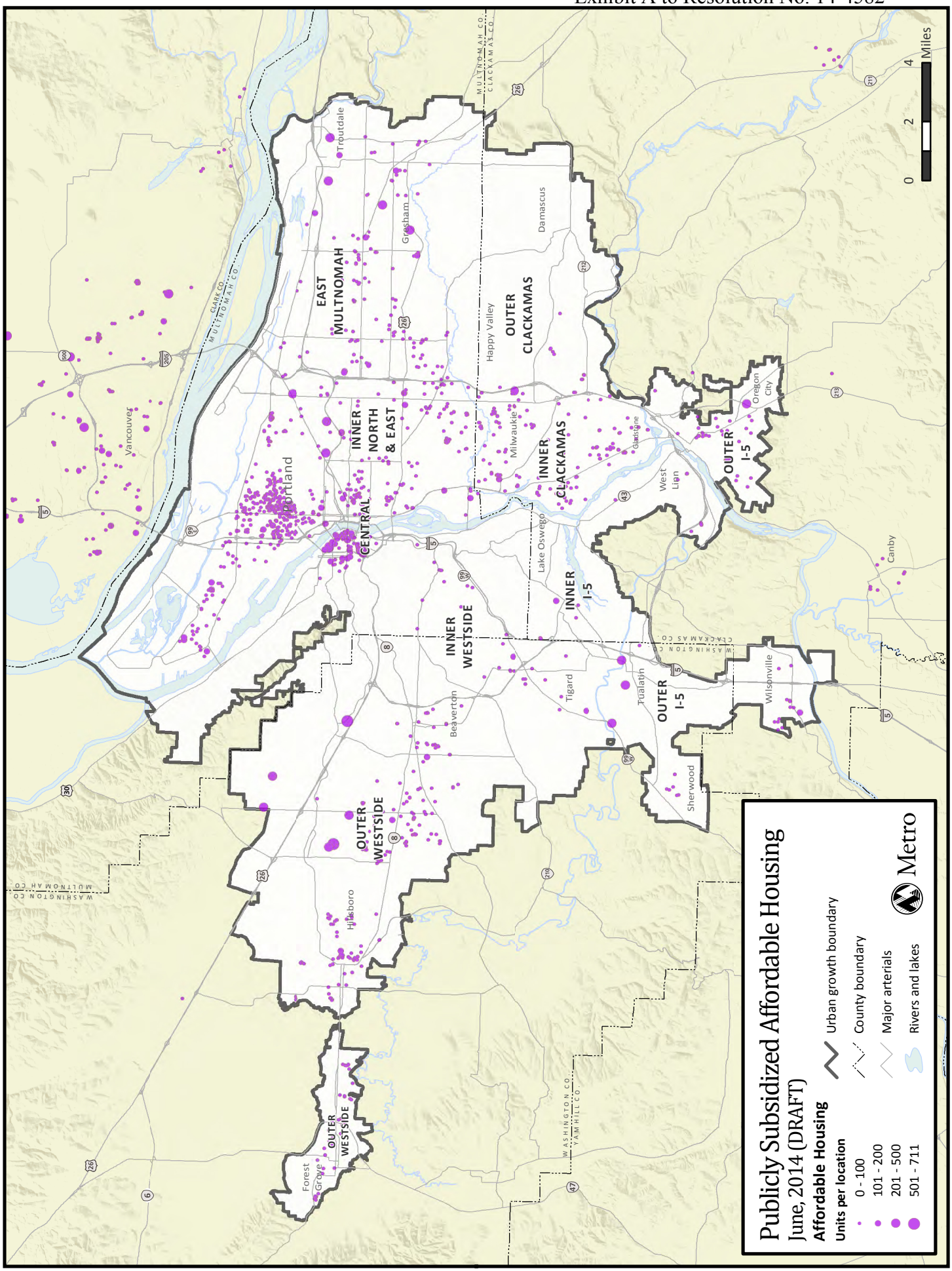
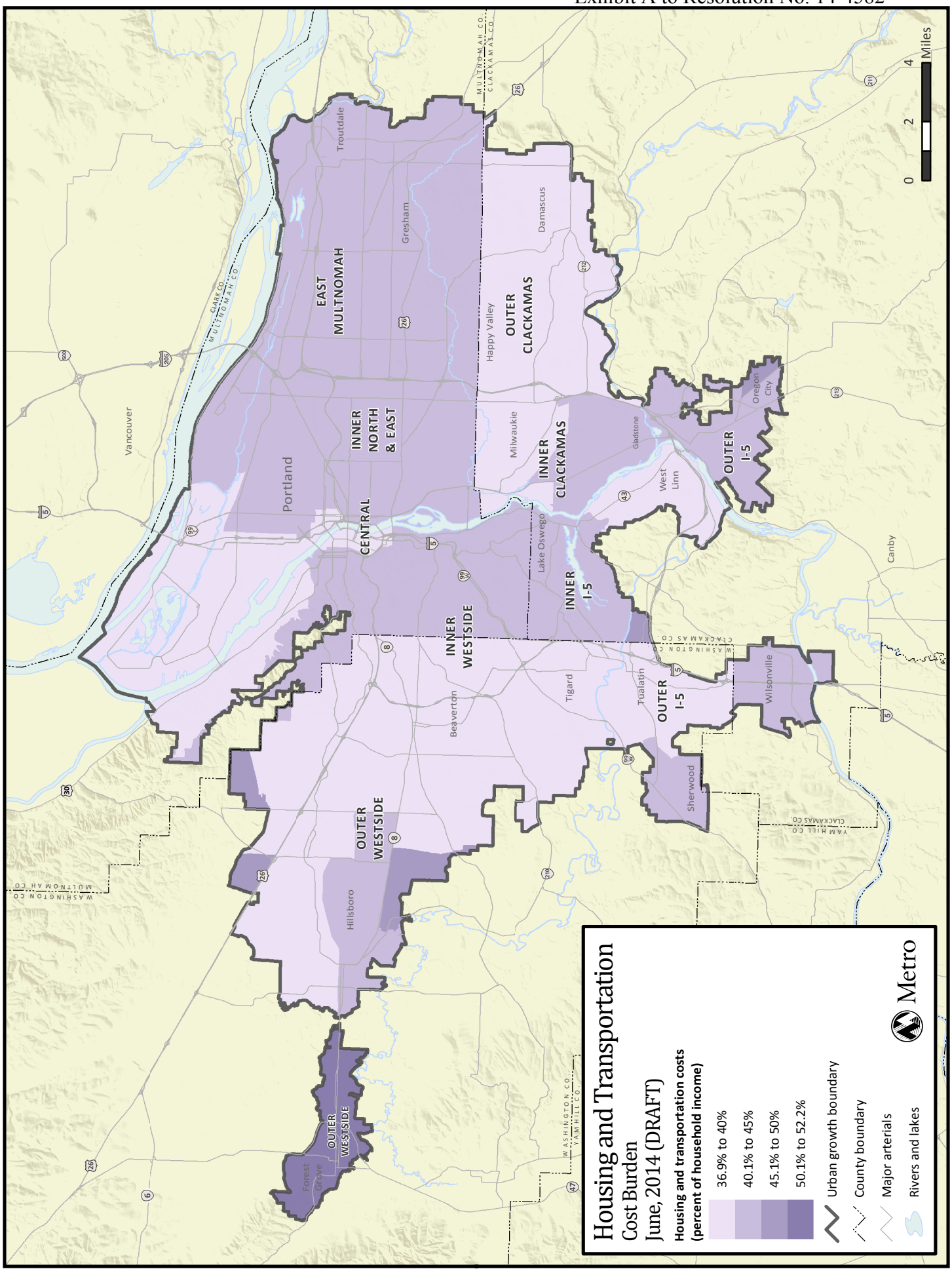


Map saved 6/3/2014 at T:\2014UGR\Maps\AffordableHousing.mxd


Housing and Transportation
Cost Burden
June, 2014 (DRAFT)
Housing and transportation costs
(percent of household income)
36.9% to 40%
40.1% to 45%
45.1% to 50%
50.1% to 52.2%
Urban growth boundary
County boundary
Major arterials
Rivers and lakes
Metro
0
2
4
Miles
EAST MULTNOMAH
INNER NORTH & EAST
CENTRAL
INNER WESTSIDE
OUTER WESTSIDE
OUTER CLACKAMAS
INNER CLACKAMAS
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Wilsonville
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MULTNOMAH CO.
CLARK CO.
CLACKAMAS CO.
WASHINGTON CO.
YAMHILL CO.
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Appendix 11

MetroScope scenario specifications

What is MetroScope?

MetroScope is an integrated land use and transportation computer model. MetroScope's main purpose is to systematically predict where employment and housing are more likely in the Portland-Vancouver-Hillsboro MSA to locate based on a given set of supply assumptions (i.e., capacity), market demand factors and regional-level macro-economic forecast. Supply is determined based on measured estimates of employment and housing capacity found in the buildable land inventory (see appendices 2 and 3). This capacity is calculated from estimates of vacant, redevelopable, and infill land. Local zoning is overlayed on the buildable land inventory to determine its status for accommodating housing or employment. For areas outside of Metro's jurisdiction, other sources are relied on to create capacity assumptions. The model will only allocate forecasted growth where capacity exists to accommodate the quantity of projected growth.

Market demand for housing and employment purposes are derived from Metro's seven-county population and employment growth forecast (see appendices 1a through 1d). MetroScope's role is to find an economically efficient distribution of this regional growth and to allocate this growth down to smaller geographic units (e-zones and census tracts).

The location choice for this market demand for housing is dependent on:

1. The location and amount of housing capacity, type of housing, by census tract
2. Household characteristics (household size, income, householder age, and whether the household includes children)
3. Proximity to work locations/choices
4. Relative home prices

In the same way, market demand for employment land need follows a parallel behavior for location choice:

1. The location and amount of industrial & commercial land by location (e-zone)
2. Industry characteristics (i.e., by NAICS)
3. Proximity to labor force, proximity to industry clusters & agglomeration
4. Relative real estate prices

Jobs by NAICS code are grouped together into building type affinities and these types are then matched up against the available supply to accommodate this demand.

How is MetroScope used to inform the 2014 Urban Growth Report?

Cities and counties in the region have planned for growth. Currently, there is more than enough zoned capacity to accommodate household and employment growth beyond the year 2035. However, zoned capacity may not always be in synch with market demand. MetroScope provides a means of testing how the market may respond to the region's adopted plans. To inform the 2014 UGR, three scenarios have been run to test the outcomes of continuing with currently adopted plans. The only difference in the input assumptions for the three scenarios is the level of demand assumed. Low, medium, and high growth scenarios were tested using the 2014 draft range forecast as the demand forecast control totals. MetroScope provides a number of outputs that are useful for the UGR, such as:

- Estimates of how much of the region's buildable land inventory may be market feasible in the next 20 years.
- Estimates of how much of the seven-county MSA's total population and employment growth may be "captured" in the Metro urban growth boundary.
- Estimates of how much commercial employment may occur in industrial zones.
- Data on housing demand by household type.
- Information about possible socioeconomic outcomes of current policies, including estimates of household cost burdens from housing and transportation expenses.

Overview of MetroScope scenario specifications

Table 1 summarizes the input assumptions used for the draft 2014 UGR scenarios. Additional detail follows.

Table 1: Summary of MetroScope specifications for 2014 UGR scenarios

Theme	Major category	Subcategory	Scenario Assumption
DEMAND (FORECAST)	Forecast control totals for Portland-Hillsboro-Vancouver, OR-WA, MSA (7 counties) *Source: MARIO14.xlsx*	Households	2010: 867,794 (Census 2010) 2035: 1,185,775 2010-35: 317,981 %APR: 1.26%
		Employment	2010: 968,800 (BLS 2010 estimate) 2035: 1,484,500 2010-35: 515,500 %APR: 1.76%
SUPPLY (CAPACITY)	Metro UGB	Vacant Buildable Land	2013 vacant land based on aerial photography, permit data, and assessor records and amended by local review. Environmental constraints based on latest 2010 data and major known utility easements
		Redevelopment and Infill	Taxlots are eligible for re-development if the total real market value(land and improvements) per square foot is less than a "strike price" informed by local jurisdiction review
		Recent UGB Expansions	Post-1994 expansion areas are a combination of local zoning, comp plans, and concept plans. New areas inside the UGB as a result of HB 4078 are assumed to follow the Metropolitan Housing Rule (50% capacity in Multi-family)
		Prospective UGB Expansions	Expansion locations based on the 2011 Urban Reserves decision and HB 4078. Timing of infrastructure availability informed by local jurisdiction review
	Tri-County Outside UGB	Urban Areas	Buildable capacity assumed to be twice the 2000 Census households, except where information was provided by local jurisdictions.
		Rural Residential	Exception land , excluding public ownership and high-value properties. Dwelling unit capacity calculated from minimum lot size of local zoning.
		Measure 49	Assumes three dwelling units per Measure 49 claims
	Clark County	Vacant and	2012 VBLM - provided by Clark County GIS, using Clark

Theme	Major category	Subcategory	Scenario Assumption
		Developed Land	County methodology
		Rural Residential	2012 Draft rural residential study
		Urban Growth Area Expansions	Clark Co. urban reserve areas in effect in 2009. Zoning is based on latest comp plans
	Columbia, Yamhill, Marion Counties	Urban Areas	Buildable capacity assumed to be twice the 2000 Census households, except where information was provided by local jurisdictions.
OTHER FORECAST INPUTS	Incentivized Redevelopment		Three tiers of incentives ($50,000, $25,000, or $10,000 per new redeveloped unit) which reflect either active urban renewal or other incentives, such as a vertical housing tax credit (refer to separate schedule of investments)
	Residential Construction Costs (SDC fees)		Per unit construction costs based on Metro and Homebuilders Association surveys.
	Residential Neighborhood Score		Neighborhood score is an input that describes the relative desirability of different neighborhoods based on statistical analysis of historic residential sales data.
	Transportation and Accessibility		Transportation networks from the Metro 2035 RTP: 2010, 2015 forecast years: 2010 network 2020, 2025 forecast years: 2017 network 2030, 2035 forecast years: 2035 "financially constrained" network

Demand forecast

See appendices 1a through 1d for additional information about the population and employment range forecast that is used as a control total for these scenarios. The forecast is for the seven-county Portland-Vancouver-Hillsboro metropolitan statistical area.

Metropolitan area supply summary

The land supply assumed for these scenarios is summarized in the following tables and graphs. This supply is made available to the model. Not all of the supply gets absorbed in the model during the 20-year planning timeframe.

Table 2: Residential supply (dwelling units) summary for 2014 UGR MetroScope scenarios

Capacity source	Single Family units	Multi-Family units	Total Units
UGB -- Vacant	48,590	40,857	89,447
UGB -- Redevelopment	70,110	233,128	303,238
Future UGB Expansions	44,692	81,900	126,592
3-County Outside UGB	20,818	5,087	25,905
Clark County	58,635	26,687	85,322
Neighbor Counties	41,387	5,003	46,390
Region	284,232	392,662	676,894

Figure 1: Residential supply (dwelling units) summary for 2014 UGR MetroScope scenarios

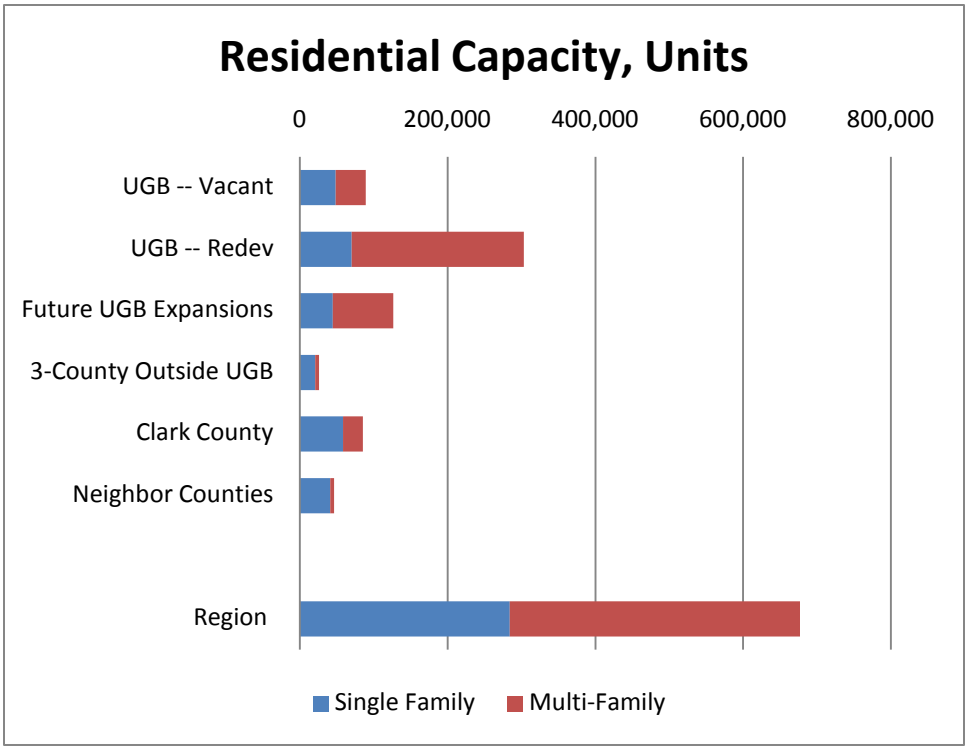
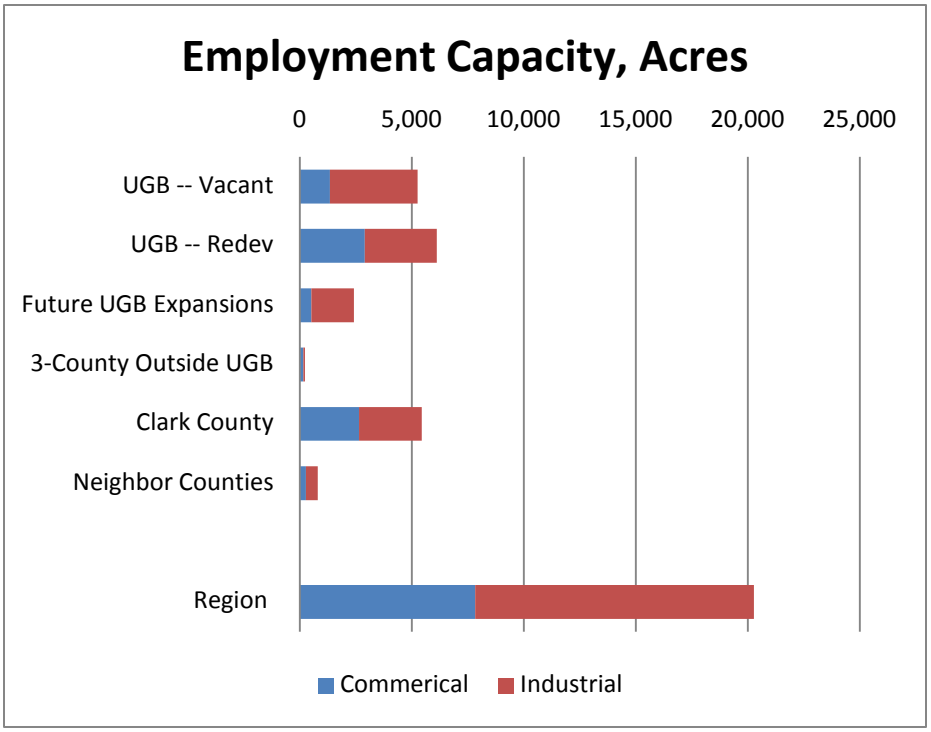


Table 3: Employment supply (acres) summary for 2014 UGR MetroScope scenarios

Capacity sources	Commercial acres	Industrial acres
UGB -- Vacant	1,352	3,905
UGB -- Redevelopment	2,900	3,210
Future UGB Expansions	511	1,911
3-County Outside UGB	162	73
Clark County	2,641	2,799
Neighbor Counties	272	536
Region	7,838	12,435

Figure 2: Employment supply (acres) summary for 2014 UGR MetroScope scenarios



Metro urban growth boundary (UGB) supply

Metro conducts a detailed buildable land inventory (BLI) for lands inside the urban growth boundary. The following is a brief summary of the BLI methodology. For a much more complete description of the BLI methodology, refer to the Appendix 2.

The starting point in the determining the BLI is the Metro Vacant Land Inventory, which is based on aerial photographs. The region's buildable land inventory is divided into "redevelopment" and "vacant". Tax lots that were previously categorized as "partially vacant" are now sorted into either category or the other.

Tax lots are considered vacant if they are either at least 95% vacant, or have an both an area of less than 2,000 square feet and a developed part which is less than 10% of the entire tax lot. In addition, a portion of the area is set aside for future streets, calculated on a per tax lot basis.

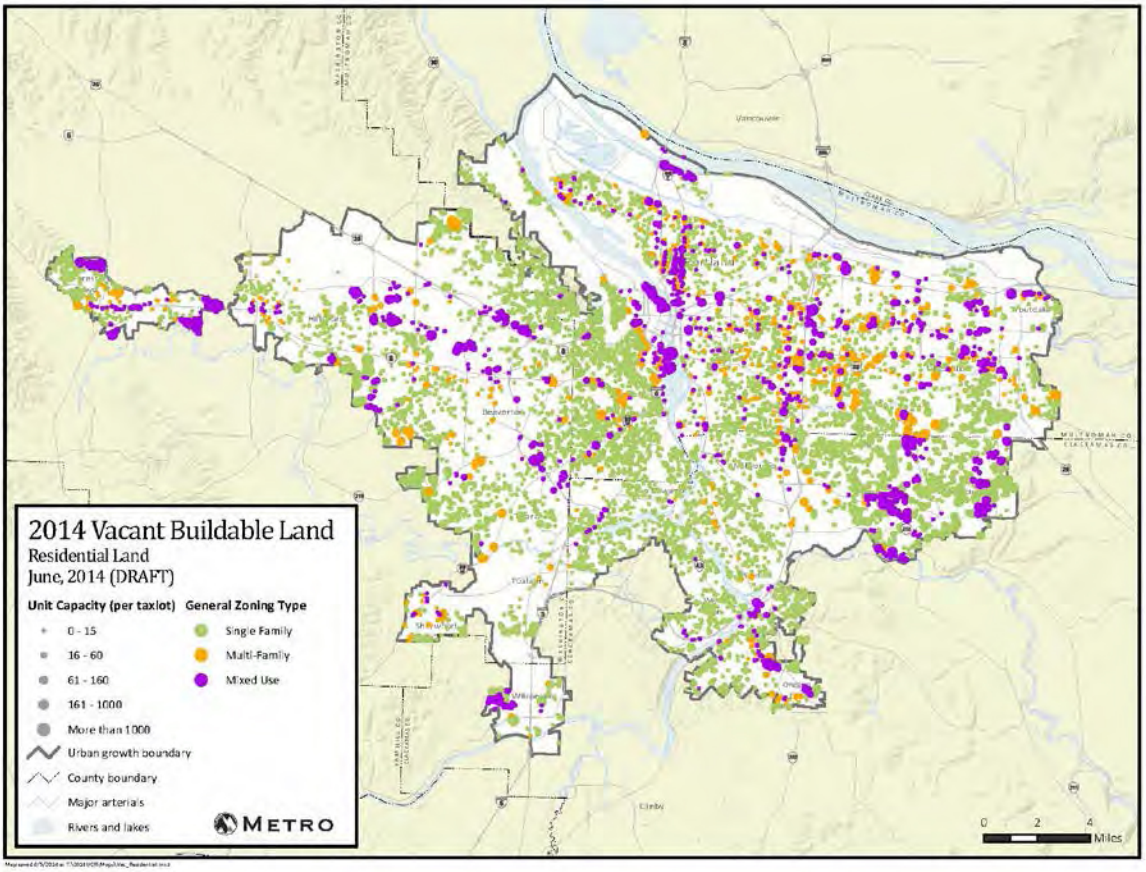
Tax lots which are considered developed are determined to be eligible for re-development if the total real market value (land and improvements) per square foot is less than a "strike price," as described in Appendix 2. Tax lots which do not have the potential to provide residential or employment growth capacity are removed.

Capacity on each residentially-zoned parcel is calculated as a function of the minimum lot size for its zoning class and the area of the tax lot under environmental constraint. In the case of multi-family (MFR) zoning, redevelopment must add at least 50% more units over the number of existing units, or at least three units total. For mixed-use zoning (MUR), the buildable area is split into residential and employment uses by a factor which varies over the geography of the UGB.

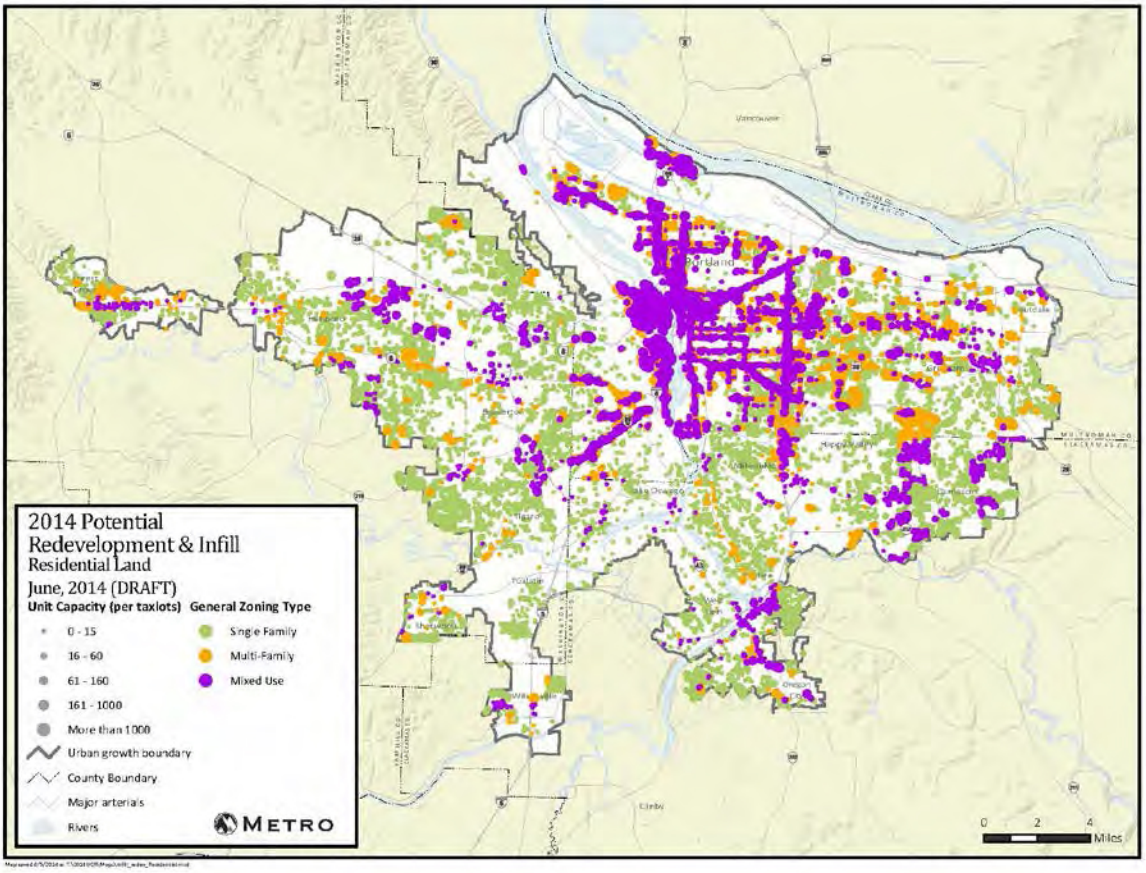
Employment-zoned land applies a simple approach of netting out all constrained land. This is based on the input of the BLI technical working group, which indicated that constrained areas are typically avoided altogether by new commercial or industrial employment uses.

Please refer to the maps "Vacant Residential", "Vacant Employment", "Infill Residential", and "Infill Employment."

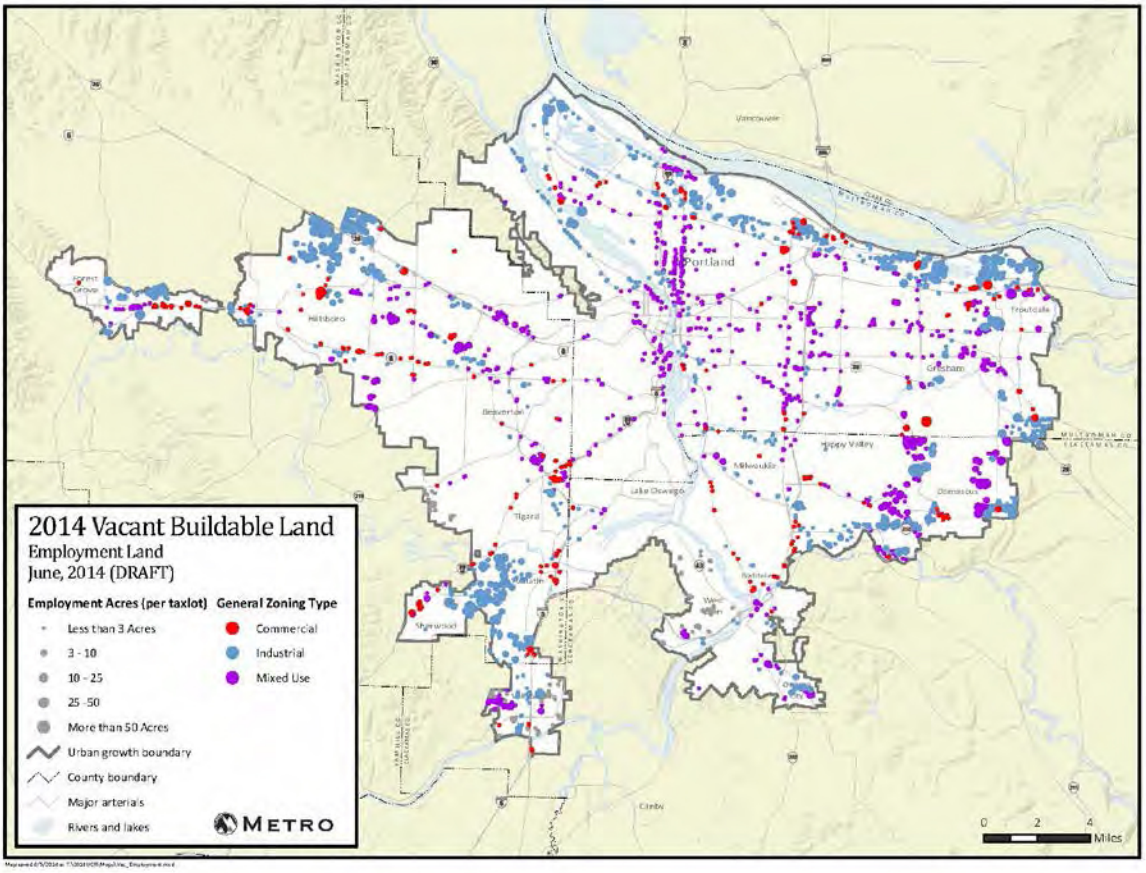
Map 1: Residential vacant buildable land



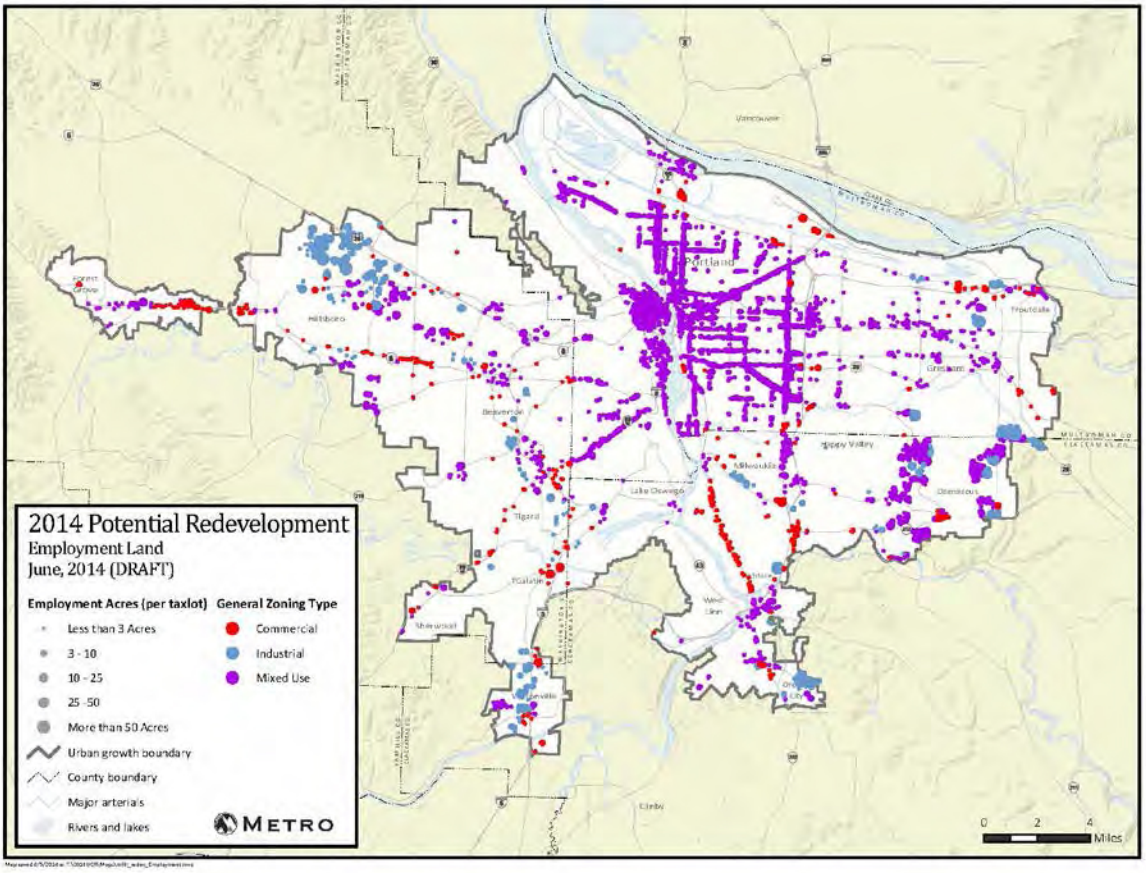
Map 2: Residential redevelopment and infill buildable land



Map 3: Employment vacant buildable land



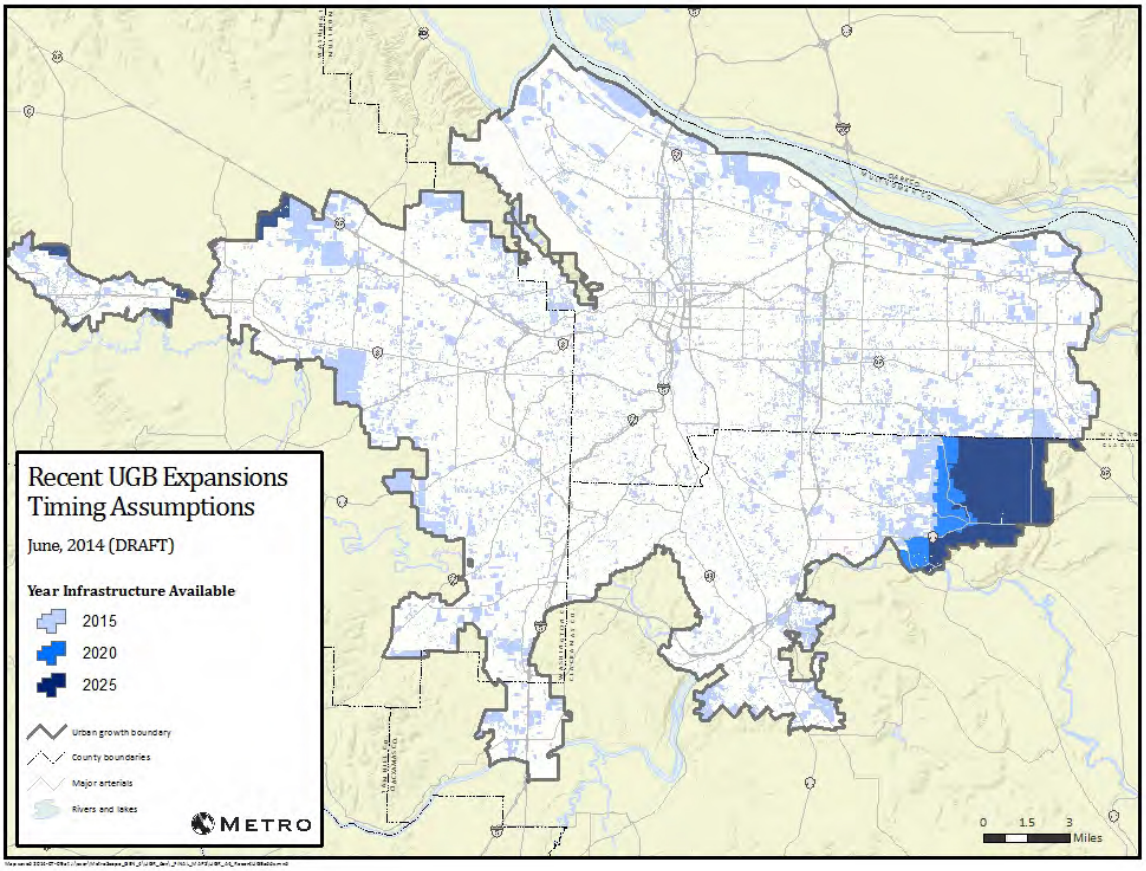
Map 4: Employment redevelopable buildable land



Growth capacity in recent UGB expansions

Planning documents, rather than GIS analysis, were typically the basis for how capacity in new urban areas is handled in the BLI. Possible sources of information included draft comprehensive plans, adopted concept plans, draft concept plans, and conditions of approval that were attached to UGB documents. There are also assumed delays between areas being added to the UGB and availability of the area for development (reflecting the time that it takes for governance, planning, and infrastructure finance issues to be sorted out). For example, because of its ongoing challenges, it is assumed that the majority of the Damascus area won't be available for development until the year 2025. Please refer to Map 5, which depicts the timing assumptions for land availability for development. This capacity also reflects the areas brought into the UGB by Oregon HB 4078. These areas were assumed to follow the Metropolitan House Rule (at least 50% of housing in multi-family units).

Map 5: Land availability timing assumptions for areas inside Metro UGB, including past UGB expansions



Capacity in prospective UGB expansions

For modeling purposes, it is assumed that designated urban reserves will be added to the UGB over time. Urban Reserves are areas adjacent to the UGB, which are deemed suitable to accommodate

development over the next 50 years. Modeling assumptions about future UGB expansions do not necessarily represent any policy direction or intent from the Metro Council and are strictly for research purposes in an attempt to model a continuation of policy implementation under state law.

The initial set of urban reserve parcels included those designated "vacant" in an inventory. From this, environmentally constrained land was removed with the formula: gross buildable acres = unconstrained land + 20% Title 13 constraints + 0% Title 3 constraints.

For urban reserve areas with residential capacity, the amount of net buildable acres is assumed be 75% of the gross acres, in order to account for streets and other public rights-of-way. If the area was designated as having only industrial, no land was taken out.

In the non-industrial areas, the net acres were split into Single Family Residential (70%), Multi-family Residential (24%) and Commercial (6%). Residential densities were chosen to achieve a previous Metro Chief Operating Officer recommendation of approximately 15 units per net acre, though there is no official policy basis for this assumption going forward. Exceptions to the above are where individual jurisdictions provided Metro with their own land use assumptions.

The MetroScope model assumes that all the land available has the necessary infrastructure to enable development. It is assumed that in general an area will have infrastructure available roughly five years after its introduction to the UGB.

Local jurisdictions provided Metro with the urban reserves timing in three phases (2025-2030, 2035-2040, 2045 or later). In some cases, at the request of the jurisdiction, portions of an urban reserve area were assumed to be made available in different years.

Please refer to Table 4 and Map 6 for location, timing, and capacity assumptions of prospective UGB expansions.

Table 4: Prospective UGB expansion modeling assumptions

Code	Year Available		SF DU	MF DU	Total DU	COM acres	IND acres
1C	2040		2,815	4,443	7,258	28	0
1D	2045		0	0	0	0	1,159
1F	2045		0	0	0	0	492
2A	2045		4,064	6,414	10,478	40	0
3B	2045		713	1,574	2,287	10	0
3C	2045		658	1,454	2,112	9	0
3D	2035		1,052	2,324	3,376	14	0
3F	2030		685	1,514	2,199	9	0
3G	2030		479	1,058	1,537	7	0
4A (1)	2040		1,293	2,856	4,148	18	0
4A (2)	2045		4,282	8,109	12,390	51	0
4B	2040		343	759	1,102	5	0
4C	2045		1,790	3,955	5,745	25	0
4D	2045		2,863	6,325	9,188	39	0
4E	2045		2,132	4,710	6,842	29	0
4F	2045		694	1,533	2,227	10	0
4G	2040		1,643	3,630	5,273	23	0
4H	2035		949	1,348	2,298	8	0
5A	2035		247	545	792	3	0
5B	2030		4,405	6,952	11,357	43	0
5D	2035		1,223	1,929	3,152	12	0
5F	2035		0	0	0	0	257
5G	2035		403	890	1,292	6	0
5H	2030		239	340	579	2	0
6A	2035		2,369	3,368	5,737	21	0
6B (1)	2035		1,846	2,913	4,758	18	0
6B (2)	2035		798	1,260	2,059	8	0
6B (3)	2045		804	1,269	2,073	8	0
6C (1)	2030		694	1,314	2,008	8	0
6C (2)	2035		433	820	1,254	5	0
6C (3)	2045		429	813	1,243	5	0
6D (1)	2035		445	702	1,147	4	0
6D (2)	2045		815	1,543	2,358	10	0
7A (1)	2040		309	585	895	4	0
7A (2)	2045		456	864	1,321	5	0
8A	2030		206	0	206	0	3
8C	2035		663	1,046	1,709	7	0

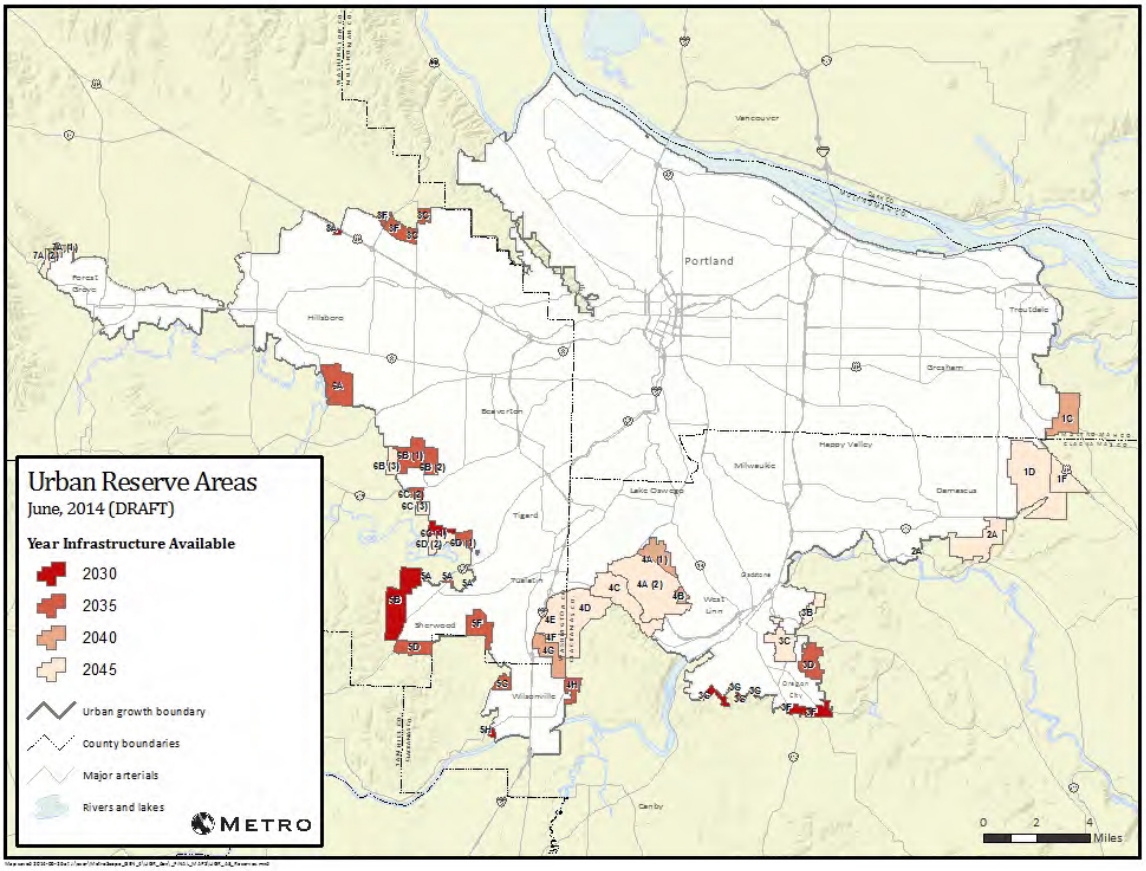
Code	Year Available		SF DU	MF DU	Total DU	COM acres	IND acres
8F	2035		1,453	2,742	4,195	17	0
	Total		**44,692**	**81,900**	**126,592**	**511**	**1,911**
	2030		6,708	11,177	17,885	70	3
	2035		11,881	19,888	31,769	124	257
	2040		6,403	12,273	18,676	77	0
	2045		19,700	38,562	58,262	240	1,651

Notes:

"Code" is the identification code from the original urban reserves decision.
Some reserves will have a different geography than when first defined, due to subsequent legislative decisions.

For some reserves, subareas were assumed to become available for development at different times.
Capacity for reserves 6A and 8A were provided by the City of Hillsboro, otherwise is from staff estimates.

Map 6: Prospective UGB expansion modeling assumptions



Growth capacity outside Metro's jurisdiction

For complete and consistent accounting of regional development, the modeling and forecasting of land use futures requires estimates of residential and employment capacity in outlying areas that fall in the shadow of the Portland socio-economic influence. These areas are:

- Neighboring cities outside the UGB
- Rural areas outside the UGB
- Clark County urban and rural areas
- Outer counties -- Columbia, Yamhill, and North Marion

These adjacent areas are part of the economic region because there are significant cross border commuting and economic trade activities among all of the counties in the MSA. These socio-economic ties are difficult to disentangle and, as a consequence, excluding these counties would severely distort econometric models designed to analyze, forecast and assess the economic conditions of the greater Portland economic region.

As a market equilibrium model, MetroScope mimics economic choices and conditions. A choice for some residents (and businesses / employees) may be to live in housing beyond the Metro UGB. Of course having supply (or capacity) outside the Metro UGB is not sufficient if there is not sufficient market demand for locations outside the UGB.

Growth capacity in neighboring cities in the three-county area

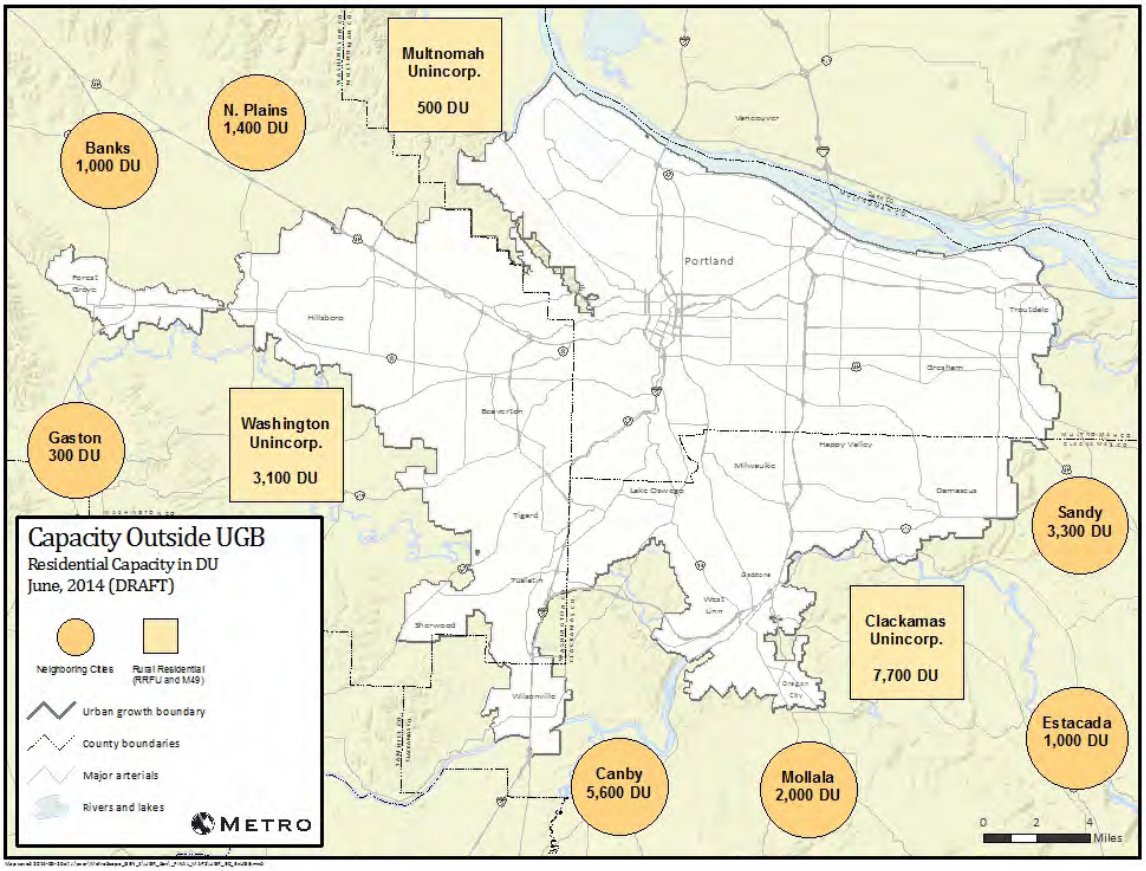
"Neighboring cities" are those jurisdictions that are inside Multnomah, Clackamas, or Washington County but outside the Metro UGB. Metro staff assumed that the capacity of each neighboring city would follow historic development trends, roughly doubling its size during the next 20 to 30 years. These cities were invited to participate in the forecast distribution and capacity reviews.

Where the neighboring cities did not provide GIS data to Metro (Canby, Molalla, Estacada, Gaston, and Banks), the initial 20-year dwelling unit supply was assumed to be equal to the number of households reported by the 2000 Census, file DP1. The share of the capacity by Single family vs. Multi-family was also taken from the 2000 Census, and a default density was applied (SFR8 @ 8.7 units/acre and MFR1 @ 12.3 units/acre).

Where the neighboring cities did provide GIS data to Metro (Sandy and North Plains), each local design type was converted to a Metro standard zoning class, with the appropriate density applied. The resulting capacity was assumed to be a 20-year supply.

Please refer to Map 7 for capacity of the neighboring cities and unincorporated areas.

Map 7: Residential growth capacity in neighboring cities assumed for modeling purposes



Rural residential growth capacity in the three-county area

At the outset of the Oregon Statewide Planning Program, counties were required to inventory farm and forest lands, and zone them as such, unless the land was physically developed by or irrevocably committed to other uses that made resource (farm or forest) use of the property impracticable. The process by which a local government shows this is called ´taking an exception´ to the appropriate resource Goal. Most counties included ´exception areas´ in their comprehensive plans, providing locations for residential, commercial, industrial, and public uses outside urban growth boundaries.

Taxlots on exception land (Metro RRFU zoning) were selected as having potential residential capacity. A subset of these was selected by criteria related to building value and ownership. Residential dwelling unit capacity was calculated as a function of the minimum lot size from the local zoning of each taxlot.

Based on an inspection of the tax lot records and aerial photos, taxlots having an assessed value of greater than $20,000 were considered developed, and excluded. This value seemed to give a reasonable balance between including existing homes and excluding more marginal structures.

Taxlots were excluded if they were publicly owned (including US, state, county and city governments, cemeteries, water districts, school districts and other entities), owned by homeowner associations, or owned by major utilities. These selections were made based on owner name and should be a good representation of properties that would not likely develop, though it is not an exhaustive list.

The capacity for additional units was calculated by:

(1) Divide the GIS acres by minimum lot size and round down to nearest integer
(2) Subtract 1 if the parcel is already developed
(3) Exclude all parcels that have been flagged as urban reserves or public properties

Finally, some additional capacity was added for "lots of record":

(1) Select tax lots that are not developed but have zero calculated capacity
(2) Of these, select lots that are at least 0.5 acre in size
(3) Add 1 unit of capacity to each of these lots

Please refer to Map 7 for a summary of the assumed capacity of unincorporated areas.

Growth capacity from Measure 49 claims

In 2004, Oregon voters passed Measure 37, which required state and local governments to either waive land use regulations or compensate landowners when a regulation reduces a property's fair market value. However, the scale of proposed Measure 37 development, especially in the Willamette Valley where 60 percent of the claims were filed, alarmed conservationists and farm groups. They worked with Democratic legislators to write Measure 49 during the 2007 legislative session and refer it to voters.

Measure 49 gives landowners who have filed Measure 37 claims the right to build homes as compensation for land use regulations imposed after they acquired their properties. Claimants may build up to three homes if allowed when they acquired their properties. Claimants may build up to 10 homes if allowed when they acquired their properties and they have suffered reductions in property values that justify the additional home sites.

Measure 49 capacity assumptions are based on data collected from the state/PSU database on Measure 49 claimants. We assumed that each measure 49 claim would produce three additional single family houses.

Growth capacity in urban Clark County, Washington

The buildable capacity for Clark County inside the Urban Growth Area (UGA) was taken from the 2011 Vacant Buildable Land Inventory (VBLM), a planning tool developed by Clark County to analyze residential, commercial, and industrial lands within urban growth areas. The VBLM analyzes potential residential and employment capacity based on vacant and underutilized land classifications.

This potential capacity is used to determine the amount of urban land needed to accommodate projected population and job growth for the next 20 years during plan updates and to analyze land consumption or conversion rates on an annual basis for plan monitoring purposes.

This approach differs from that used in the Metro UGB, but represents the best practices and local expertise of Clark County staff. Capacity from future UGA additions was determined from the taxlots inside the "Urban Reserve" areas as defined in the most recent Comprehensive Plan.

The model classifies lands into three urban land use categories residential, commercial, and industrial. Lands are grouped into land use codes based on comprehensive plan designations for model purposes. Lands designated as parks & open space, public facility, mining lands, or airport within the urban growth areas are excluded from available land calculations.

To determine the buildable capacity, the following VBLM classifications were selected:

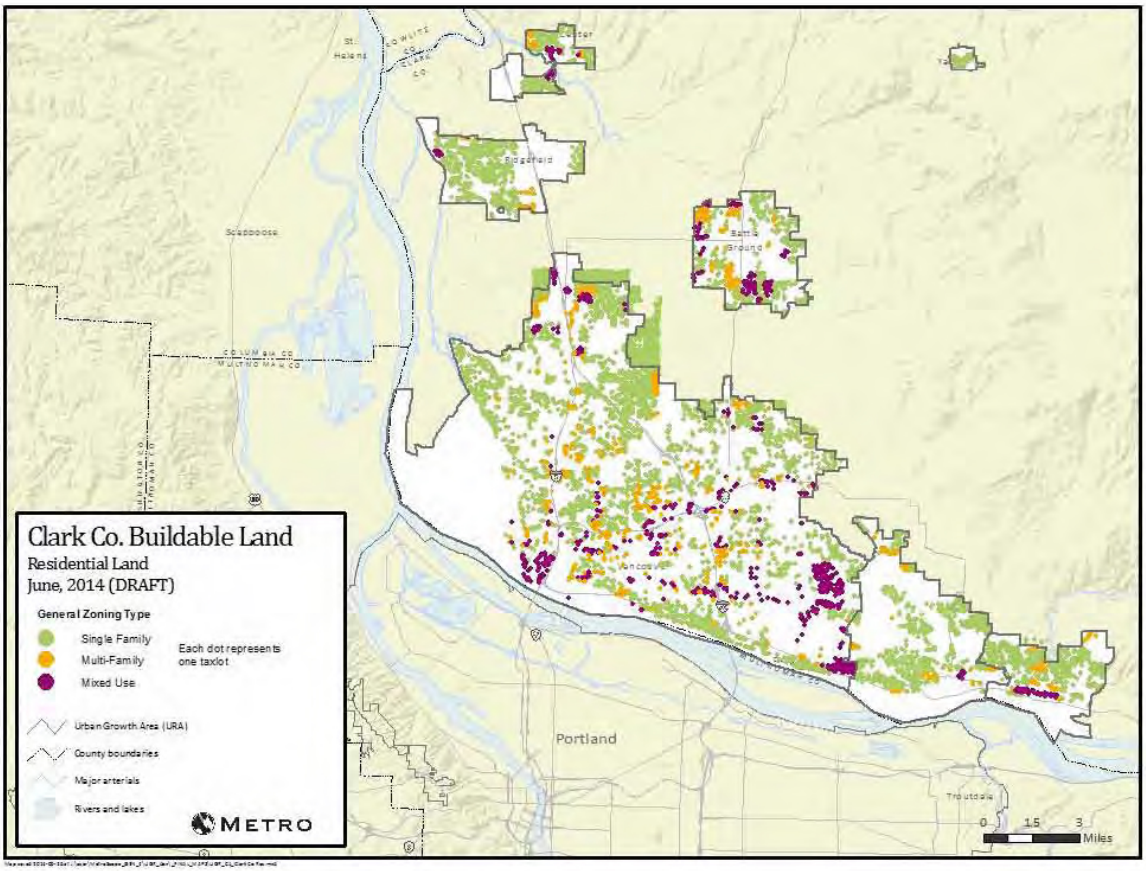
Residential Vacant -- RES class 3, Vacant
Commercial Vacant -- COM class 2, Vacant
Industrial Vacant -- IND class 1, Vacant

Residential Refill -- RES class 4, Underutilized
Commercial Refill -- COM class 3, Underutilized
Industrial Refill -- IND class 2, Underutilized

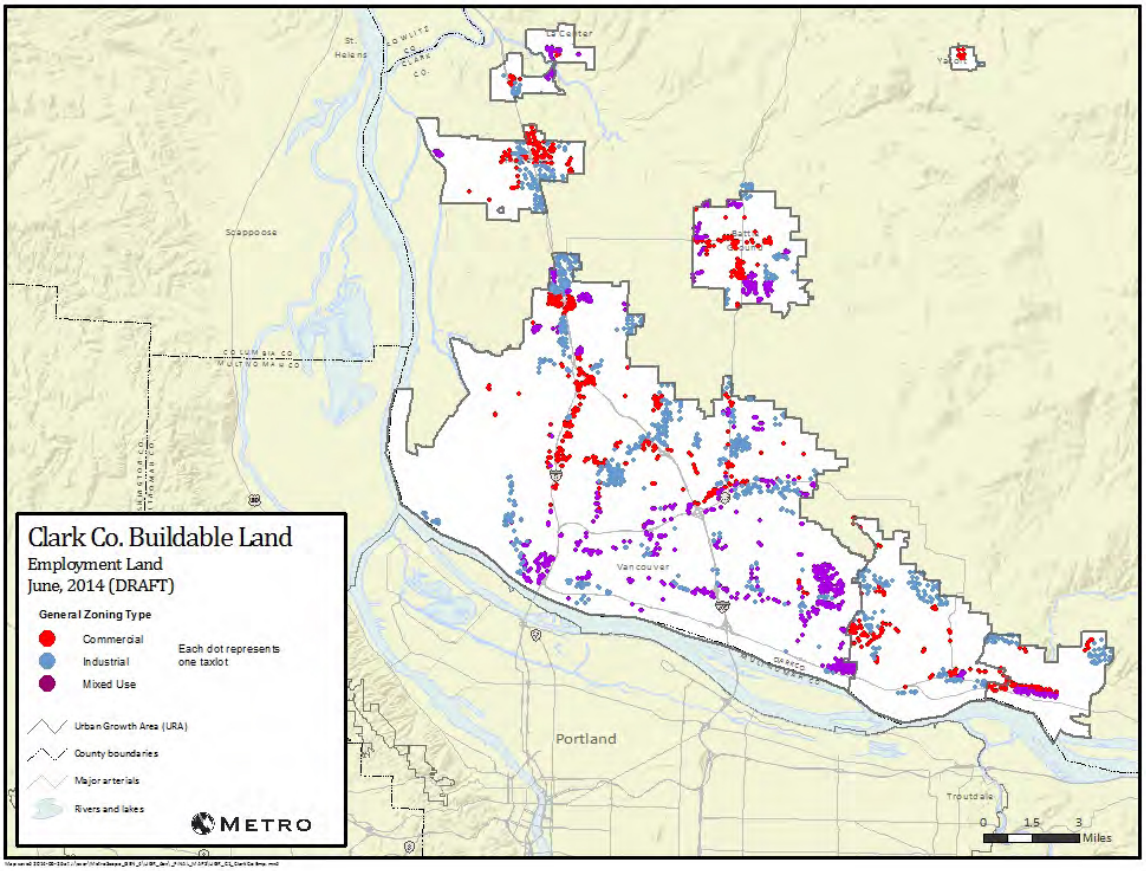
To determine the buildable capacity for the MetroScope scenarios, each of the Clark County local zoning codes was converted to an equivalent Metro zone class, from a crosswalk table created by Clark County and Metro planning staff.

Please refer to Map 8 and Map 9 that depict residential and employment buildable land in Clark County, Washington. More information about the VBLM can be found at http://gis.clark.wa.gov/vblm/assets/VBLM.pdf.

Map 8: Clark County, Washington residential buildable land



Map 9: Clark County, Washington employment buildable land



Rural residential growth capacity in Clark County, Washington

A formal Vacant Buildable Lands Model (VBLM) for determining future urban residential and employment land use capacity has been in place since the beginning of Clark County's Growth Management Planning process. However, the VBLM excludes rural areas outside of urban growth areas. Since rural capacity is a component of the overall capacity a different, a simplified process has been created by Clark County staff to account for rural capacity.

Rural residential lands have minimum lot sizes of 5 acres or more with the exception of rural centers which have minimum lot sizes of 1 acre. Rural residential and resource lands are classified as built, vacant, or underutilized lands.

Classifications are based on criteria such as assessed building value, total area, and minimum lot size. Known public lands (Federal, State, and local) and Western Forest Protected Lands are excluded. Vacant lots four acres or larger, but less than minimum lot area, are considered buildable. This is based on the potential of lots qualifying for legal lot determinations. No reductions for critical areas. It is assumed that a building envelope would be available on larger rural lots.

Other model assumptions

The MetroScope model incorporates several other input assumptions that are intended as proxies for location preferences (neighborhood scores), system development charges, and development incentive programs such as urban renewal.

Incentivized redevelopment

Incentivized residential redevelopment is a set of model assumptions which represent attempts by local governments to revitalize specific areas, and in broader context, to implement the 2040 Growth Concept.

The purpose of the incentive for is to make the units more affordable for development. This can reflect such things as active urban renewal or a vertical housing tax credit. Many of the incentivized redevelopment areas are in higher-density locations that carry higher residential price tags (land prices and costs of construction per square foot are typically higher). The impact of the incentive is that prospective homeowners (or renters) are more likely to locate in the area, other things being equal, because rents should be lower with the incentive than otherwise.

The areas receiving incentives include Urban Renewal Areas, Regional Centers, Town Centers, and other development strategies (Portland's Transit-Oriented Development and Neighborhood Prosperity Initiative). The amount of incentive per dwelling unit for each areas is one of three tiers ($50,000, $25,000, or $10,000), estimated by Metro staff and local jurisdictions.

In the MetroScope model, the incentivized capacity is defined by those taxlots which are both identified as having potential for redevelopment, and fall within the geographies of the areas described above.

The incentive does not prioritize the housing capacity, but it does make it more likely to be built than non-incentivized capacity. The non-residential supply is not incentivized.

Please refer to Map 10 and Table 5 for more detail about the model's incentive assumptions, which are based on currently adopted programs.

Map 10: Areas with modeled assumptions for residential incentive programs

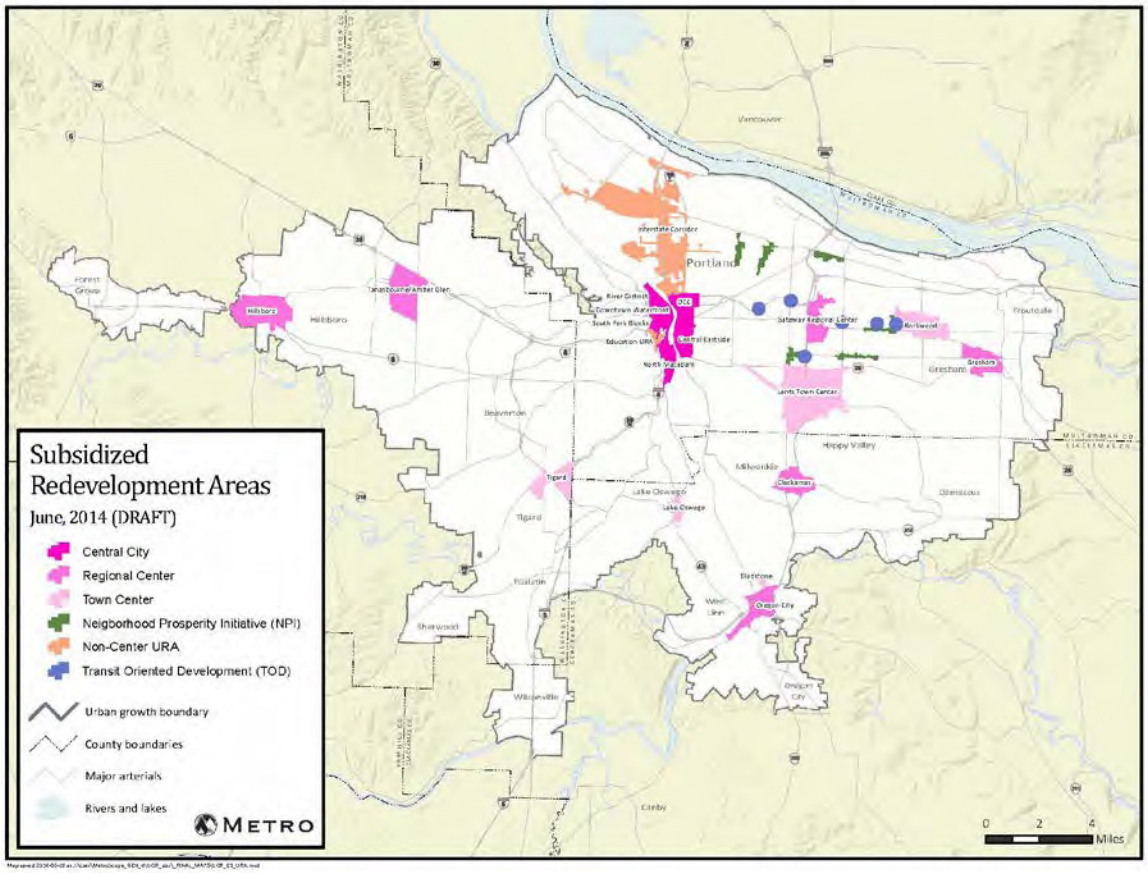


Table 5: Areas with modeled assumptions for residential incentive programs

City of Portland	Type	Incentive per DU	SF DU	MF DU	Total DU
Central Eastside	Central City	$50,000	0	1,196	1,196
Downtown Waterfront	Central City	$50,000	0	3,376	3,376
North Macadam	Central City	$50,000	0	10,574	10,574
Oregon Convention Center	Central City	$50,000	0	7,105	7,105
River District	Central City	$50,000	0	5,336	5,336
South Park Blocks	Central City	$50,000	0	787	787
Gateway Regional Center	Regional Center	$25,000	0	4,233	4,233
Lents Town Center	Town Center	$10,000	682	17,209	17,891
Education URA (PSU)	Non-Center URA	$10,000	0	831	831
Interstate Corridor	Non-Center URA	$50,000	194	19,036	19,230
NPI - 42nd Avenue	NPI	$10,000	14	813	827
NPI - 82nd Avenue and Division	NPI	$10,000	38	2,690	2,728
NPI - Cully Blvd	NPI	$10,000	4	1,960	1,964
NPI - Division Midway	NPI	$10,000	0	507	507
NPI - Parkrose	NPI	$10,000	2	339	341
NPI - Rosewood	NPI	$10,000	61	248	309
TOD - E 122nd Ave MAX Station	Portland TOD	$10,000	6	84	90
TOD - E 148th Ave MAX Station	Portland TOD	$10,000	128	1,001	1,129
TOD - E 162nd Ave MAX Station	Portland TOD	$10,000	4	54	58
TOD - NE 60th Ave MAX Station	Portland TOD	$10,000	1	308	309
TOD - NE 82nd Ave MAX Station	Portland TOD	$10,000	2	1,851	1,853
TOD - SE Division St	Portland TOD	$10,000	1	978	979
Rest of UGB	**Type**	**Incentive per DU**	**SF DU**	**MF DU**	**Total DU**
Clackamas	Regional Center	$25,000	0	248	248
Gresham	Regional Center	$25,000	14	365	379
Hillsboro	Regional Center	$25,000	238	408	646
Oregon City	Regional Center	$25,000	0	886	886
Tanasbourne/AmberGlen	Regional Center	$25,000	8	1,553	1,561
Gladstone	Town Center	$10,000	10	0	10
Lake Oswego	Town Center	$10,000	3	33	36
Rockwood	Town Center	$10,000	0	1,135	1,135
Tigard	Town Center	$10,000	67	337	404
Outside UGB	**Type**	**Incentive per DU**	**SF DU**	**MF DU**	**Total DU**
Canby	Neighbor City	$10,000	0	600	600
Sandy	Neighbor City	$10,000	0	600	600

Vancouver	Neighbor City	$25,000	0	6,000	6,000
			SF DU	**MF DU**	**Total DU**
Portland Total			1,137	80,516	81,653
UGB Total			1,477	85,481	86,958
Region Total			1,477	92,681	94,158
Notes:					
NPI = Neighborhood Prosperity Initiative					
TOD = Transit Oriented Development					
DU = Dwelling unit					
MF = Multifamily					
SF = Single-family					

System development charges (SDCs)

SDCs are one-time fees charged by local jurisdictions that are based on the development of a property. They apply to both new construction and residential projects which increase impacts on infrastructure. State law allows SDCs to be charged to help pay for five types of capital facilities: water, stormwater, sewer, transportation, and parks. Local jurisdictions must provide research and analysis to justify the amount they charge for each SDC.

SDCs for the MetroScope scenarios were estimated with data from the Homebuilders Association of Metropolitan Portland and a 2009 Metro study. Separate fees were assumed for both single family and multi-family units. Please refer to Table 6 for details about the SDC assumptions used for modeling purposes.

Table 6: SDC assumptions for MetroScope modeling (per residence)

Jurisdiction	Source	SFR	MFR
Gladstone	Home Builders	$6,650	$6,650
Happy Valley	Metro Survey	$30,000	$27,000
Beaverton	Metro Survey	$21,087	$19,158
Cornelius	Home Builders	$15,063	$15,063
Durham	Metro Survey	$17,188	$17,188
Fairview	Metro Survey	$7,091	$6,371
Forest Grove	Metro Survey	$16,657	$16,657
Gresham	Home Builders	$16,665	$16,665
Springwater	Home Builders	$31,034	$31,034
Pleasant Valley	Home Builders	$24,578	$24,578
Hillsboro	Home Builders	$16,691	$16,691

Johnson City	Metro Survey	$18,088	$13,081
King City	Home Builders	$11,713	$11,713
Lake Oswego	Metro Survey	$22,470	$15,378
Maywood Park	Metro Survey	$18,088	$13,081
Milwaukie	Metro Survey	$9,127	$8,750
Oregon City	Metro Survey	$19,747	$18,747
Portland Central City	Metro Survey	$18,088	$13,081
Rivergrove	Metro Survey	$500	$500
Sherwood	Metro Survey	$23,351	$17,897
Tigard	Metro Survey	$16,535	$13,716
Troutdale	Metro Survey	$14,659	$13,311
Tualatin	Metro Survey	$17,185	$17,185
West Linn	Metro Survey	$29,291	$22,257
Wood Village	Metro Survey	$9,982	$9,982
Wilsonville	Metro Survey	$22,123	$17,444
Multnomah Cty Unincorp	Metro Survey	$16,500	$16,500
Washington Cty Unincorp	Metro Survey	$18,000	$14,000
Clackamas County Unincorp	Metro Survey	$19,000	$15,000
Vancouver	Staff Estimate	$19,000	$15,000
Battle Ground	Staff Estimate	$19,000	$15,000
Camas	Staff Estimate	$19,000	$15,000
Ridgefield	Staff Estimate	$19,000	$15,000
Washougal	Staff Estimate	$19,000	$15,000
Clark County Unincorp	Staff Estimate	$4,000	$4,000
Other Rural	Staff Estimate	$4,000	$4,000
Other Urban	Staff Estimate	$19,000	$15,000
Sources:			
2011 Metro Survey, Homebuilders 2010 Survey, Metro Staff Estimates			

Residential neighborhood score

The residential neighborhood score is rough measure of how much people would be willing to pay for a similar house in different locations around the region. It is used as an input assumption for modeling to recognize these market dynamics. There are a many reasons that an identical house in two different neighborhoods might sell for very different prices. It could be because of the quality of the housing stock, a walkable business district, proximity to parks, or a number of other things.

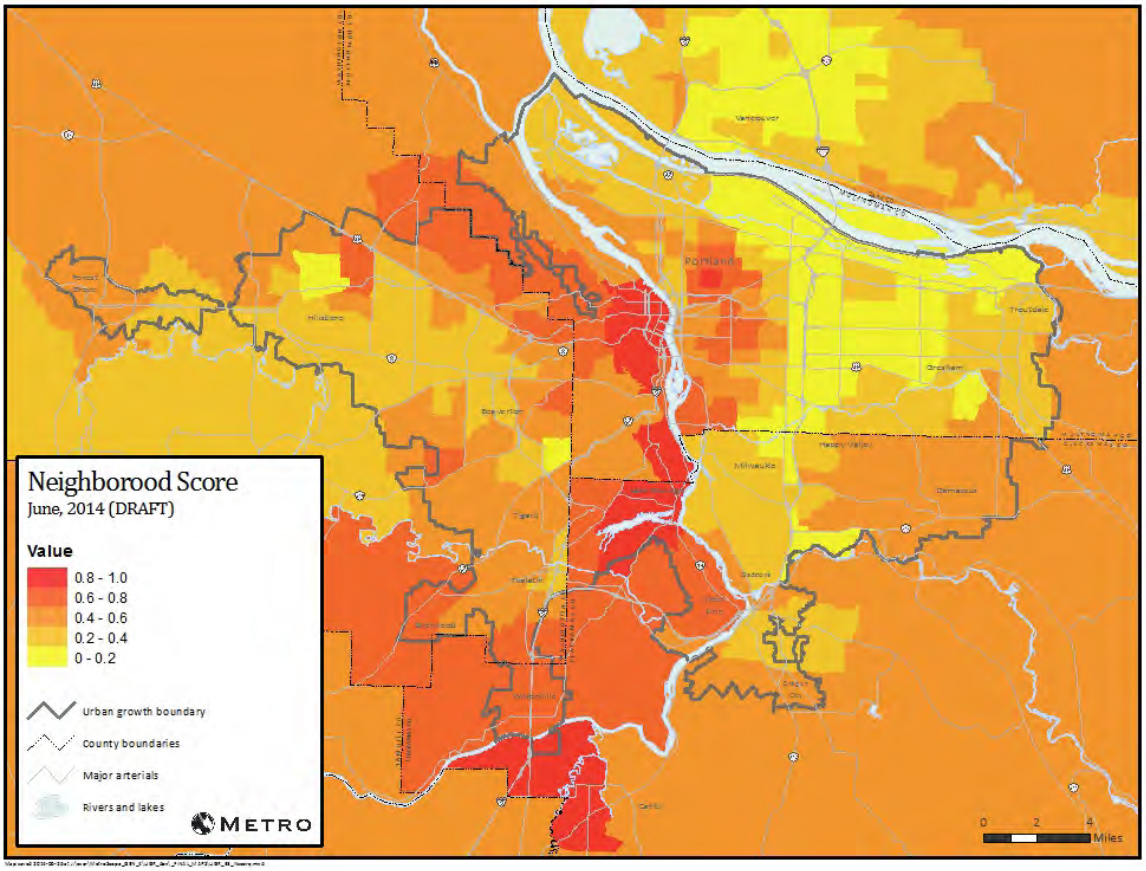
We don't directly observe how much people are willing to pay for these things, but people pay indirectly for them by choosing a house (or apartment) that has the right bundle of amenities and price that suits their wants and needs. For example, if apartments in a more walkable neighborhood cost more than apartments in a less walkable neighborhood, then we may be able to tease out how much that amenity is worth to people in dollar terms.

Most of those things are very difficult to quantify or measure, and so we must perform a data analysis known as a "hedonic regression". A hedonic regression for housing tries to decompose the sale price into the various attributes of the house itself, such as house size and lot size, as well as location-based attributes, such as a typical commute time or school quality.

Since we are forecasting over a 20 to 40 year time horizon, we tend to focus on the most basic and measurable of these attributes, the ones that we can derive from assessor and zoning data, such as house size, lot size and location. The raw data for this analysis come from the assessor files for single family homes sold between 2004 and 2012.

In the end, each census tract gets a relative score between zero and one, which becomes a parameter in the MetroScope residential location choice equations. Please refer to Map 11 for a depiction of neighborhood score assumptions.

Map 11: Neighborhood score assumptions by location



Transportation and accessibility

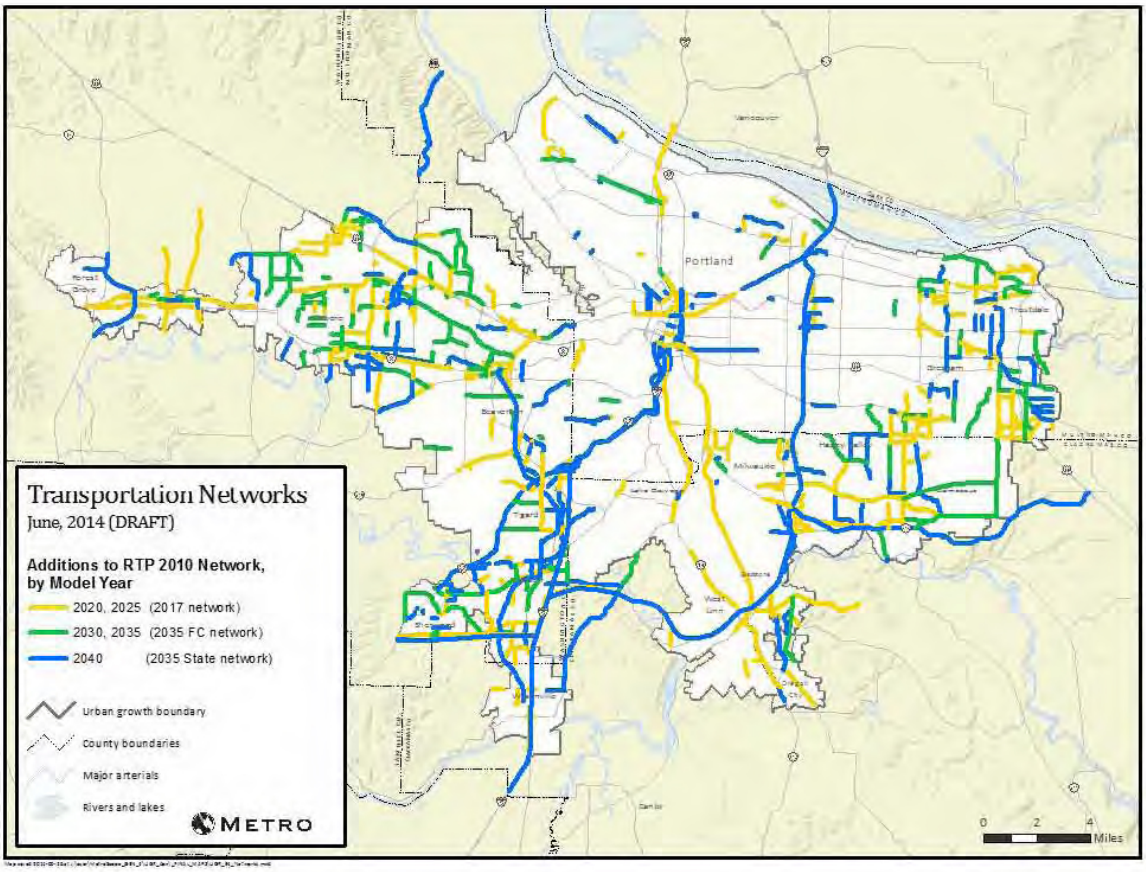
The MetroScope land use model is integrated with a transportation model, so that travel times can influence the location choices of households and employment, which in turn can influence vehicle trips on the transportation network. Transportation networks used in MetroScope UGR scenarios are from the Metro 2035 Regional Transportation Plan:

2010, 2015 forecast years:	2010 network
2020, 2025 forecast years:	2017 network
2030, 2035 forecast years:	2035 "financially constrained" network

Please refer to Map 12 for an illustration of which transportation projects were added in each year. A complete list of projects can be found at:

http://library.oregonmetro.gov/files//2035_rtp_appendix_june2010_web.pdf

Map 12: Transportation networks assumed in MetroScope modeling



Appendix 12

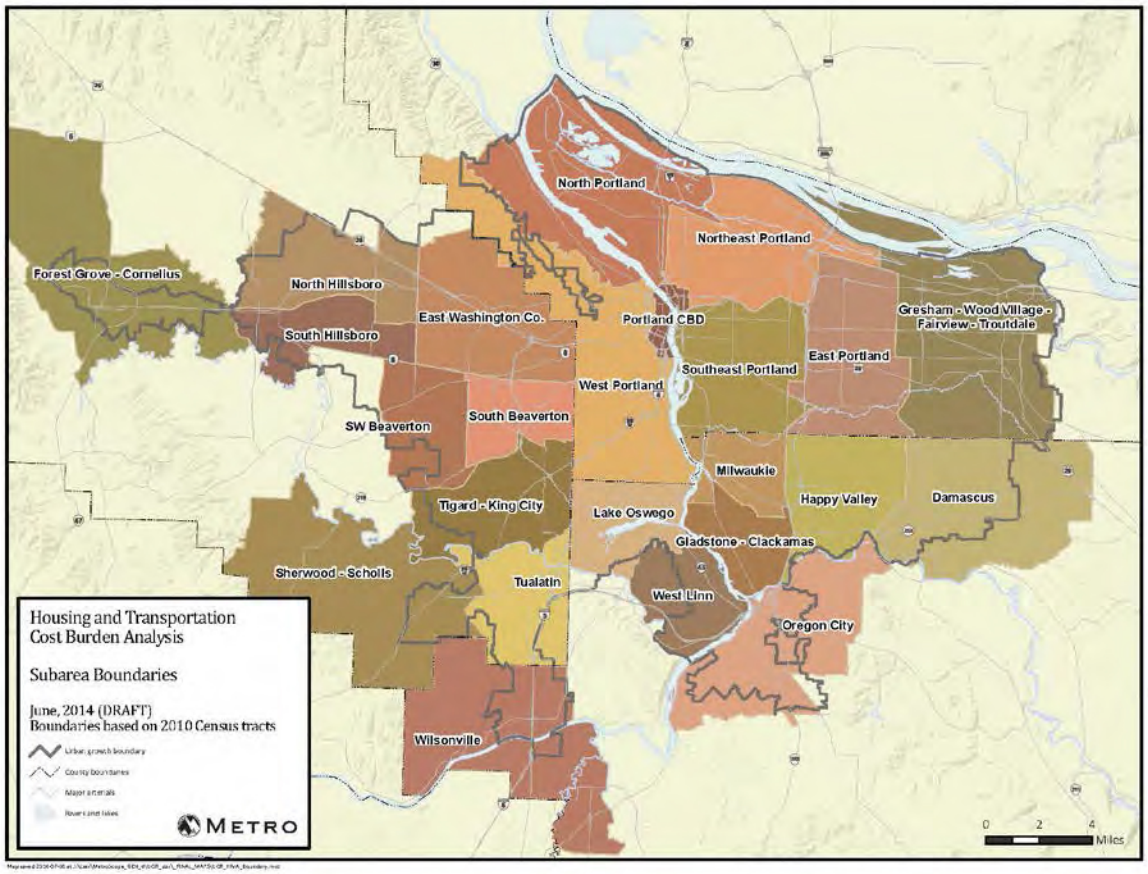
Housing and transportation cost burden analysis

Introduction

This analysis is intended to inform discussions by local and regional policy makers, housing authorities, non-profit housing providers, home builders, and other service providers about how to ensure that current and future generations have adequate housing and transportation options to match their budgets. This appendix does not comprise the urban growth report's analysis of regional housing needs, but is intended as additional information about how current local and regional policies may play out in the future.

The following profiles describe historic and forecast housing dynamics for the 24 subareas pictured in Map 1. Subarea boundaries are based on groupings of Census Tracts that are intended to roughly approximate city boundaries, portions of cities, or groupings of smaller cities.

Map 1: Subareas used for housing + transportation cost burden analysis



These profile sheets describe the total number of households, unique housing mixes, incomes, and housing and transportation expenses forecast for subareas in the Portland metropolitan region (within the Metro urban growth boundary (UGB)). Historic data are given for the year 2010 and forecast data are given for the year 2035. All dollars are expressed as 2010$. The scenario used to create these forecast data assumes a continuation of current policies and investment trends. Additional background on the assumptions built into the scenario is provided in Appendix 11.

The results of these scenarios should not be taken as foregone conclusions. Different assumptions would produce different results. Changes in policies and investments can change the outcomes for the region's communities.

Household types

The MetroScope scenario model uses 400 types of households[1] that are determined by household size, income, household age and whether children are present. To make analysis and presentation feasible, the 400 types have been simplified to eight household types.

These eight household types are ranked roughly commensurate with income (income generally increases from household type one to household type eight). Differences in household characteristics translate into different choices of housing types and locations and transportation modes, as well as level of cost burden.

Housing and transportation costs

Traditionally, housing affordability analyses look at the cost of the residence itself without regard for transportation costs. In reality, people weigh a variety of factors when choosing where to live. One such factor is transportation costs. In many cases, highly desirable locations have high housing costs, but very low transportation costs (because of their central location and access to multiple modes of transportation), while other locations have lower housing costs, but very high transportation costs (because they are distant from jobs and services). In order to illustrate the tradeoffs of different housing choices, this analysis includes information about housing and transportation costs.

Cost burden definition

Homeownership represents an economic choice that requires some level of equity investment. Defining cost-burden for homeowners is somewhat more difficult than for renters since many homeowners regard their homes as not just a residence but as an investment. Homeowners often spend a substantial portion of their income on their home, but do not necessarily regard these expenditures as a burden. This is particularly the case for affluent homeowners. For these reasons, this analysis assumes that to be

[1] Household refers to the residents, not the residence

cost-burdened, a household must rent, not own. Nonetheless, for completeness, this report also provides data on all households (renters and owners).

There is a generally accepted rule that no more than 30 percent of one's income should be spent on housing. Because this analysis includes housing and transportation costs, that standard rule is adjusted. In 2007, many low-to-moderate-income households in the United States spent well over 50 percent of their income on housing and transportation[2]. In 2007, the national median percentage of income spent on these costs was 45 percent. For the purposes of this analysis, this report proposes that **if a household rents its residence and spends 45 percent or more of its income on transportation and housing, it is considered cost-burdened.**

How do the results of this analysis compare with the analysis completed for the 2009 Urban Growth Report?

Forecast cost burdens in this updated report are not as severe as those forecast in the 2009 report. The primary reasons for this are:

- The 2014 population and employment forecast reflects the effects of the Great Recession, which dampened projected growth. The effect of having less population growth is that there is less demand and competition for housing.
- The 2014 Urban Growth Report uses different methods to identify the region's buildable land inventory. Additionally, urban growth boundary expansions have been made since the release of the 2009 report. The new inventory has more housing capacity than was assumed in the 2009 report. This larger supply, combined with reduced demand, means that there is less housing price escalation forecasted.
- The model's transportation mode shares were updated to reflect actual data from the 2010 Census. Those Census data point to an increase in the non-auto mode share, which reduces transportation costs, particularly for households with lower incomes residing in apartments. This influences the forecast.

Regional summary of cost-burden analysis

Tables 1 through 3 summarize income, housing expense, transportation expense, and cost burden data for households in the Metro urban growth boundary for the year 2010 and 2035 under three different growth scenarios (low, medium, high). Generally, there is not a big difference in median incomes or average household expenses when comparing the low growth scenario, medium or high growth scenarios. Not accounting for potential inflation, incomes and expenditures remain stable. Though the share of households that is cost-burdened is forecast to decrease slightly between 2010 and 2035, the forecast indicates an increase in the absolute numbers of cost-burdened households between the years

[2] Source: United States Bureau of Labor Statistics

2010 and 2035. Depending on the growth scenario, there will be between 3,000 to 27,000 more cost-burdened households in 2035 than there were in 2010 (about 15,000 more cost-burdened households under the medium growth scenario, which represents the most likely outcome, if assumptions are correct).

Table 1: Housing and transportation costs for all households in UGB (2010$)

Year	Median income	Average housing expenditure	Average transportation expenditure
2010	$70,800	$21,200	$6,400
2035 low growth scenario	$69,500	$18,900	$5,200
2035 medium growth scenario	$69,400	$19,400	$5,200
2035 high growth scenario	$69,200	$20,100	$5,200

Table 2: Housing and transportation costs for renter households in UGB (2010$)

Year	Median income	Average housing expenditure	Average transportation expenditure
2010	$39,300	$9,200	$4,700
2035 low growth scenario	$40,400	$9,500	$3,600
2035 medium growth scenario	$40,300	$9,700	$3,600
2035 high growth scenario	$40,100	$10,000	$3,600

Table 3: Cost-burdened households inside Metro UGB (2010$)

Year	Number of cost-burdened households in UGB	Share of UGB households that are cost-burdened
2010	104,100	17%
2035 low growth scenario	107,100	14%
2035 medium growth scenario	119,300	15%
2035 high growth scenario	130,900	15%

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

Portland CBD		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	12,453	26,936	28,799	30,771
Subarea share of UGB households	2%	4%	4%	4%
Total jobs	94,319	99,755	121,486	151,377
Subarea share of UGB jobs	12%	11%	11%	11%
Percent of all households by type				
Type 1 (Median Income $13,000)	25%	16%	16%	16%
Type 2 (Median Income $24,000)	14%	14%	14%	14%
Type 3 (Median Income $33,000)	9%	11%	11%	11%
Type 4 (Median Income $44,000)	6%	9%	9%	9%
Type 5 (Median Income $60,000)	7%	10%	10%	10%
Type 6 (Median Income $76,000)	11%	13%	13%	13%
Type 7 (Median Income $93,000)	14%	12%	13%	13%
Type 8 (Median Income $200,000)	14%	14%	14%	13%
Average annual costs, all households				
Transportation costs	$2,924	$2,234	$2,310	$2,327
Housing costs	$13,000	$13,356	$13,849	$14,520
Transportation plus housing	$47,743	$51,444	$51,945	$52,262
% of income spent on transportation	6%	4%	4%	4%
% of income of spent on housing	27%	26%	27%	28%
% of income spent on transportation plus housing	33%	30%	31%	32%
Average annual costs, renters only				
Transportation costs	$2,595	$2,202	$2,287	$2,313
Housing costs	$8,723	$10,086	$10,385	$10,758
Transportation plus housing	$36,852	$43,539	$43,814	$43,694
% of income spent on transportation	7%	5%	5%	5%
% of income of spent on housing	24%	23%	24%	25%
% of income spent on transportation plus housing	31%	28%	29%	30%
Number of cost burdened households	5,023	7,043	7,278	7,535
% of total households that are cost burdened	40%	26%	25%	24%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

Northeast Portland		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	45,169	59,229	62,113	64,657
Subarea share of UGB households	8%	8%	8%	8%
Total jobs	68,531	75,667	98,267	118,506
Subarea share of UGB jobs	9%	9%	9%	8%
Percent of all households by type				
Type 1 (Median Income $13,000)	10%	10%	10%	10%
Type 2 (Median Income $24,000)	11%	13%	13%	14%
Type 3 (Median Income $33,000)	11%	11%	11%	12%
Type 4 (Median Income $44,000)	9%	13%	13%	13%
Type 5 (Median Income $60,000)	13%	13%	12%	12%
Type 6 (Median Income $76,000)	16%	14%	14%	14%
Type 7 (Median Income $93,000)	16%	12%	12%	12%
Type 8 (Median Income $200,000)	14%	14%	13%	13%
Average annual costs, all households				
Transportation costs	$4,994	$3,573	$3,603	$3,606
Housing costs	$23,495	$18,699	$19,020	$19,669
Transportation plus housing	$75,246	$67,091	$66,341	$65,867
% of income spent on transportation	7%	5%	5%	5%
% of income of spent on housing	31%	28%	29%	30%
% of income spent on transportation plus housing	38%	33%	34%	35%
Average annual costs, renters only				
Transportation costs	$3,574	$2,777	$2,823	$2,837
Housing costs	$10,192	$10,258	$10,428	$10,689
Transportation plus housing	$42,581	$43,391	$43,211	$42,816
% of income spent on transportation	8%	6%	7%	7%
% of income of spent on housing	24%	24%	24%	25%
% of income spent on transportation plus housing	32%	30%	31%	32%
Number of cost burdened households	6,776	8,139	9,373	10,815
% of total households that are cost burdened	15%	14%	15%	17%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

Gresham - Wood Village - Fairview - Troutdale		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	50,370	54,486	58,514	61,795
Subarea share of UGB households	8%	7%	7%	7%
Total jobs	47,337	59,579	84,648	107,643
Subarea share of UGB jobs	6%	7%	7%	8%
Percent of all households by type				
Type 1 (Median Income $13,000)	14%	12%	12%	12%
Type 2 (Median Income $24,000)	17%	17%	17%	17%
Type 3 (Median Income $33,000)	17%	16%	16%	16%
Type 4 (Median Income $44,000)	16%	17%	17%	17%
Type 5 (Median Income $60,000)	15%	13%	13%	13%
Type 6 (Median Income $76,000)	10%	11%	11%	11%
Type 7 (Median Income $93,000)	6%	7%	8%	8%
Type 8 (Median Income $200,000)	5%	5%	6%	6%
Average annual costs, all households				
Transportation costs	$7,133	$6,013	$5,942	$5,856
Housing costs	$13,835	$14,254	$14,760	$15,279
Transportation plus housing	$48,152	$50,508	$51,277	$51,510
% of income spent on transportation	15%	12%	12%	11%
% of income of spent on housing	29%	28%	29%	30%
% of income spent on transportation plus housing	44%	40%	40%	41%
Average annual costs, renters only				
Transportation costs	$5,814	$4,744	$4,655	$4,596
Housing costs	$7,954	$8,176	$8,320	$8,534
Transportation plus housing	$34,119	$34,059	$34,195	$34,358
% of income spent on transportation	17%	14%	14%	13%
% of income of spent on housing	23%	24%	24%	25%
% of income spent on transportation plus housing	40%	38%	38%	38%
Number of cost burdened households	11,661	10,529	11,192	11,879
% of total households that are cost burdened	23%	19%	19%	19%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

East Portland		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	46,867	56,388	62,322	66,924
Subarea share of UGB households	8%	7%	8%	8%
Total jobs	27,645	32,021	40,564	48,864
Subarea share of UGB jobs	4%	4%	4%	4%
Percent of all households by type				
Type 1 (Median Income $13,000)	16%	17%	17%	17%
Type 2 (Median Income $24,000)	19%	21%	21%	20%
Type 3 (Median Income $33,000)	18%	17%	17%	17%
Type 4 (Median Income $44,000)	13%	15%	15%	15%
Type 5 (Median Income $60,000)	11%	10%	10%	10%
Type 6 (Median Income $76,000)	9%	8%	8%	8%
Type 7 (Median Income $93,000)	8%	7%	7%	7%
Type 8 (Median Income $200,000)	5%	5%	5%	5%
Average annual costs, all households				
Transportation costs	$5,355	$4,237	$4,229	$4,211
Housing costs	$12,666	$12,158	$12,297	$12,612
Transportation plus housing	$45,500	$42,320	$42,263	$42,223
% of income spent on transportation	12%	10%	10%	10%
% of income of spent on housing	28%	29%	29%	30%
% of income spent on transportation plus housing	40%	39%	39%	40%
Average annual costs, renters only				
Transportation costs	$4,492	$3,653	$3,671	$3,675
Housing costs	$8,018	$8,264	$8,370	$8,554
Transportation plus housing	$36,282	$36,133	$36,244	$36,270
% of income spent on transportation	12%	10%	10%	10%
% of income of spent on housing	22%	23%	23%	24%
% of income spent on transportation plus housing	34%	33%	33%	34%
Number of cost burdened households	8,694	9,795	11,885	13,331
% of total households that are cost burdened	19%	17%	19%	20%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

Southeast Portland		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	70,189	101,189	108,274	114,796
Subarea share of UGB households	12%	13%	13%	13%
Total jobs	63,642	75,385	95,124	111,192
Subarea share of UGB jobs	8%	9%	8%	8%
Percent of all households by type				
Type 1 (Median Income $13,000)	12%	12%	12%	13%
Type 2 (Median Income $24,000)	15%	17%	17%	18%
Type 3 (Median Income $33,000)	13%	14%	14%	14%
Type 4 (Median Income $44,000)	10%	14%	14%	13%
Type 5 (Median Income $60,000)	13%	13%	13%	13%
Type 6 (Median Income $76,000)	14%	12%	13%	12%
Type 7 (Median Income $93,000)	14%	9%	9%	9%
Type 8 (Median Income $200,000)	10%	9%	8%	8%
Average annual costs, all households				
Transportation costs	$4,356	$3,173	$3,214	$3,222
Housing costs	$19,401	$15,281	$15,488	$15,913
Transportation plus housing	$61,413	$53,356	$52,729	$52,300
% of income spent on transportation	7%	6%	6%	6%
% of income of spent on housing	32%	29%	29%	30%
% of income spent on transportation plus housing	39%	35%	35%	37%
Average annual costs, renters only				
Transportation costs	$3,172	$2,550	$2,610	$2,640
Housing costs	$9,078	$9,122	$9,277	$9,502
Transportation plus housing	$35,891	$36,638	$36,668	$36,588
% of income spent on transportation	9%	7%	7%	7%
% of income of spent on housing	25%	25%	25%	26%
% of income spent on transportation plus housing	34%	32%	32%	33%
Number of cost burdened households	14,384	17,760	21,535	24,075
% of total households that are cost burdened	20%	18%	20%	21%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

West Portland		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	50,659	79,500	83,625	87,454
Subarea share of UGB households	8%	10%	10%	10%
Total jobs	69,835	77,972	94,795	108,713
Subarea share of UGB jobs	9%	9%	8%	8%
Percent of all households by type				
Type 1 (Median Income $13,000)	9%	7%	7%	7%
Type 2 (Median Income $24,000)	11%	13%	13%	13%
Type 3 (Median Income $33,000)	8%	10%	10%	11%
Type 4 (Median Income $44,000)	8%	13%	13%	13%
Type 5 (Median Income $60,000)	11%	14%	13%	13%
Type 6 (Median Income $76,000)	13%	12%	13%	13%
Type 7 (Median Income $93,000)	15%	10%	10%	10%
Type 8 (Median Income $200,000)	24%	21%	21%	20%
Average annual costs, all households				
Transportation costs	$4,791	$3,586	$3,661	$3,674
Housing costs	$28,743	$21,391	$22,027	$22,924
Transportation plus housing	$92,611	$79,918	$79,887	$79,619
% of income spent on transportation	5%	4%	5%	5%
% of income of spent on housing	31%	27%	28%	29%
% of income spent on transportation plus housing	36%	31%	32%	33%
Average annual costs, renters only				
Transportation costs	$2,915	$2,505	$2,583	$2,602
Housing costs	$9,375	$9,972	$10,241	$10,544
Transportation plus housing	$37,144	$40,621	$40,782	$40,376
% of income spent on transportation	8%	6%	6%	6%
% of income of spent on housing	25%	25%	25%	26%
% of income spent on transportation plus housing	33%	31%	31%	33%
Number of cost burdened households	10,572	13,722	15,324	16,996
% of total households that are cost burdened	21%	17%	18%	19%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

North Portland		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	24,136	36,615	39,313	43,286
Subarea share of UGB households	4%	5%	5%	5%
Total jobs	46,198	58,570	73,250	84,984
Subarea share of UGB jobs	6%	7%	6%	6%
Percent of all households by type				
Type 1 (Median Income $13,000)	15%	18%	19%	19%
Type 2 (Median Income $24,000)	17%	19%	19%	20%
Type 3 (Median Income $33,000)	16%	14%	14%	14%
Type 4 (Median Income $44,000)	11%	14%	13%	13%
Type 5 (Median Income $60,000)	11%	10%	9%	9%
Type 6 (Median Income $76,000)	12%	10%	10%	10%
Type 7 (Median Income $93,000)	9%	7%	7%	7%
Type 8 (Median Income $200,000)	8%	8%	8%	8%
Average annual costs, all households				
Transportation costs	$4,646	$3,476	$3,491	$3,465
Housing costs	$16,376	$13,867	$14,065	$14,302
Transportation plus housing	$53,704	$47,086	$46,788	$46,295
% of income spent on transportation	9%	7%	7%	7%
% of income of spent on housing	30%	29%	30%	31%
% of income spent on transportation plus housing	39%	37%	38%	38%
Average annual costs, renters only				
Transportation costs	$3,704	$3,086	$3,132	$3,157
Housing costs	$9,659	$9,740	$9,906	$10,072
Transportation plus housing	$40,207	$41,723	$41,710	$41,576
% of income spent on transportation	9%	7%	8%	8%
% of income of spent on housing	24%	23%	24%	24%
% of income spent on transportation plus housing	33%	31%	31%	32%
Number of cost burdened households	4,110	5,636	6,507	7,586
% of total households that are cost burdened	17%	15%	17%	18%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

Lake Oswego		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	16,603	17,437	17,631	17,865
Subarea share of UGB households	3%	2%	2%	2%
Total jobs	17,104	17,169	22,315	27,970
Subarea share of UGB jobs	2%	2%	2%	2%
Percent of all households by type				
Type 1 (Median Income $13,000)	4%	1%	1%	1%
Type 2 (Median Income $24,000)	2%	1%	1%	1%
Type 3 (Median Income $33,000)	3%	2%	2%	2%
Type 4 (Median Income $44,000)	5%	5%	4%	5%
Type 5 (Median Income $60,000)	9%	6%	6%	6%
Type 6 (Median Income $76,000)	11%	9%	9%	9%
Type 7 (Median Income $93,000)	20%	19%	19%	19%
Type 8 (Median Income $200,000)	45%	56%	56%	56%
Average annual costs, all households				
Transportation costs	$8,257	$7,636	$7,745	$7,758
Housing costs	$50,955	$41,662	$43,353	$45,698
Transportation plus housing	$141,648	$161,016	$161,145	$161,302
% of income spent on transportation	6%	5%	5%	5%
% of income of spent on housing	36%	26%	27%	28%
% of income spent on transportation plus housing	42%	31%	32%	33%
Average annual costs, renters only				
Transportation costs	$5,740	$5,106	$5,180	$5,153
Housing costs	$13,652	$14,366	$14,848	$15,367
Transportation plus housing	$57,373	$62,950	$63,126	$62,558
% of income spent on transportation	10%	8%	8%	8%
% of income of spent on housing	24%	23%	24%	25%
% of income spent on transportation plus housing	34%	31%	32%	33%
Number of cost burdened households	1,137	734	729	836
% of total households that are cost burdened	7%	4%	4%	5%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

Gladstone - Clackamas		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	17,287	18,299	18,742	18,978
Subarea share of UGB households	3%	2%	2%	2%
Total jobs	7,797	9,231	11,472	13,860
Subarea share of UGB jobs	1%	1%	1%	1%
Percent of all households by type				
Type 1 (Median Income $13,000)	13%	12%	12%	12%
Type 2 (Median Income $24,000)	13%	15%	15%	15%
Type 3 (Median Income $33,000)	13%	13%	13%	14%
Type 4 (Median Income $44,000)	14%	19%	18%	18%
Type 5 (Median Income $60,000)	17%	15%	14%	14%
Type 6 (Median Income $76,000)	15%	13%	13%	13%
Type 7 (Median Income $93,000)	8%	7%	7%	7%
Type 8 (Median Income $200,000)	8%	7%	7%	7%
Average annual costs, all households				
Transportation costs	$6,533	$5,564	$5,647	$5,674
Housing costs	$17,130	$16,301	$16,761	$17,406
Transportation plus housing	$59,771	$56,330	$56,367	$56,209
% of income spent on transportation	11%	10%	10%	10%
% of income of spent on housing	29%	29%	30%	31%
% of income spent on transportation plus housing	40%	39%	40%	41%
Average annual costs, renters only				
Transportation costs	$5,273	$4,590	$4,659	$4,661
Housing costs	$9,226	$9,663	$9,884	$10,139
Transportation plus housing	$41,257	$42,135	$42,231	$41,798
% of income spent on transportation	13%	11%	11%	11%
% of income of spent on housing	22%	23%	23%	24%
% of income spent on transportation plus housing	35%	34%	34%	35%
Number of cost burdened households	2,291	2,161	2,296	2,417
% of total households that are cost burdened	13%	12%	12%	13%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

Milwaukie		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	15,678	16,941	17,802	18,435
Subarea share of UGB households	3%	2%	2%	2%
Total jobs	18,431	21,159	26,147	31,029
Subarea share of UGB jobs	2%	2%	2%	2%
Percent of all households by type				
Type 1 (Median Income $13,000)	14%	14%	14%	14%
Type 2 (Median Income $24,000)	15%	17%	17%	17%
Type 3 (Median Income $33,000)	16%	16%	16%	16%
Type 4 (Median Income $44,000)	15%	19%	18%	18%
Type 5 (Median Income $60,000)	15%	13%	12%	12%
Type 6 (Median Income $76,000)	10%	9%	9%	9%
Type 7 (Median Income $93,000)	6%	5%	5%	5%
Type 8 (Median Income $200,000)	8%	8%	8%	7%
Average annual costs, all households				
Transportation costs	$5,509	$4,463	$4,537	$4,554
Housing costs	$14,301	$14,172	$14,489	$14,881
Transportation plus housing	$51,813	$49,626	$49,429	$49,025
% of income spent on transportation	11%	9%	9%	9%
% of income of spent on housing	28%	29%	29%	30%
% of income spent on transportation plus housing	38%	38%	38%	40%
Average annual costs, renters only				
Transportation costs	$4,621	$3,828	$3,883	$3,886
Housing costs	$8,480	$9,050	$9,161	$9,304
Transportation plus housing	$38,231	$39,865	$39,535	$38,929
% of income spent on transportation	12%	10%	10%	10%
% of income of spent on housing	22%	23%	23%	24%
% of income spent on transportation plus housing	34%	32%	33%	34%
Number of cost burdened households	3,018	2,798	2,946	3,238
% of total households that are cost burdened	19%	17%	17%	18%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

Happy Valley	2010	Data for Year 2035		
		Low Growth	Medium Growth	High Growth
Total households	16,448	18,879	21,068	22,945
Subarea share of UGB households	3%	2%	3%	3%
Total jobs	31,893	38,396	49,781	61,437
Subarea share of UGB jobs	4%	4%	4%	4%
Percent of all households by type				
Type 1 (Median Income $13,000)	10%	10%	9%	9%
Type 2 (Median Income $24,000)	6%	6%	6%	6%
Type 3 (Median Income $33,000)	7%	8%	8%	8%
Type 4 (Median Income $44,000)	10%	13%	13%	13%
Type 5 (Median Income $60,000)	16%	18%	17%	17%
Type 6 (Median Income $76,000)	17%	18%	19%	18%
Type 7 (Median Income $93,000)	18%	16%	16%	16%
Type 8 (Median Income $200,000)	16%	12%	12%	12%
Average annual costs, all households				
Transportation costs	$7,511	$6,255	$6,367	$6,359
Housing costs	$21,858	$20,478	$21,432	$22,406
Transportation plus housing	$83,437	$78,277	$80,090	$80,592
% of income spent on transportation	9%	8%	8%	8%
% of income of spent on housing	26%	26%	27%	28%
% of income spent on transportation plus housing	35%	34%	35%	36%
Average annual costs, renters only				
Transportation costs	$5,345	$4,313	$4,340	$4,299
Housing costs	$8,857	$9,165	$9,281	$9,427
Transportation plus housing	$41,450	$40,525	$40,359	$39,765
% of income spent on transportation	13%	11%	11%	11%
% of income of spent on housing	21%	23%	23%	24%
% of income spent on transportation plus housing	34%	33%	34%	35%
Number of cost burdened households	1,836	1,858	2,246	2,553
% of total households that are cost burdened	11%	10%	11%	11%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

Damascus		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	5,553	11,875	15,977	19,313
Subarea share of UGB households	1%	2%	2%	2%
Total jobs	2,608	8,676	14,570	23,308
Subarea share of UGB jobs	0%	1%	1%	2%
Percent of all households by type				
Type 1 (Median Income $13,000)	5%	5%	5%	5%
Type 2 (Median Income $24,000)	3%	5%	5%	5%
Type 3 (Median Income $33,000)	5%	6%	6%	6%
Type 4 (Median Income $44,000)	8%	12%	12%	12%
Type 5 (Median Income $60,000)	15%	18%	16%	17%
Type 6 (Median Income $76,000)	17%	17%	19%	18%
Type 7 (Median Income $93,000)	23%	20%	20%	20%
Type 8 (Median Income $200,000)	24%	17%	17%	17%
Average annual costs, all households				
Transportation costs	$12,160	$9,654	$9,639	$9,483
Housing costs	$31,446	$27,706	$28,921	$30,047
Transportation plus housing	$118,241	$106,869	$108,523	$108,418
% of income spent on transportation	10%	9%	9%	9%
% of income of spent on housing	27%	26%	27%	28%
% of income spent on transportation plus housing	37%	35%	36%	36%
Average annual costs, renters only				
Transportation costs	$8,417	$6,169	$6,096	$5,992
Housing costs	$12,650	$11,305	$11,628	$12,152
Transportation plus housing	$51,048	$38,170	$38,119	$38,706
% of income spent on transportation	16%	16%	16%	15%
% of income of spent on housing	25%	30%	31%	31%
% of income spent on transportation plus housing	41%	46%	46%	47%
Number of cost burdened households	370	467	508	640
% of total households that are cost burdened	7%	4%	3%	3%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

Oregon City	2010	Data for Year 2035		
		Low Growth	Medium Growth	High Growth
Total households	15,065	18,148	20,635	22,925
Subarea share of UGB households	3%	2%	3%	3%
Total jobs	14,383	18,250	24,351	29,561
Subarea share of UGB jobs	2%	2%	2%	2%
Percent of all households by type				
Type 1 (Median Income $13,000)	12%	11%	12%	12%
Type 2 (Median Income $24,000)	9%	10%	10%	10%
Type 3 (Median Income $33,000)	10%	10%	10%	10%
Type 4 (Median Income $44,000)	12%	15%	15%	15%
Type 5 (Median Income $60,000)	18%	17%	16%	16%
Type 6 (Median Income $76,000)	17%	16%	17%	17%
Type 7 (Median Income $93,000)	13%	12%	12%	12%
Type 8 (Median Income $200,000)	9%	8%	8%	8%
Average annual costs, all households				
Transportation costs	$9,105	$7,985	$8,122	$8,072
Housing costs	$20,102	$19,041	$19,876	$20,371
Transportation plus housing	$70,088	$68,430	$69,686	$68,884
% of income spent on transportation	13%	12%	12%	12%
% of income of spent on housing	29%	28%	29%	30%
% of income spent on transportation plus housing	42%	39%	40%	41%
Average annual costs, renters only				
Transportation costs	$6,717	$5,762	$5,771	$5,732
Housing costs	$9,260	$9,598	$9,742	$9,756
Transportation plus housing	$40,149	$40,680	$40,479	$39,990
% of income spent on transportation	17%	14%	14%	14%
% of income of spent on housing	23%	24%	24%	24%
% of income spent on transportation plus housing	40%	38%	38%	39%
Number of cost burdened households	2,129	2,309	2,439	2,960
% of total households that are cost burdened	14%	13%	12%	13%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

West Linn		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	10,541	11,353	11,526	11,716
Subarea share of UGB households	2%	1%	1%	1%
Total jobs	5,777	6,189	7,699	9,168
Subarea share of UGB jobs	1%	1%	1%	1%
Percent of all households by type				
Type 1 (Median Income $13,000)	3%	1%	1%	1%
Type 2 (Median Income $24,000)	4%	2%	2%	2%
Type 3 (Median Income $33,000)	5%	3%	3%	3%
Type 4 (Median Income $44,000)	6%	5%	5%	5%
Type 5 (Median Income $60,000)	11%	7%	7%	7%
Type 6 (Median Income $76,000)	13%	11%	12%	12%
Type 7 (Median Income $93,000)	20%	23%	23%	22%
Type 8 (Median Income $200,000)	38%	48%	48%	48%
Average annual costs, all households				
Transportation costs	$9,395	$9,181	$9,319	$9,358
Housing costs	$39,930	$37,501	$38,855	$40,699
Transportation plus housing	$131,596	$152,163	$152,339	$152,281
% of income spent on transportation	7%	6%	6%	6%
% of income of spent on housing	30%	25%	26%	27%
% of income spent on transportation plus housing	37%	31%	32%	33%
Average annual costs, renters only				
Transportation costs	$6,860	$6,503	$6,597	$6,574
Housing costs	$13,636	$14,154	$14,574	$15,016
Transportation plus housing	$61,921	$68,335	$68,434	$67,605
% of income spent on transportation	11%	10%	10%	10%
% of income of spent on housing	22%	21%	21%	22%
% of income spent on transportation plus housing	33%	30%	31%	32%
Number of cost burdened households	713	473	472	555
% of total households that are cost burdened	7%	4%	4%	5%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

Wilsonville		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	8,892	11,634	12,471	13,260
Subarea share of UGB households	1%	2%	2%	2%
Total jobs	14,435	16,169	21,511	26,754
Subarea share of UGB jobs	2%	2%	2%	2%
Percent of all households by type				
Type 1 (Median Income $13,000)	7%	3%	3%	3%
Type 2 (Median Income $24,000)	6%	4%	4%	5%
Type 3 (Median Income $33,000)	9%	6%	7%	6%
Type 4 (Median Income $44,000)	10%	9%	9%	9%
Type 5 (Median Income $60,000)	16%	14%	13%	13%
Type 6 (Median Income $76,000)	14%	14%	14%	14%
Type 7 (Median Income $93,000)	16%	20%	20%	20%
Type 8 (Median Income $200,000)	22%	29%	29%	29%
Average annual costs, all households				
Transportation costs	$11,005	$10,393	$10,386	$10,334
Housing costs	$29,733	$29,093	$29,948	$31,524
Transportation plus housing	$91,844	$114,173	$113,793	$114,413
% of income spent on transportation	12%	9%	9%	9%
% of income of spent on housing	32%	25%	26%	28%
% of income spent on transportation plus housing	44%	35%	35%	37%
Average annual costs, renters only				
Transportation costs	$7,475	$6,130	$6,108	$6,016
Housing costs	$9,766	$9,753	$9,897	$10,160
Transportation plus housing	$39,648	$40,081	$39,828	$39,502
% of income spent on transportation	19%	15%	15%	15%
% of income of spent on housing	25%	24%	25%	26%
% of income spent on transportation plus housing	43%	40%	40%	41%
Number of cost burdened households	2,816	2,304	2,538	2,633
% of total households that are cost burdened	32%	20%	20%	20%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

North Hillsboro		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	21,337	24,158	25,125	26,140
Subarea share of UGB households	4%	3%	3%	3%
Total jobs	45,764	49,897	76,493	108,302
Subarea share of UGB jobs	6%	6%	7%	8%
Percent of all households by type				
Type 1 (Median Income $13,000)	6%	6%	6%	6%
Type 2 (Median Income $24,000)	9%	10%	10%	10%
Type 3 (Median Income $33,000)	12%	12%	12%	12%
Type 4 (Median Income $44,000)	13%	16%	16%	15%
Type 5 (Median Income $60,000)	19%	17%	16%	16%
Type 6 (Median Income $76,000)	20%	19%	19%	19%
Type 7 (Median Income $93,000)	14%	14%	14%	14%
Type 8 (Median Income $200,000)	7%	7%	7%	7%
Average annual costs, all households				
Transportation costs	$7,988	$6,440	$6,246	$6,014
Housing costs	$16,656	$15,895	$16,299	$16,876
Transportation plus housing	$59,741	$59,564	$59,256	$59,009
% of income spent on transportation	13%	11%	11%	10%
% of income of spent on housing	28%	27%	28%	29%
% of income spent on transportation plus housing	41%	37%	38%	39%
Average annual costs, renters only				
Transportation costs	$6,487	$5,175	$5,041	$4,891
Housing costs	$9,486	$9,706	$9,918	$10,232
Transportation plus housing	$44,530	$44,152	$44,140	$44,437
% of income spent on transportation	15%	12%	11%	11%
% of income of spent on housing	21%	22%	22%	23%
% of income spent on transportation plus housing	36%	34%	34%	34%
Number of cost burdened households	3,080	2,860	3,107	3,192
% of total households that are cost burdened	14%	12%	12%	12%

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Urban Growth Report -- Housing and Transportation Cost Burden Analysis

East Washington County		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	44,185	50,380	51,843	53,096
Subarea share of UGB households	7%	7%	6%	6%
Total jobs	56,097	64,765	85,248	104,430
Subarea share of UGB jobs	7%	7%	8%	7%
Percent of all households by type				
Type 1 (Median Income $13,000)	6%	5%	5%	5%
Type 2 (Median Income $24,000)	8%	9%	9%	9%
Type 3 (Median Income $33,000)	10%	10%	10%	10%
Type 4 (Median Income $44,000)	11%	12%	12%	12%
Type 5 (Median Income $60,000)	15%	14%	13%	13%
Type 6 (Median Income $76,000)	15%	14%	15%	14%
Type 7 (Median Income $93,000)	18%	18%	18%	18%
Type 8 (Median Income $200,000)	18%	19%	19%	19%
Average annual costs, all households				
Transportation costs	$6,782	$5,805	$5,819	$5,802
Housing costs	$25,261	$23,906	$24,664	$25,804
Transportation plus housing	$87,913	$90,693	$90,467	$90,475
% of income spent on transportation	8%	6%	6%	6%
% of income of spent on housing	29%	26%	27%	29%
% of income spent on transportation plus housing	36%	33%	34%	35%
Average annual costs, renters only				
Transportation costs	$4,760	$3,926	$3,927	$3,908
Housing costs	$9,167	$9,592	$9,818	$10,133
Transportation plus housing	$39,668	$40,409	$40,412	$40,503
% of income spent on transportation	12%	10%	10%	10%
% of income of spent on housing	23%	24%	24%	25%
% of income spent on transportation plus housing	35%	33%	34%	35%
Number of cost burdened households	5,575	5,798	6,013	6,111
% of total households that are cost burdened	13%	12%	12%	12%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

South Beaverton		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	23,020	24,508	24,813	25,096
Subarea share of UGB households	4%	3%	3%	3%
Total jobs	20,284	22,792	29,254	35,725
Subarea share of UGB jobs	3%	3%	3%	3%
Percent of all households by type				
Type 1 (Median Income $13,000)	10%	9%	9%	9%
Type 2 (Median Income $24,000)	12%	13%	14%	14%
Type 3 (Median Income $33,000)	13%	13%	13%	13%
Type 4 (Median Income $44,000)	13%	16%	16%	16%
Type 5 (Median Income $60,000)	17%	15%	15%	15%
Type 6 (Median Income $76,000)	15%	14%	15%	15%
Type 7 (Median Income $93,000)	10%	10%	10%	10%
Type 8 (Median Income $200,000)	9%	10%	10%	10%
Average annual costs, all households				
Transportation costs	$5,563	$4,596	$4,627	$4,597
Housing costs	$17,249	$16,621	$17,108	$17,749
Transportation plus housing	$60,532	$60,697	$60,680	$60,319
% of income spent on transportation	9%	8%	8%	8%
% of income of spent on housing	28%	27%	28%	29%
% of income spent on transportation plus housing	38%	35%	36%	37%
Average annual costs, renters only				
Transportation costs	$4,251	$3,551	$3,575	$3,544
Housing costs	$8,375	$8,910	$9,110	$9,334
Transportation plus housing	$36,101	$38,160	$38,190	$37,859
% of income spent on transportation	12%	9%	9%	9%
% of income of spent on housing	23%	23%	24%	25%
% of income spent on transportation plus housing	35%	33%	33%	34%
Number of cost burdened households	4,641	4,556	4,636	4,728
% of total households that are cost burdened	20%	19%	19%	19%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

Tigard - King City		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	27,140	32,790	34,808	36,583
Subarea share of UGB households	5%	4%	4%	4%
Total jobs	37,817	43,089	56,676	70,469
Subarea share of UGB jobs	5%	5%	5%	5%
Percent of all households by type				
Type 1 (Median Income $13,000)	7%	6%	6%	6%
Type 2 (Median Income $24,000)	10%	11%	11%	11%
Type 3 (Median Income $33,000)	12%	12%	12%	12%
Type 4 (Median Income $44,000)	12%	15%	15%	15%
Type 5 (Median Income $60,000)	17%	16%	15%	15%
Type 6 (Median Income $76,000)	17%	15%	16%	16%
Type 7 (Median Income $93,000)	14%	13%	13%	14%
Type 8 (Median Income $200,000)	12%	12%	11%	11%
Average annual costs, all households				
Transportation costs	$7,173	$6,252	$6,279	$6,255
Housing costs	$21,606	$20,641	$21,123	$21,972
Transportation plus housing	$74,699	$75,378	$74,959	$74,780
% of income spent on transportation	10%	8%	8%	8%
% of income of spent on housing	29%	27%	28%	29%
% of income spent on transportation plus housing	39%	36%	37%	38%
Average annual costs, renters only				
Transportation costs	$5,087	$4,249	$4,274	$4,231
Housing costs	$9,160	$9,638	$9,741	$9,935
Transportation plus housing	$39,806	$41,274	$40,919	$40,410
% of income spent on transportation	13%	10%	10%	10%
% of income of spent on housing	23%	23%	24%	25%
% of income spent on transportation plus housing	36%	34%	34%	35%
Number of cost burdened households	3,853	3,597	3,948	4,161
% of total households that are cost burdened	14%	11%	11%	11%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

Tualatin	2010	Data for Year 2035		
		Low Growth	Medium Growth	High Growth
Total households	10,222	11,893	12,171	12,487
Subarea share of UGB households	2%	2%	2%	1%
Total jobs	29,889	34,051	44,224	56,148
Subarea share of UGB jobs	4%	4%	4%	4%
Percent of all households by type				
Type 1 (Median Income $13,000)	7%	4%	5%	5%
Type 2 (Median Income $24,000)	8%	7%	7%	7%
Type 3 (Median Income $33,000)	10%	9%	9%	9%
Type 4 (Median Income $44,000)	12%	12%	12%	11%
Type 5 (Median Income $60,000)	17%	13%	12%	12%
Type 6 (Median Income $76,000)	16%	14%	15%	14%
Type 7 (Median Income $93,000)	16%	20%	20%	20%
Type 8 (Median Income $200,000)	14%	20%	21%	22%
Average annual costs, all households				
Transportation costs	$8,268	$7,348	$7,425	$7,419
Housing costs	$22,220	$24,155	$25,255	$26,833
Transportation plus housing	$76,138	$94,371	$95,631	$97,468
% of income spent on transportation	11%	8%	8%	8%
% of income of spent on housing	29%	26%	26%	28%
% of income spent on transportation plus housing	40%	33%	34%	35%
Average annual costs, renters only				
Transportation costs	$6,133	$4,485	$4,498	$4,452
Housing costs	$9,030	$9,136	$9,347	$9,675
Transportation plus housing	$39,897	$38,365	$38,432	$38,840
% of income spent on transportation	15%	12%	12%	11%
% of income of spent on housing	23%	24%	24%	25%
% of income spent on transportation plus housing	38%	36%	36%	36%
Number of cost burdened households	2,046	1,801	1,838	1,830
% of total households that are cost burdened	20%	15%	15%	15%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

Sherwood - Scholls		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	7,922	10,643	11,512	13,318
Subarea share of UGB households	1%	1%	1%	2%
Total jobs	5,555	6,252	8,303	10,674
Subarea share of UGB jobs	1%	1%	1%	1%
Percent of all households by type				
Type 1 (Median Income $13,000)	3%	2%	2%	2%
Type 2 (Median Income $24,000)	4%	3%	3%	4%
Type 3 (Median Income $33,000)	5%	5%	5%	5%
Type 4 (Median Income $44,000)	10%	10%	10%	10%
Type 5 (Median Income $60,000)	20%	15%	14%	15%
Type 6 (Median Income $76,000)	20%	19%	20%	20%
Type 7 (Median Income $93,000)	17%	21%	21%	20%
Type 8 (Median Income $200,000)	21%	25%	25%	25%
Average annual costs, all households				
Transportation costs	$11,356	$10,845	$10,809	$10,581
Housing costs	$32,154	$30,114	$30,951	$31,506
Transportation plus housing	$101,476	$117,582	$117,247	$114,759
% of income spent on transportation	11%	9%	9%	9%
% of income of spent on housing	32%	26%	26%	27%
% of income spent on transportation plus housing	43%	35%	36%	37%
Average annual costs, renters only				
Transportation costs	$8,759	$7,363	$7,364	$7,169
Housing costs	$13,141	$12,545	$12,850	$12,579
Transportation plus housing	$57,141	$54,547	$54,846	$53,732
% of income spent on transportation	15%	13%	13%	13%
% of income of spent on housing	23%	23%	23%	23%
% of income spent on transportation plus housing	38%	36%	37%	37%
Number of cost burdened households	754	633	736	940
% of total households that are cost burdened	10%	6%	6%	7%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

SW Beaverton		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	24,559	29,689	31,872	34,024
Subarea share of UGB households	4%	4%	4%	4%
Total jobs	7,319	9,144	11,907	14,404
Subarea share of UGB jobs	1%	1%	1%	1%
Percent of all households by type				
Type 1 (Median Income $13,000)	6%	5%	5%	5%
Type 2 (Median Income $24,000)	10%	10%	10%	10%
Type 3 (Median Income $33,000)	13%	11%	11%	11%
Type 4 (Median Income $44,000)	13%	14%	14%	13%
Type 5 (Median Income $60,000)	16%	13%	12%	12%
Type 6 (Median Income $76,000)	15%	14%	14%	14%
Type 7 (Median Income $93,000)	14%	17%	18%	18%
Type 8 (Median Income $200,000)	13%	16%	16%	16%
Average annual costs, all households				
Transportation costs	$7,408	$6,663	$6,698	$6,652
Housing costs	$22,155	$22,945	$23,768	$24,673
Transportation plus housing	$76,657	$87,478	$88,167	$88,163
% of income spent on transportation	10%	8%	8%	8%
% of income of spent on housing	29%	26%	27%	28%
% of income spent on transportation plus housing	39%	34%	35%	36%
Average annual costs, renters only				
Transportation costs	$5,661	$4,646	$4,638	$4,614
Housing costs	$9,976	$10,255	$10,433	$10,694
Transportation plus housing	$44,378	$44,894	$44,958	$45,112
% of income spent on transportation	13%	10%	10%	10%
% of income of spent on housing	22%	23%	23%	24%
% of income spent on transportation plus housing	35%	33%	34%	34%
Number of cost burdened households	2,542	2,045	2,184	2,314
% of total households that are cost burdened	10%	7%	7%	7%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

South Hillsboro		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	20,771	22,678	23,753	24,659
Subarea share of UGB households	3%	3%	3%	3%
Total jobs	13,578	15,025	19,194	23,513
Subarea share of UGB jobs	2%	2%	2%	2%
Percent of all households by type				
Type 1 (Median Income $13,000)	9%	8%	8%	8%
Type 2 (Median Income $24,000)	13%	14%	14%	15%
Type 3 (Median Income $33,000)	16%	16%	16%	16%
Type 4 (Median Income $44,000)	17%	20%	20%	20%
Type 5 (Median Income $60,000)	17%	14%	14%	14%
Type 6 (Median Income $76,000)	12%	12%	12%	12%
Type 7 (Median Income $93,000)	9%	9%	9%	8%
Type 8 (Median Income $200,000)	8%	8%	8%	7%
Average annual costs, all households				
Transportation costs	$7,836	$6,536	$6,401	$6,218
Housing costs	$17,319	$16,804	$17,299	$17,947
Transportation plus housing	$58,798	$59,023	$58,828	$58,515
% of income spent on transportation	13%	11%	11%	11%
% of income of spent on housing	29%	28%	29%	31%
% of income spent on transportation plus housing	43%	40%	40%	41%
Average annual costs, renters only				
Transportation costs	$6,587	$5,317	$5,178	$5,002
Housing costs	$10,017	$10,345	$10,615	$10,943
Transportation plus housing	$45,486	$46,025	$46,029	$45,909
% of income spent on transportation	14%	12%	11%	11%
% of income of spent on housing	22%	22%	23%	24%
% of income spent on transportation plus housing	37%	34%	34%	35%
Number of cost burdened households	3,012	2,385	2,450	2,551
% of total households that are cost burdened	14%	11%	10%	10%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

Urban Growth Report -- Housing and Transportation Cost Burden Analysis

Forest Grove - Cornelius		Data for Year 2035		
	2010	Low Growth	Medium Growth	High Growth
Total households	11,806	13,617	14,743	16,170
Subarea share of UGB households	2%	2%	2%	2%
Total jobs	8,748	8,738	12,330	16,338
Subarea share of UGB jobs	1%	1%	1%	1%
Percent of all households by type				
Type 1 (Median Income $13,000)	18%	14%	15%	15%
Type 2 (Median Income $24,000)	17%	18%	18%	18%
Type 3 (Median Income $33,000)	17%	17%	16%	16%
Type 4 (Median Income $44,000)	11%	14%	14%	13%
Type 5 (Median Income $60,000)	12%	11%	11%	11%
Type 6 (Median Income $76,000)	10%	10%	11%	11%
Type 7 (Median Income $93,000)	7%	8%	8%	8%
Type 8 (Median Income $200,000)	8%	8%	8%	8%
Average annual costs, all households				
Transportation costs	$11,361	$10,194	$10,093	$9,733
Housing costs	$16,931	$16,574	$17,413	$17,921
Transportation plus housing	$53,804	$57,889	$59,025	$58,432
% of income spent on transportation	21%	18%	17%	17%
% of income of spent on housing	31%	29%	30%	31%
% of income spent on transportation plus housing	53%	46%	47%	47%
Average annual costs, renters only				
Transportation costs	$8,870	$7,285	$7,038	$6,675
Housing costs	$8,507	$8,403	$8,605	$8,688
Transportation plus housing	$35,216	$34,835	$34,635	$34,020
% of income spent on transportation	25%	21%	20%	20%
% of income of spent on housing	24%	24%	25%	26%
% of income spent on transportation plus housing	49%	45%	45%	45%
Number of cost burdened households	3,109	3,050	3,090	3,525
% of total households that are cost burdened	26%	22%	21%	22%

"Cost burdened" households are those where housing plus transportation costs exceed 45% of total income

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REGIONAL INDUSTRIAL SITE READINESS

2014 Inventory Update

Submitted
September 2014

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MACKENZIE
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REGIONAL INDUSTRIAL SITE READINESS – 2014 Inventory Update

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APPENDICES

Appendix A: June 2014 Site Inventory Matrix

Appendix B: Regional Industrial Site Readiness 2014 Inventory Update – Site Maps

Appendix C: Regional Industrial Site Readiness 2014 Inventory Update – User Designated and Constrained Site Maps

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EXECUTIVE SUMMARY

This report is an update to the *2011 Regional Industrial Site Readiness Project* of large (25+ acres) industrial sites within the Portland metropolitan area Urban Growth Boundary (UGB) and select urban reserves[1]. The project is a partnership of Business Oregon, Metro, NAIOP - Commercial Real Estate Development Association Oregon Chapter, Oregon Department of Land Conservation and Development, Port of Portland, and the Portland Business Alliance, with cooperation from local governments and private property owners. This update is intended to inform local, regional, and state efforts to ensure an adequate supply of development-ready large industrial sites for traded-sector job creation.

Portland-Metro's Traded Sector, a 2012 Value of Jobs Report issued by Portland Business Alliance, found that on average a traded-sector worker in the Portland metropolitan area earns 42% more than a local-sector worker in the Portland metropolitan region. Promoting traded-sector job creation also spurs the local economy with a multiplier of 2.5 local-sector jobs created for each high-skilled traded-sector job. The production of traded-sector goods (i.e., manufacturing) remains a backbone of Portland metropolitan area's employment. Manufacturing jobs provide higher wages and better benefits than non-manufacturing jobs, particularly for those workers without a high school or college degree. The availability of large and market-ready industrial sites is critical to expanding and attracting traded-sector businesses and growing middle-income jobs key to a prosperous region.

This update intends to:

1. inventory and track changes in the region's large lot industrial site supply;
2. analyze movement of sites from varying states of site readiness;
3. inform policy makers on activity, such as policy changes or infrastructure investments, that have increased the supply and/or readiness of development-ready sites; and
4. support policy and investment decisions required to ensure an adequate supply of development-ready large industrial sites to support economic growth.

The development-readiness tiers used in this inventory are based on those established during the 2011 project:

Tier 1: Development-ready within 180 days of application submittal (i.e., projects can receive all necessary permits; sites can be served with infrastructure and zoned and annexed into the city within this timeframe).

Tier 2: Likely to require 7-30 months to become development-ready.

Tier 3: Likely to require over 30 months to become development-ready.

ACTIONS THAT MADE SITES MORE DEVELOPMENT-READY	
Local and state legislative actions[2]	2
Changes in property owner willingness to transact	2
Environmental constraint mitigation	2
Infrastructure investments	5

Tier 1 sites are the only sites generally considered recruitment-ready for businesses expanding or locating in the Portland region. In a globally competitive environment, businesses increasingly require compressed timelines for

[1] Although this inventory does not include sites within rural areas of these three counties that are outside the UGB and selected urban reserves, these sites are important to the region's economic prosperity.

[2] Legislative actions include Urban Growth Boundary (UGB) expansion, annexation, zoning, and concept planning.

decision making and development. While not considered marketable for most recruitments, Tier 2 could be feasible for expansions of existing businesses and for speculative development for investors. Tier 3 sites are viewed as being non-competitive in the market, and are therefore unavailable for business expansion and recruitment without significant investments, changes in regulatory compliance, or land price discounted by property owners.

Findings

Of the 54 sites in the 2014 inventory:

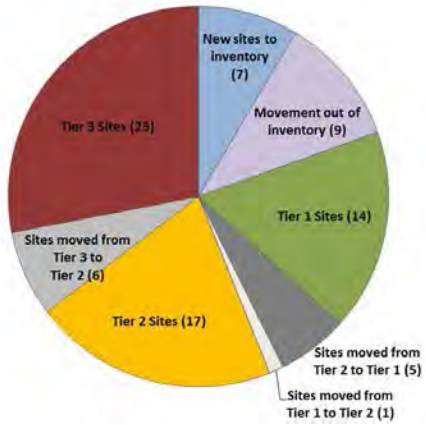
- There are 14 Tier 1 sites; 17 Tier 2 sites; and 23 Tier 3 sites.
- Seven new sites were ***added*** to the inventory since 2011.
- Nine sites were ***removed*** from the inventory since 2011:

ACTIVITY RESULTING IN INVENTORY REMOVAL	
User designated[3]:	1
Program changes[4]:	2
Construction and development:	3
Local and state legislative actions:	3
Total:	**9**

  - Three of these sites are currently being developed and projected to result in $38 million in investments and 416 new jobs when construction is complete[5]; one of the sites is being used as a temporary parking lot[6] for Intel's Ronler Acres Campus expansion.
  - Since this June 2014 inventory was completed, three additional Tier 1 sites have been absorbed in the market[7].

- Five sites moved up from Tier 2 to Tier 1.
- Six sites moved up from Tier 3 to Tier 2.
- Large industrial sites face multiple development constraints, including: required state and local legislative actions[8], inadequate infrastructure and transportation[9], land assembly needs, natural resources mitigation, brownfield remediation, and property owners not willing to transact.

Total Sites and 2011-2014 Inventory Movement



[3] User designated sites are sites owned and held for future expansion of existing regional firms and not available to the general market.

[4] Current property owners have designated these sites to meet long-term operational needs. As a result, these sites are no longer available to the general market.

[5] **Site 11:** Portland International Airport in Portland has two buildings under construction totaling 491,200 square feet with a $28.5 million investment and 141 projected distribution and logistics jobs available in late 2014 (Port of Portland). **Site 40:** Pacific Realty in Tualatin has two buildings under construction totaling 100,000 square feet with a $9.5 million investment and 275 projected distribution and logistics jobs available in 2015 (PacTrust). **Site 44:** Intel Corporation in Hillsboro was previously used as a staging area and is now a temporary parking lot for the D1X and D2X fabrication plants at the Intel Ronler Acres Campus with investment of $1 billion (Intel).

[6] Intel received land use approval for a temporary parking lot until 2023 at which point the property may be redeveloped.

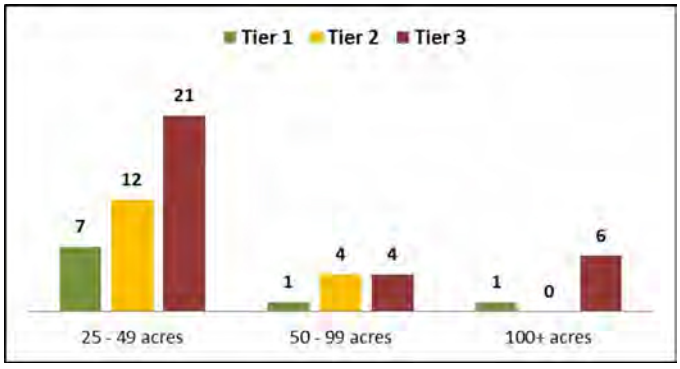
[7] **Site 13:** Specht Properties in Portland; **Site 46:** Development Services of America (Westmark site) in Hillsboro; **Site 114**: Colwood Ltd Partnership in Portland.

[8] Local and state legislative actions include UGB expansion, annexation, zoning, and concept planning.

[9] Infrastructure includes water, sewer, and stormwater utilities.

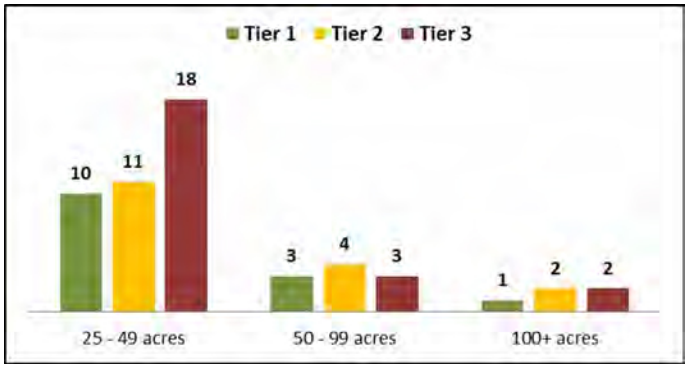
The following charts and tables compare site net developable acreage changes between the 2011 and 2014 inventories.

2011 Inventory: 56 sites



	2011 Inventory	2014 Inventory
Tier 1	9	14
Tier 2	16	17
Tier 3	31	23
Total	56 sites	54 sites

2014 Inventory: 54 sites



	2011 Inventory	2014 Inventory
25-49 acres	40	39
50-99 acres	9	10
100+ acres	7	5
Total	56 sites	54 sites

The increase in Tier 1 sites in the 2014 inventory is a result of the addition of three new sites to the inventory[10] and five sites upgraded from Tier 2[11], offset by the market absorption of three Tier 1 sites. Of the 14 Tier sites, only seven have broad market appeal.

Of the 11 sites that moved up a tier, seven sites required investment in infrastructure and mitigation.

- Two sites moved up a tier due to mitigation of environmental constraints.[12]
- Five sites received transportation/infrastructure investments, totaling approximately $39.5 million.[13]

Four of the sites which moved up a tier were able to do so without significant investment in infrastructure.

- Two sites had a change in the property owner's willingness to transact and were upgraded to Tier 2.[14]
- Two sites were taken out of urban reserves and brought into the UGB by House Bill 4078 in 2014.[15]

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[10] **Site 111:** Weston Investment – an aggregated site; **Site 113**: Henningsen Cold Storage – increased in site acreage due to decision to vacate dedicated right-of-way and building demolition for future development; and **Site 114:** Colwood Ltd Partnership – open space rezoned to industrial.

[11] **Site 13:** Specht Propertlines Inc.; **Site 22:** Port of Portland – GVBP West; **Site 29:** Clackamas County Development Agency; **Site 50:** Shute North; **Site 52:** Shute South.

[12] **Site 13:** Specht Properties and **Site 29:** Clackamas County Development Agency.

[13] **Sites 18 and 19:** Troutdale Reynolds Industrial Park Phase 2 - The Port has expended $2.5M in planning and design to permit the infrastructure for Phase 2. $8 million in regional transportation funding was approved for the local roads, along with a transfer of $6 million in funding from the State-funded Troutdale interchange project and $1.1 million from the City of Troutdale.; **Site 29:** Clackamas County Development Agency - $1.1 million in State Immediate Opportunity Fund and Clackamas County funding was used to improve local road access to the site. An additional $1.8 million in County funds paid for extension of 120th Avenue; **Sites 50 and 52:** Shute Road North and South - $8 million in regional transportation funding and $10 million transfer of I-26/Brookwood interchange savings was used to pay for the construction of nearby local road improvements. The City of Hillsboro contributed $1 million dollars for water infrastructure and planning for sewer line pump station and extension.

[14] **Site 23:** Mt. Hood Community College and **Site 47:** Cranford.

[15] **Site 101:** Vanrose Farms and **Site 104:** Meek Subarea.

Conclusions

- The Portland region's supply of large industrial sites over 25 net developable acres has decreased since 2011.
- There have been positive impacts in site readiness from investments in infrastructure, mitigation and local and state legislative actions. Movement between tiers is largely due to infrastructure investments, and environmental constraint mitigation (7 sites).
- Supply continues to be most limited for larger sites of 50 acres or more.
  - There is only one 100-plus acre Tier 1 site in the region. Larger sites are more complex and take patience to acquire and develop.
- Sites with multiple property owners require aggregation. This is a key issue to supplying larger sites to the market affecting a third of the Tier 2 and Tier 3 sites in the inventory (13 sites).
- There are multiple market-readiness site constraints for other sites in the pipeline.
- Over half of the Tier 2 and Tier 3 sites require local and state legislative actions such as annexation zoning, completion of concept planning, or addition to the urban growth boundary (23 sites).
- Between 40% and 60% of Tier 2 and Tier 3 sites have transportation, infrastructure, and/or environmental mitigation constraints (17-25 sites).
- While brownfield redevelopment affects only six large industrial sites, three industrial sites are located in the Portland Harbor Superfund site which will add significant costs, time, and brownfield redevelopment challenges and require coordinated strategies.
- While investments in infrastructure, changes in ownership willingness to transact, and legislative actions have improved the quality of sites in the inventory, with 11 sites moving closer to market readiness; site readiness is not occurring at a pace sufficient to keep up with demand.[16]

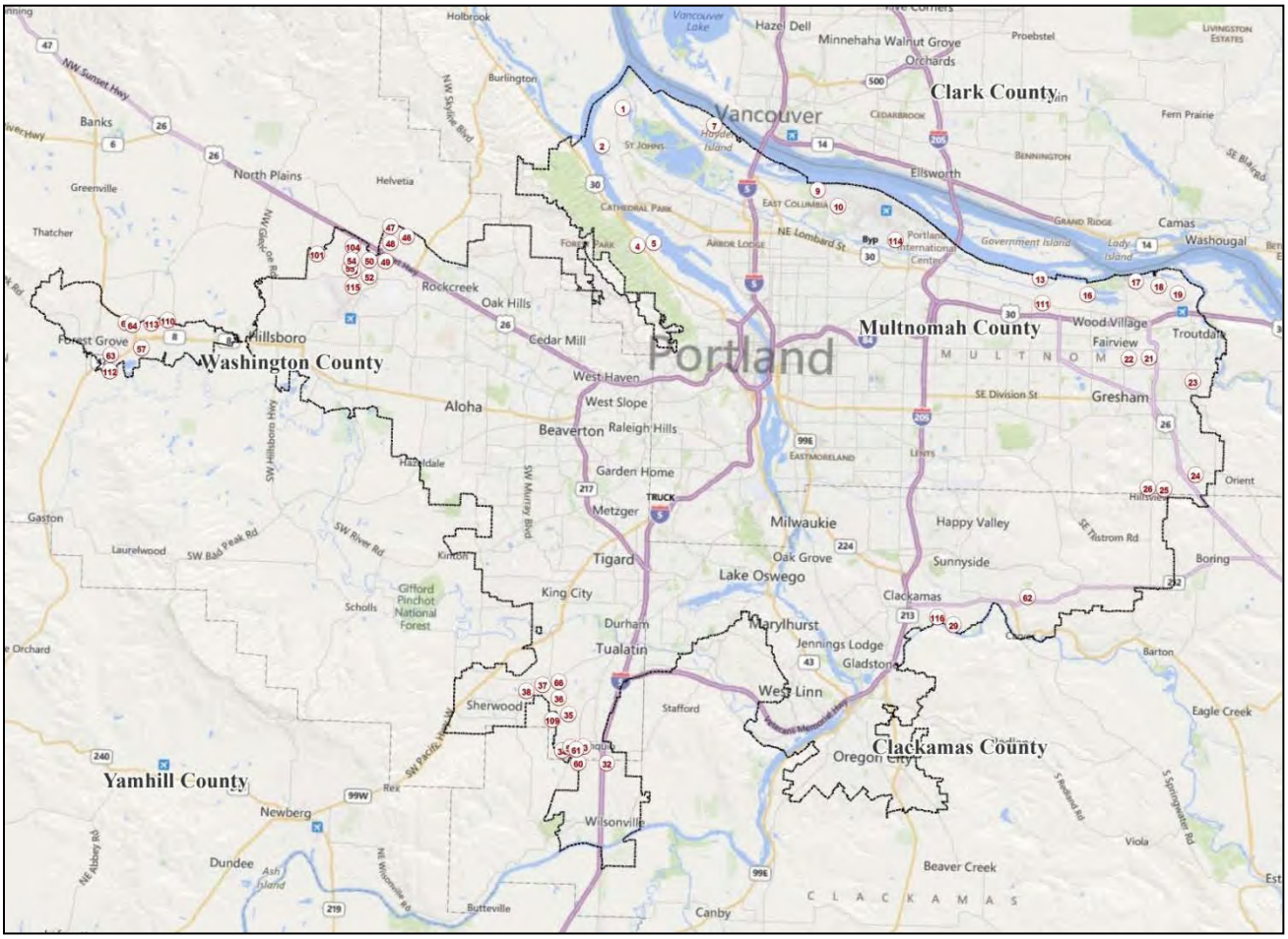
As the economy continues to recover and demand increases due to business growth and investment, additional strategies to increase the continued supply of land will be needed. In order to provide the required land supply to meet projected 2035 population and employment growth within the Metro UGB[17], create middle income jobs to address income disparity, and achieve a sustainable tax base critical to public services[18] , state and regional policymakers must work from an accurate and practical employment land inventory and prioritize policy actions and investments to address industrial site readiness, aggregation, infrastructure, environmental constraint mitigation, legislative actions, and industrial brownfield identification and mitigation. Regular updates to the inventory support the region's traded-sector prosperity and job creation efforts allow tracking of progress in efforts to maintain a supply of sites and help target investments and policy decisions to ensure an adequate supply of development-ready industrial sites. With reduced federal funds, the region will need to be more strategic about investments required to move sites to market ready sites to support these goals.

[16] The inventory shows an overall decrease in the total number acres and total number of sites, and a 26% decrease in Tier 3 sites over the two and a half year period.

[17] The draft *2014 Metro Urban Growth Report* forecasts 85,000 to 440,000 additional jobs and 300,000 to 485,000 additional people inside the Metro urban growth boundary by the year 2035.

[18] State personal income taxes and local property taxes.

Regional Map of Tier 1, 2, and 3 Sites



Note: Additional maps are available in Appendix B of this report.

Source: Mackenzie

PROJECT SUMMARY

Project Purpose

The *2011-12 Regional Industrial Site Readiness Project* assessed the Portland region's supply of development-ready large industrial sites, a critical part of a strategy to retain and attract traded-sector jobs. *Portland-Metro's Traded Sector*, a 2012 Value of Jobs Report issued by Portland Business Alliance, found that on average a traded-sector worker in the Portland metropolitan area earns 42% more than a local-sector worker in the Portland metropolitan region. In an income tax dependent state such as Oregon, these high wage traded-sector jobs generate more revenue for critical services like schools, health care, and social services than local-sector jobs. Traded-sector jobs have a multiplier effect throughout the economy, with an additional 2.5 local-sector jobs created for each traded-sector job. Manufacturing is the backbone of the Portland metropolitan area's traded-sector employment. Manufacturing jobs provide employment opportunities for those without a high school or college degree. The availability of market-ready industrial lands is critical for growing a prosperous traded-sector economy and middle-income jobs.

Because the Portland region must compete with other metropolitan areas for these traded-sector jobs, it must have an adequate inventory of development-ready large industrial sites for expanding and attracting companies. This report is an update to the 2011 inventory which described the supply and market-readiness of large (25 acres and larger) industrial sites in the Portland metropolitan region[19]. For purposes of this study, only vacant, industrially zoned or planned lands within the Portland metropolitan Urban Growth Boundary (UGB) and select Urban Reserves were analyzed. The 2014 inventory utilized the same methodology that was developed during the 2011-2012 Project.

The original project was conceived partly in response to Metro's *2009 Urban Growth Report*, which identified a shortage of large industrial sites in the region and the need to replenish large industrial sites as they are developed. The original project report was produced by Mackenzie in partnership with Business Oregon, Metro, NAIOP - Commercial Real Estate Development Association Oregon Chapter, Port of Portland, and the Portland Business Alliance whose representatives served as the Project Management Team (PMT).

The 2011 inventory created in Phase 1 of this *Regional Industrial Site Readiness Project* provided a community-wide understanding of the supply of vacant large industrial lands, the time and investment needed to get land development ready, and the severity of development constraints. While the 2011 report and this update are limited in scope to industrial lands within the Metro UGB and urban reserves, several communities have replicated the work for other locations, most notably Clackamas County's county-wide work in 2013-14[20].

Phase 2 of the 2011-12 project analyzed the development readiness of 12 sites, identifying a development scenario, constraints to development, costs for on- and off-site developments, and economic benefits derived from such development. This analysis highlighted the significant economic benefit that would result from development, with a significant share of benefit accruing to the State through personal income taxes. The findings supported the passage of Senate Bills 246 and 253 in 2013, designed to provide State financial assistance for local site readiness and due diligence work.

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[19] The Regional Industrial Site Readiness Project examines vacant, industrially-zoned, or planned lands within the Portland metropolitan area's UGB and selected urban reserves that are suitable for large industrial development by new firms moving to the region, development companies who develop business and employment centers, or support the growth of existing firms. The study identified and documented user-owned sites held for future use, but excluded these from the detailed analysis because these sites were not available to the general marketplace. Rural areas of Clackamas and Washington counties outside the Metro UGB were not included in this analysis.

[20] http://cmap.clackamas.us/ccss/

As with the 2011 inventory, the 2014 inventory update focuses on the quality of land and how ready it is for development versus the quantity of gross acres. The inventory is intended to be maintained and updated on a regular basis to reflect market changes, development, investments, and actions to move sites to market. It will also help to inform continued local and private sector efforts to increase site readiness, legislative actions to fund the site readiness, and due diligence programs, and Metro's *2014 Urban Growth Report* and 2015 Growth Management Decision. The *Urban Growth Report* assesses the region's long-range industrial site inventory and, as such, has a broader perspective than this inventory, which focuses on site-readiness for short- and medium-term job creation opportunities. The common theme of both the Urban Growth Report and this inventory is that the public and private sectors need to work cooperatively to make sites available for private sector job creation.

The inventory update reflects conditions as of June 2014. Seven new sites have become available to the market and nine sites from the 2011 inventory are no longer available to the market. This report summarizes the findings of the 2014 inventory and highlights changes from the October 2011 inventory to show movement within the market and the impact of recent legislative changes.

2014 INVENTORY

Background on the Update

The 2011 inventory identified available land for traded-sector employment expansion and attraction within the Metro UGB. Since the 2011 inventory was completed, there have been many changes to the inventory, including market activity as shown on Table 9. The PMT initiated this inventory update to reflect those changes and provide data for Metro's *2014 Urban Growth Report*. The PMT recommends future inventory updates on a similar cycle.

The 2014 inventory update assessed sites over 25 net developable acres to identify development-ready sites (Tier 1) and sites that need additional work and investment (Tier 2 and Tier 3). The 2014 inventory update did not analyze the size of investments needed to move Tier 2 and Tier 3 sites to development-ready status. Clackamas and Washington counties are undertaking detailed site assessments using the methodology developed in Phase 2 of the *2011-12 Regional Industrial Site Readiness Project*.

The inventory update provides a database of industrial sites to support the region's economic development efforts. The database lays a foundation for the work of local jurisdictions, Greater Portland Inc., Metro, the Port of Portland, and the State, to grow the region's job base through market absorption of Tier 1 sites, make investments in site readiness, and bring Tier 2 and Tier 3 sites to Tier 1 status.

Mackenzie and the PMT evaluated sites using similar criteria and metrics as companies or developers would use, rather than limiting analysis to existing parcels or tax lots. A site in this inventory could be a single owner parcel or multiple adjacent parcels that can be combined into a single site; combined parcels could include adjacent parcels in the same ownership and/or in multiple ownerships. This update is also important because trends and changes can be examined since the previous inventory, not solely the quantity of land. It assesses legislative actions and market changes to understand the transformation of sites. It is anticipated that in future updates of the inventory additional data points will help identify trends that may further inform policymakers.

Tiering Criteria and the Process to Score the Sites

The tiering system utilized in this inventory update was based on development readiness criteria established during the 2011-2012 project. The tiers are based on industry standards and mirror the recruitment/development timeframe used by the State's Industrial Site Certification Process. The tiers are defined as follows.

Tier 1 Sites have over 25 net developable acres and are development-ready, or can be development-ready, within 180 days (six months). It is anticipated that no, or minimal, infrastructure or brownfield remediation is necessary and that due diligence and entitlements could be provided and/or obtained within this time period. A Tier 1 site does not have a use restriction and is currently on the market for sale or lease, or the ownership is willing to transact within 180 days. Sites in this tier would generally qualify for Business Oregon's Industrial Site Certification program.

Tier 2 Sites have over 25 net developable acres and require additional actions that would take between seven to 30 months to be counted as development-ready. The seven to 30 month timeframe is for sites that are less competitive for expansions and recruitment, but may still be of some interest to more patient users/developers. These sites may have deficiency issues with regard to infrastructure or may require brownfield remediation, annexation, and additional local and state legislative actions that are assumed to take more than six months. Additionally, these sites may have a marine or aviation use restriction that limits, but does not eliminate, their market opportunity. These sites are

currently on the market for sale or lease, or the property owner is willing to transact. If the property owners' willingness to transact is unknown, the site may still be considered a Tier 2 site. Should the site be in multiple ownerships, an agreement to aggregate within 30 months must be in place.

Tier 3 Sites have over 25 net developable acres and require the most cost and time to deliver a development-ready site. Tier 3 sites include those that require 30 months or more to be development-ready and represent the least competitive sites from an expansion, recruitment, or a speculative development perspective. In addition to the criterion for Tier 2, these sites may or may not be currently for sale or lease, or the owner may or may not be willing to transact. In a small number of cases, sites are in Tier 3 because required information was not available at the time this report was published.

Table 1 below shows the tiering criteria developed and used by the PMT and consultant team to tier the sites.

Table 1: Inventory Tiering Criteria

	25 net developable acres	Use Restriction	Brownfield Remediation	Annexation Required	Sewer, Water, & Storm	System Mobility	Currently for Sale or Lease		Willingness to Transact
Tier 1	Within six (6) months	No	No or Within six (6) months (Score of A)	No	A or B	A or B	Yes	***OR***	Yes
Tier 2	Within 7-30 months	Yes or No	Within 7-30 Months (Score of B)	Yes or No	A, B, or C	A, B, or C	Yes	***OR***	Yes or Unknown
Tier 3	>30 months	Yes or No	>30 months (Score of C)	Yes or No	A, B, or C	A, B, or C	Yes or No	***OR***	Yes or No or Unknown

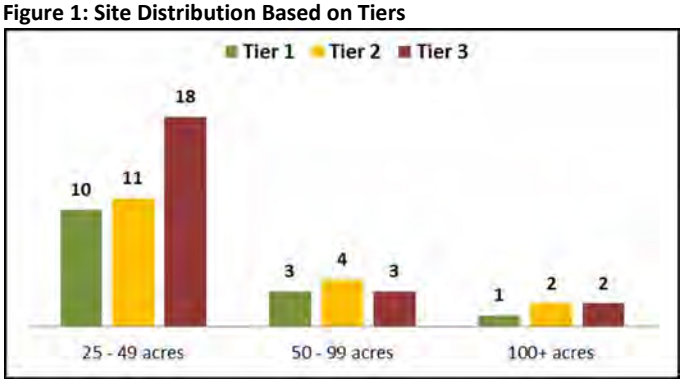
Source: Mackenzie

2014 INVENTORY UPDATE FINDINGS

Development Readiness

Industrial sites in the region are in varying states of readiness, requiring regulatory approvals (development permitting, environmental resource mitigation), local discretionary actions (concept planning, annexation, zoning), infrastructure (sewer, water, transportation), site/property owner aggregation, and brownfield remediation.

Figure 1: Site Distribution Based on Tiers



Source: Mackenzie

The study finds that the region has a limited supply of large industrial land readily available to attract and grow employers needed for the region to prosper, particularly sites of 50 net developable acres or more. Net developable acres are gross acres less wetlands, floodplain, 10%+ slopes, streams, and other development constraints that limit development. Figure 1 represents the findings of the regional inventory as of June 2014.

The study found the following.

14 Tier 1 sites
Available for facility construction within 180 days
There are 14 Tier 1 "market-ready" sites available for development opportunities in the near term, mostly in the 25 to 49 acre range. Tier 1 sites total approximately 650 net developable acres.

17 Tier 2 sites
Available for facility construction between seven and 30 months
Tier 2 mid-term sites require additional investment and policy actions to be market-ready. Of the 17 Tier 2 sites totaling approximately 1,100 net developable acres, four of these sites require property owner assembly.

23 Tier 3 sites
Available for facility construction beyond 30 months
There are multiple challenges to address to bring these 23 Tier 3 sites to market. Investment and actions required to move these sites forward include site aggregation, brownfield remediation, wetland mitigation, transportation/infrastructure improvements, and annexation. Nine of the Tier 3 sites (40%) require property owner assembly. Net developable acres in Tier 3 totals approximately 1,300 acres.

50-plus and 100-plus acre size sites
There is a limited supply of 50-plus and 100-plus acre sites in the Portland region. With respect to 100-plus acre sites, the study found:

- One Tier 1 site: Site 21: Gresham Vista Business Park (owned by Port of Portland)
- Two Tier 2 sites: Site 104: Meek Subarea site and Site 101: Vanrose Farms/Bert & Bernie LLC (Hillsboro)
- Two Tier 3 sites: Site 7: West Hayden Island and Site 10: SW Quad (both owned by the Port of Portland)

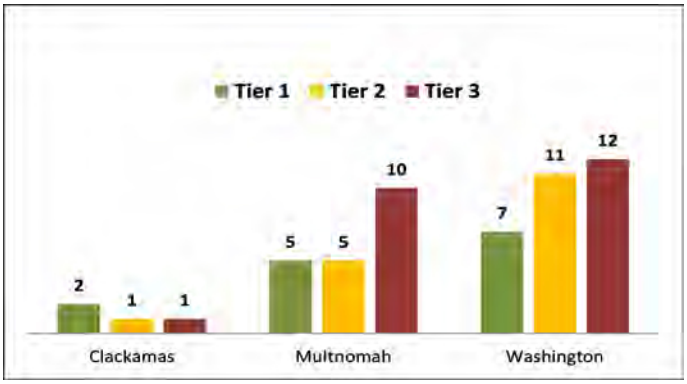
Tier 2 and 3 Development Constraints

There are multiple development constraints impacting the 40 Tier 2 and Tier 3 sites as outlined in the table below. Parcel aggregation is an issue affecting 25% of the sites in the inventory. More than 50% of the Tier 2 and Tier 3 sites require local and state legislative action and 45% of Tier 2 and Tier 3 sites have significant site infrastructure constraints.

Tier 2 and Tier 3 Development Constraints	
Brownfield clean up:	6
Natural Resources:	18
Infrastructure (water, sewer, storm utilities):	17
Transportation:	25
Land Assembly:	13
Local and State Legislative Actions:	23
Willingness to Transact No: Unknown:	 10 6

Note: Most sites may have multiple constraints

Figure 2: Distribution of Sites by Location



Source: Mackenzie

Tier 1, 2, and 3 Site Results

The 2014 update is based on the best available public information available to the consultant as of June 2014. The inventory of industrial sites in the Portland region will change over time; as such, this inventory is a snapshot in time. Changes to this inventory update are based on better information, such as wetland delineations; site surveys; property owner conversations; new properties coming on the market; properties in the inventory coming off the market due to transactions; a change in tier status based on investment or other actions; and other issues, such as an increase in property owner willingness to transact or other user designation.

The inventory update identifies 54 large industrial sites in the Metro UGB and selected urban reserves (Figure 2). Of these 54 sites in the inventory, 14 sites (26%) are Tier 1; 17 sites (31%) are Tier 2; and 23 sites (43%) are Tier 3 sites. Many of the Tier 3 sites have significant barriers to market readiness and may not be able to be aggregated as a site at all. The complete inventory of sites detailing all of the data prepared for each site, their location in the region, and their tiers can be found in Appendix A with regional maps found in Appendix B.

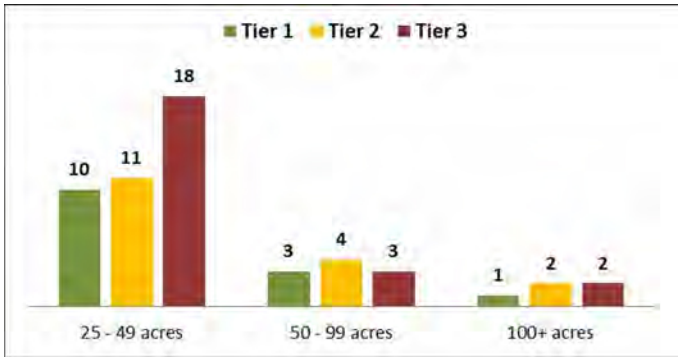
TIER AND SITE DISTRIBUTION BY COUNTY				
Tier/Acres	**Clackamas**	**Multnomah**	**Washington**	**Total**
Absorbed by the Market	**0**	**1**	**2**	**3**
Tier 1	**2**	**5**	**7**	**14**
25-49 acres	2	3	5	10
50-99 acres	0	1	2	3
100+ acres	0	1	0	1

Tier/Acres	Clackamas	Multnomah	Washington	Total
Tier 2	**1**	**5**	**11**	**17**
25-49 acres	1	2	8	11
50-99 acres	0	3	1	4
100+ acres	0	0	2	2
Tier 3	**1**	**10**	**12**	**23**
25-49 acres	1	8	9	18
50-99 acres	0	0	3	3
100+ acres	0	2	0	2
TOTAL	**4**	**20**	**30**	**54**

Tier 1 Sites

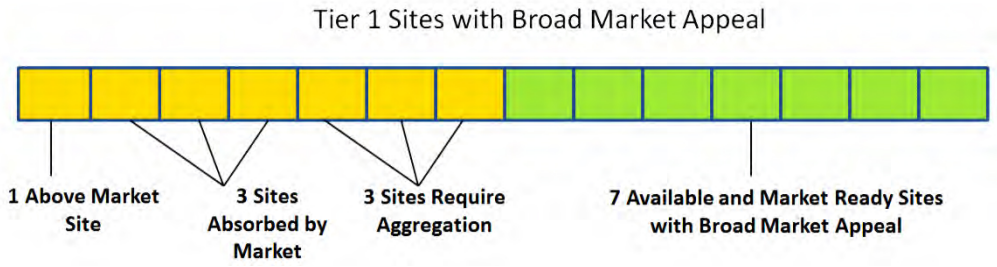
Of the 14 Tier 1 sites, seven are in Washington County, five are in Multnomah County and two are in Clackamas County (Figure 3). The number of larger sites is limited as approximately 70% of the Tier 1 sites are in the 25-49 acre range. There are only three 50-acre sites and one 100-acre site that are Tier 1.

Figure 4: Distribution of Sites by Acreage



Source: Mackenzie

In addition to development-readiness, there are a handful of economic factors that drive the suitability of industrial sites for immediate development. A closer look at the 14 Tier 1 sites (Table 2) reveals that the number of sites attractive to a broad range of potential traded-sector companies is even smaller. Of the 14 Tier 1 sites, there are seven sites that meet standard market requirements. Three sites have multiple owners and a potential user must aggregate these sites themselves. One site is currently for sale at an above market price for industrial development. It is unclear if, or when, the current owner will align the asking price with current industrial market pricing. Three sites that have been absorbed by the market since June 2014[21].



Over 85% of the Tier 1 sites are in Multnomah or Washington County[22]. Because the inventory only includes sites within the Portland metropolitan UGB or select urban reserves, industrial sites located in rural Washington

[21] **Site 13**: Specht Properties in Portland; **Site 46**: Development Services of America (Westmark site) in Hillsboro; **Site 114**: Colwood Ltd Partnership in Portland.

County and Clackamas County, such as Banks, Canby, Sandy, Molalla, and Estacada are not included in this inventory[23]. However, these sites are an important component of the regional economy. Table 3 details the Tier 1 sites.

[22] Approximately 40% of Multnomah County is within the Metro UGB; 17% of Washington County; and 5% of Clackamas County.

[23] http://cmap.clackamas.us/ccss/

Table 3: Tier 1 Site Summary

Site ID	Owner/Site	Location	County	Gross Acres	Net Developable Acreage	Number of Tax lots	Number of Owners	Currently for Sale/Lease	Willing to Transact
13	Specht Properties Inc.	Portland	Multnomah	28.11	26.52	3		S	
21	Port Of Portland GVBP - East	Gresham	Multnomah	115.98	115.01	5		S/L	
22	Port Of Portland GVBP - West	Gresham	Multnomah	87.79	67.84	3		S/L	
29	Clackamas County Development Agency	Clackamas	Clackamas	61.93	40.00	11		S/L	
32	Ralph & Shirley Elligsen	Wilsonville	Clackamas	33.42	30.20	2		S	
46	Development Services Of America (Westmark Site)	Hillsboro	Washington	30.02	30.02	1		S	
48	Dewayne Wafford (Baker/Bindewald Site)	Hillsboro	Washington	46.06	44.58	1		S	
49	Majestic Realty Company	Hillsboro	Washington	75.11	62.75	9		S/L	
50	Shute North (Berger/Moore Trust/Boyles Trust)	Hillsboro	Washington	73.31	55.00	5	3	S	
52	Shute South (Berger Properties/Moore Trust)	Hillsboro	Washington	42.91	42.91	2	2	S	
57	Merix Corporation	Forest Grove	Washington	34.25	29.71	1		S	
111	Weston Investments and CCF Oregon LLC	Gresham	Multnomah	34.99	26.00	2	2	S	
113	Henningsen Cold Storage	Forest Grove	Washington	28.57	26.44	3			YES
114	Colwood LTD Partnership	Portland	Multnomah	47.55	39.42	1		S	

Note: It is assumed that if a property is currently listed for sale or lease, the property owner is willing to transact. **Source: Mackenzie**

Tier 2 Sites

The analysis found 17 Tier 2 sites within the Metro UGB. The bulk of these sites are in Washington or Multnomah County with only one site in Clackamas County. The number of large sites in Tier 2 is limited, with four sites that are between 50-99 acres and two 100-plus acre sites.

The few large sites in Tier 2 face significant challenges to become market-ready, including the need to build infrastructure (roads and sewer), mitigate wetlands, and assemble parcels currently under multiple ownerships. Many of these sites have multiple development constraints that limit their marketability. The inventory update did not identify specific constraints at each site, but the list of potential constraints includes environmental clean-up, infrastructure upgrades, property owner aggregation, annexation, wetland/floodplain fill. Of the 17 Tier 2

sites, four require aggregation and eight require local and state legislative actions, such as UGB expansion, annexation, zoning, and concept planning.

Generally, the constraints to readiness for Tier 2 sites are less extensive than Tier 3 sites, requiring less time and lower costs than the majority of the Tier 3 sites. Tier 2 sites present the best opportunity to focus resources to bring more sites to market. Table 4 details the Tier 2 sites.

Table 4: Tier 2 Site Summary

Site ID	Owner/Site	Location	County	Gross Acres	Net Developable Acreage	Number of Tax lots	Number of Owners	Currently for Sale/Lease	Willing to Transact
1	Port of Portland (Rivergate)	Portland	Multnomah	51.44	51.21	4		L	
9	Port of Portland (NE Marine Drive & 33rd Avenue)	Portland	Multnomah	66.74	62.70	1		L	
18	Port of Portland (Trip - Phase 2)	Troutdale	Multnomah	42.67	30.18	3		S/L	
19	Port of Portland (Trip - Phase 2)	Troutdale	Multnomah	80.53	80.34	2		S/L	
23	Mt Hood Community College	Troutdale	Multnomah	38.45	37.40	3			Yes
38	Biles Family LLC	Sherwood	Washington	39.60	30.89	1		S	
47	Julian & Sharon Cranford	Hillsboro	Washington	28.51	27.29	1		S	
54	5305 NW 253RD Avenue LLC	Hillsboro	Washington	38.49	28.59	1			N/A
55	Spokane Humane Society & Spokanimal Care	Hillsboro	Washington	45.49	36.00	1			Yes
56	East Evergreen Site	Hillsboro	Washington	70.74	61.00	9	7	S	Yes
62	Rock Creek Site	Happy Valley	Clackamas	40.83	36.82	5	2	S	Yes
63	Woodburn Industrial Capital	Forest Grove	Washington	26.17	25.01	1		S/L	
66	Kenneth Itel	Tualatin	Washington	46.25	30.25	2			Yes
101	Vanrose Farms and Bert & Bernie LLC	Hillsboro	Washington	271.64	224.83	2	2		Yes
104	Meek Subarea Site	Hillsboro	Washington	268.02	257.42	8	7		Yes
112	Hally Haworth	Forest Grove	Washington	38.19	36.15	2			Yes
115	SolarWorld	Hillsboro	Washington	46.23	46.23	1		S	

Note: It is assumed that if a property is currently listed for sale or lease, the property owner is willing to transact. **Source: Mackenzie**

Tier 3 Sites

The analysis found 23 Tier 3 sites within the Metro UGB and selected urban reserves. While all but one of the Tier 3 sites are inside the UGB or select urban reserve sites, this category of sites has multiple and significant constraints to overcome to get to market-readiness. Similar to the other tiers, the number of larger Tier 3 sites is also limited, with three sites that are between 50-99 acres and two 100-plus acre sites.

Nine of the Tier 3 sites (nearly 40%) require aggregation of parcels in separate ownerships. Ownership ranges from two owners for the Woodfold site in Forest Grove (Site 64) and the Davis Family Trust & Taghon site in Cornelius (Site 110) to up to 16 owners for the Coffee Creek site #1 in Wilsonville (Site 33). Five of these nine sites have more than three ownerships. The more owners involved, the more complex and lengthy the aggregation process.

More than two-thirds (15) of the sites in Tier 3 will require some kind of local or state legislative actions such as UGB expansion, annexation, zoning and concept planning to become development-ready. Examples include sites that are outside the current UGB and West Hayden Island, which is inside the UGB but subject to a lengthy planning and annexation process that is likely to include significant mitigation requirements. If approved for development, the West Hayden Island site is at least seven years away from readiness due to permits, mitigation, and infrastructure requirements. There are also two sites on the edge of the UGB with tax lots that are partially inside the UGB and partially outside of the UGB included in this study. This split of urban and rural land creates a legislative challenge as only lots within the UGB are allowed to develop to urban use and intensity. Development to urban intensities includes a prohibition on partitioning of these lots to a size inconsistent with rural land uses and zoning. For the purpose of this study, only the portions of the tax lots inside the UGB are included as a site. Oregon Department of Land Conservation and Development is currently engaged in a process to fix this legislative issue.

Another issue affecting five Tier 3 sites is brownfield contamination. Three of these sites are located in the City of Portland adjacent to the Willamette River Superfund designation and have significant development issues, risk, and uncertainty.

Three of the Tier 3 sites (15%) are currently operating as active quarries with gross site acreage varying from 26 to 85 to 300 acres. These sites have been mined for decades and as a result are significantly sloped due to excavation.

Providing a market perspective on the quality of sites is a major objective of this analysis. Market-readiness requires first and foremost, a willingness to enter into a transaction by the property owner. However, simply a lack of willingness to transact, or a lack of information of a willingness to transact, was not a reason to exclude a site in the inventory. Of the 23 Tier 3 sites, 16 (nearly 70%) either lack a willingness to transact or the information was unable to be determined as part of this study. Slightly over 20% of the Tier 3 sites (four sites) are currently, or could be, available to the general market, as the property owner is willing to enter into a transaction. Only 13% (three sites) are currently listed for sale on the market. Table 5 provides a complete list of the Tier 3 sites.

Table 5: Tier 3 Site Summary

Site ID	Owner/Site	Location	County	Gross Acres	Net Developable Acreage	Number of Tax lots	Number of Owners	Currently for Sale/Lease	Willing to Transact
2	Time Oil Company	Portland	Multnomah	51.10	39.40	7			Yes
4	ESCO Corp	Portland	Multnomah	37.62	29.92	6	3		N/A
5	Atofina Chemicals INC	Portland	Multnomah	59.76	47.25	6			N/A
7	Port of Portland (West Hayden Island)	Portland	Multnomah	472.00	300.00	3			Yes
10	Port of Portland (SW Quad)	Portland	Multnomah	209.69	206.47	5			Yes
16	Michael Cereghino	Gresham	Multnomah	41.63	25.00	5		S	
17	Port of Portland (Trip - Phase 3)	Fairview	Multnomah	34.14	30.00	1		S/L	
24	Jean Johnson	Gresham	Multnomah	37.17	33.82	1			N/A
25	Lester Jonak Jr.	Gresham	Multnomah	34.19	27.07	1			N/A
26	Michael & Ardele Obrist	Gresham	Multnomah	33.51	33.51	2			N/A
33	Coffee Creek Industrial Area - Site 1	Wilsonville	Washington	89.59	84.70	21	16		No
34	Kennedy/Fitzpatrick/ Vanleeuwen	Wilsonville	Washington	52.88	25.50	3			N/A
35	Tonquin Industrial Area	Tualatin	Washington	49.52	34.32	8	7		Yes
36	Tigard Sand & Gravel Site	Tualatin	Washington	301.08	25.00				No
37	Orr Family Farm LLC	Sherwood	Washington	96.26	77.00	1			No
59	Coffee Creek Industrial Area - Site 2	Wilsonville	Washington	45.07	44.49	12	7		No
60	Coffee Creek Industrial Area - Site 3	Wilsonville	Washington	28.82	26.22	10	6		No
61	Coffee Creek Industrial Area - Site 4	Wilsonville	Washington	46.57	42.37	12	8		No
64	Woodfold-Marco MFG Inc. (East Oak Street)	Forest Grove	Washington	27.67	25.06	2	2		No

Site ID	Owner/Site	Location	County	Gross Acres	Net Developable Acreage	Number of Tax lots	Number of Owners	Currently for Sale/Lease	Willing to Transact
65	Woodforld-Marco MFG Inc. (West Oak Street)	Forest Grove	Washington	53.66	52.97	5			No
109	Morse Bros. Inc.	Tualatin	Washington	83.68	25.00	7			No
110	Davis Family Trust & Remi Taghon	Cornelius	Washington	49.01	40.21	10	2		Yes/ No
111	Northwest Sand & Gravel Inc.	Unincorporated	Clackamas	26.2	25.10	6	1	S	

Source: Mackenzie

Note: "YES/NO" is for a property with two owners – one willing to transact and one not willing to transact. Additionally, it is assumed that if a property is currently listed for sale or lease, the property owner is willing to transact.

Additional Sites

There are several dozen industrially designated sites that are not included in this inventory update. These sites fall into three categories.

1. The parcel/site is greater than 25 gross acres, but when constraints (environmental or restrictive zoning/overlay) are taken into consideration, the net developable acreage falls below 25 acres. (See Table 6)

2. The parcel/site is owned by a company that is **part of an existing campus/development** and the company has future expansion plans. This vacant land is not currently available to the market for another prospective user. The site is partially vacant but reserved for expansion. (See Table 7)

3. The parcel/site is owned by a company that has **future development plans;** therefore the site is not currently on the market for a prospective user. The site is fully vacant and land banked for new development. (See Table 7)

Although these sites do not appear in the 2014 inventory in this report, they are still an important portion of the region's industrial land supply. Appendix C provides regional maps of these sites.

Sites with Less Than 25 Net Developable Acres

There are 16 parcels and/or sites in this study that have 25 gross acres, but do not have 25 net developable acres. However, these sites are still part of the region's inventory of industrial land as they may be developable for smaller users. These sites are identified in Table 6 below, but are not included in the 2014 inventory because they did not meet the criteria of this study.

Table 6: Parcels or Sites with Less Than 25 Net Developable Acres

Owner	Location	Gross Acreage	Approximate Net Developable Acres	Notes
McCormick & Bassili Investments LLC	Happy Valley (HWY 212 & 162nd)	33.98	7.5	Environmental constraints result in <25 net developable acres – according to Clackamas County
Weaver Russell	Happy Valley (HWY 212 & 162nd)	34.19	3.5	Environmental constraints result in <25 net developable acres – according to Clackamas County
Fazio	Portland (East of NE MLK & Gertz)	34.96	22	Existing drainage ditch bisects site into a 21.5 acre site; net developable acres in largest development parcel is less than 25 acres
Graphic Packaging	North Portland (Marine Drive & Portland)	26.26	2.75	Environmental constraints result in <25 net developable acres
Catellus	Portland (N of Airport and 185th)	31.99	3.5	Environmental constraints result in <25 acres remaining (wetlands and floodplain)
Langer Family	Sherwood (TS Road & Adams)	56.48	< 25	Public utility district overlay on site results in <25 net developable
Orwa Sherwood LLC	Sherwood (T/S Road & Adams)	50.25	6	Bisecting road results in <25 net developable acres
Fred Fields property	Tigard (Hall and Hunziker)	35.6	<25	Environmental constraints result in <25 net developable acres (market/site knowledge)
David Young	Wilsonville (S of Boeckman W of I5)	33.9	0	Significant Resource Overlay Zone environmental constraints – according to City of Wilsonville
Gary Walgraeve	Tualatin (Herman Road & 118th)	54.95	14.5	Environmental constraints result in <25 net developable acres – according to City of Tualatin
Edward Wager	Tualatin (T/S Road & 124th)	32.14	13	Environmental constraints result in <25 net developable acres – according to City of Tualatin
Joe Bernert Tow Inc.	Wilsonville (Wilsonville Road & Boones Ferry)	31.18	13.5	Significant Resource Overlay Zone – according to Wilsonville
Rock Creek aggregate site	Happy Valley (Rock Creek Blvd & SE 172nd Avenue)	25.03	21.04	Slope constraints
Powin Pacific Properties LLC	Tualatin (T/S Road & 115th)	29.47	13.45	Wetlands and stream on site
Port of Portland	Portland (NE 33rd; South of Marine Drive)	28	23	Drainage ditches result in <25 net developable acres
Port of Portland	Portland (South of SW Quad)	67.5	0	Reserved for open space/wetlands mitigation. Land is not greater than 25 net developable acres – according to Port of Portland

Owner	Location	Gross Acreage	Approximate Net Developable Acres	Notes
Port of Portland	Fairview (South of site 17)	100	0	Reserved for open space/wetlands mitigation. Land is not greater than 25 net developable acres – according to Port of Portland
Port of Portland	Troutdale (East of Troutdale Reynolds Industrial Park site 20)	64	0	Reserved for open space/conservation. Land is not greater than 25 net development acres – according to Port of Portland
Xerox (2 parcels)	Wilsonville (East of Interstate5)	95.81	34.1	Remaining 34.1 acres are reserved for future on site environmental mitigation for the Xerox campus and not developable

Source: Mackenzie

User Owned and User Designated Sites

This analysis also excluded land-banked parcels that are owned and held for future expansion by existing regional firms. These parcels are an important part of the regional industrial land inventory, but since they are being held by their current owners for future development, they are not considered to be available to the general market, which is the focus of this study. There are 25 user-owned sites with at a minimum 25 net developable acres that are being held for future development in this study (Table 7). Twelve (12) of these sites are vacant (for future use) with 25 or more net developable acres; and 13 are partially vacant (buildings on site/part of existing campus), but still have a minimum of 25 acres vacant for future expansion.

Table 7: User Owned and User Designated Sites

Owner	Location	Gross Acreage	Vacant Acreage	Vacant: for future use	Partially Vacant: in use	Notes
N Pacific Union Conference Association SDA	Gresham (Foster & Tillstrom)	66.9	66.9	X		Reserved for future use/development
Providence Health	Happy Valley (HWY 212 & 162nd)	49.7	49.7	X		Reserved for future use/development
Intel (Future parking lot)	Hillsboro (Cornell & Cornelius Pass)	47.36	47.36	X		Reserved for future use/development (parking lot)

Owner	Location	Gross Acreage	Vacant Acreage	Vacant: for future use	Partially Vacant: in use	Notes
Legacy Health Services	Hillsboro (Cornell & Cornelius Pass)	28.95	27.3	X		Reserved for future use/development (easement on site)
Intel	Hillsboro (West Union & Cornelius Pass)	72.54	68.4	X		Reserved for future use/development
Port of Portland (PIC WEST)	Portland (NE Alderwood Drive)	69.45	58.96	X		Future relocation site for PDX rental cars
Port of Portland	Troutdale (East of site 17)	34	32.7	X		Vacant; reserved for utility use (substation) – according to Port of Portland
Port of Portland	Hillsboro (NW Evergreen Road)	71.81	67.69	X		Brought into UGB in 2014 with House Bill 4078; reserved for future Hillsboro Airport use (airport restrictions)
Port of Portland	Hillsboro (NW Evergreen Road and 264th)	39.22	34.15	X		Inside Hillsboro Airport fence, and included in FAA Airport Layout Plan; reserved for aviation related development only
Mentor Graphics	Wilsonville (S of Boeckman E of I5)	43.4	43.4	X		Reserved for future use/development - split from main campus by public street; Significant Resource Overlay Zone on site and wetlands
Phight LLC	Tualatin (T/S Road & 118th)	28.8	28.8	X		Reserved for future use/development
BT Property LLC (UPS)	Gresham (NE 185th and NE Portal Way)	51.45	51.45	X		Reserved for future use/development
Clackamas CDA	Clackamas County (I205/82nd)	32.2	32.1		X	Excess land - in use and not available – according to Clackamas County
Great American TVR	Clackamas County (I205/82nd)	49.35	47.5		X	Communication towers and infrastructure on site
State of Oregon (3 parcels)	Clackamas County (I205/Hwy 212)	232	97		X	In use and not available – according to Clackamas County
Nacco Materials Company	Fairview (Marine & Blue Lake Road)	78.7	58.7		X	Excess land; some environmental constraints on site
Microchip Technology (Formally Linde)	Gresham (Glisan & 223rd)	137	75		X	Not available – according to City of Gresham
Mutual Materials	Gresham (Hogan Road)	86.08	56.8		X	Excess land: currently in use

Owner	Location	Gross Acreage	Vacant Acreage	Vacant: for future use	Partially Vacant: in use	Notes
Novellus Systems Inc.	Tualatin (SW Tualatin Road & SW 108th)	58.4	27.46		X	Excess land: currently in use
PGE Portland	Gresham (Powell & E of 182nd)	72.13	62.8		X	Reserved for future use and not available
Genentech (entire campus)	Hillsboro (Evergreen & Brookwood)	75.3	60		X	Reserved for future use and not available
Tokyo Ohka Kogyo	Hillsboro (Evergreen & Brookwood)	38.89	28.5		X	Reserved for future use and not available
Intel (Ronler Acres)	Hillsboro (Shute Road)	111.7	61		X	Reserved for future use and not available
PGE Portland	North Portland (St Helens)	63.1	43.9		X	Excess land currently in use
Cookin (Siltronic)	Portland (St Helens Road)	79.27	38.6		X	Reserved for future use and not available

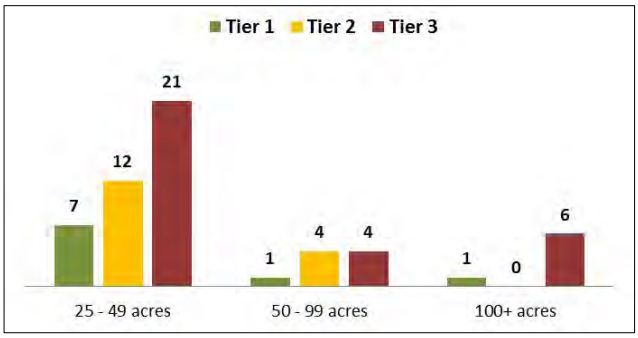
Source: Mackenzie

Changes from 2011 Inventory to 2014 Inventory

Movement In and Out of the Inventory

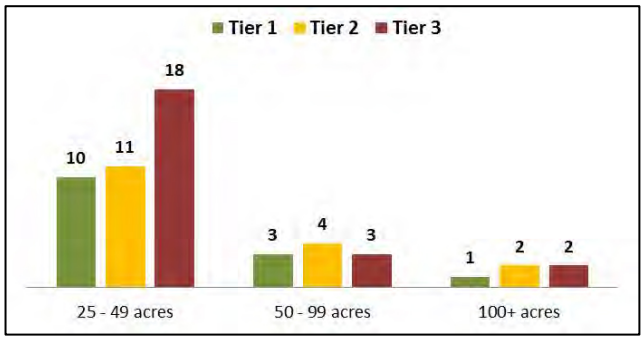
The 2011 inventory included 56 sites, compared to the 2014 inventory of 54 sites. The breakdown among tiers is shown in Figure 5 and 6 below. Nine sites were removed from the inventory, including three sites that are being developed or used for construction staging. Seven sites were added to the inventory. The number of Tier 1 sites has increased by six sites; Tier 2 sites increased by one site; and Tier 3 sites decreased by eight sites. Of the Tier 1 sites, only seven of the sites meet standard development criteria.

Figure 5: 2011 Inventory



Source: Mackenzie

Figure 6: 2014 Inventory



Source: Mackenzie

Movement between Tiers

From 2011 to 2014, there has been significant movement between the tiers. The 2014 update found 11 sites that moved up a tier; five Tier 2 sites became Tier 1 sites and six Tier 3 sites became Tier 2 sites in the 2014 update. The table below shows movement between the tiers in the past two and a half years. The majority of movement between tiers is a result of environmental mitigation and infrastructure investments.

Table 8: Movement in the Inventory

	2014 Inventory	Remain from 2011	Upgraded from 2011	Added Sites in 2014
Tier 1	14	6	5 (previously Tier 2 site)	3
Tier 2	17	8	6 (previously Tier 3 site)	3[24]
Tier 3	23	21	-	2
TOTAL	**54**	**35**	**11**	**7**

Of the 11 sites that moved up a tier:

- Five sites are located in Hillsboro, five sites are located in the East Multnomah County submarket, and one site is located in Portland.
- Six sites are in private ownership and five sites are in public ownership three (3) sites owned by the Port of Portland, one site owned by Mount Hood Community College, and one site owned by Clackamas County Development Agency.

Seven of the 11 sites that moved up a tier required investment in infrastructure and mitigation.

- Two sites moved up a tier due to environmental constraint mitigation.[25]
- Five sites received transportation/infrastructure investments.[26]

[24] One of the three new Tier 2 sites is site number 1 (Port of Portland - Rivergate). In 2011, this was a Tier 1 site; however, due to the listing of the streaked horned lark species, the site requires mitigation and is no longer developable within a 6 month timeframe. Environmental mitigation required is a 7-30 month process which drops the site from Tier 1 to Tier 2.

[25] **Site 13:** Specht Properties and **Site 29:** Clackamas County Development Agency.

[26] **Sites 18 and 19:** Troutdale Reynolds Industrial Park Phase 2, **Site 22:** Gresham Vista Business Park West, and **Sites 50 and 52**: Shute Road North and South.

Additionally, of the 11 sites that upgraded a tier, four were able to do so without significant investment in infrastructure.

- Two of the sites experienced a legislative change, and were taken out of urban reserves and brought into the UGB.[27]
- Two of the sites had a change in the property owner willingness to transact, and therefore were upgraded to Tier 2.[28]

Sites Deleted from the Inventory

Using the methodology developed during the 2011 inventory project, the team removed nine sites, resulting in a total of 54 sites in the June 2014 inventory. The tables below show which 2011 inventory sites are no longer on the inventory with an explanation of why. Between the *2011 and 2014 Regional Industrial Land Inventory Report*, nine sites and approximately 400 estimated net developable acres were removed from the inventory. In contrast, the seven sites added to the 2014 inventory accounted for approximately 240 acres.

Table 9: 2011 Inventory Sites Removed from 2014 Inventory

Site ID	Owner/Site	Location	County	Gross Acres	Net Developable Acres	Sale/Lease/ Transact (2011)	Development and/or Action
Tier 1 Sites							
11	Port of Portland (PIC East)	Portland	Multnomah	43.50	41.18	L	Currently under construction; results in less than 25 developable acres
44	Intel Corporation	Hillsboro	Washington	31.39	31.39	S	Currently used as a paved/gravel parking lot and staging area for Intel
Tier 2 Sites							
40	Pacific Realty Associates	Tualatin	Washington	26.80	26.80	S/L	Currently under construction; results in less than 25 developable acres
67*	Port of Portland (PIC West)	Portland	Multnomah	69.45	58.96	L	Held by Port of Portland for future relocation of rental cars at PDX[29]

[27] **Site 101:** Vanrose Farms and **Site 104:** Meek Subarea

[28] **Site 23:** Mt. Hood Community College and **Site 47:** Cranford

[29] With passenger volumes increasing to 15 million in 2013, the timeframe for the relocation of the rental cars at Portland International Airport has shortened, necessitating the removal of this site from the inventory.

Site ID	Owner/Site	Location	County	Gross Acres	Net Developable Acres	Sale/Lease/ Transact (2011)	Development and/or Action
68*	Port of Portland (Hillsboro Airport)	Hillsboro	Washington	39.22	34.15	L	Port of Portland Hillsboro Airport planning has changed, requiring this site for future airport use only
Tier 3 Sites							
6	McCormick & Baxter Creosoting	Portland	Multnomah	42.39	33.39	No	Designated for University of Portland expansion and development (City of Portland approved conditional use master plan)
15*	BT Property LLC (UPS)	Gresham	Multnomah	51.45	49.45	No	Owner has decided to develop site for future use
28	James & Mollie Siri	Happy Valley	Clackamas	26.40	25.26	No	Dedication along SE 172nd results in less than 25 developable acres
100	Holzmeyer Richard Henry	Forest Grove	Washington	111.37	100.12	N/A	Designated from urban reserves to rural reserves during Grand Bargain; no longer eligible to be included in inventory

* This site was removed from the 2011 inventory as it is no longer available to the general market; however, it now appears on Table 7: User Owned and User Designated Sites

Sites Added to the Inventory

Using the methodology developed during the 2011 inventory project, the team found seven new sites to add to the inventory and removed nine sites, resulting in a total of 54 sites in the June 2014 inventory. The table below shows which 2011 inventory sites are no longer on the inventory with an explanation of why. Approximately 240 estimated net developable acres were added in the same time period with seven newly identified sites. The net decrease of large industrial site acreage in the metro-region is an estimated 160 net developable acres.

Table 10: Sites Added to the 2014 Inventory

Site ID	Owner/Site	Location	County	Gross Acres	Net Developable Acres	Sale/Lease/ Transact (2014)
Tier 1 Sites						
111	Weston Investments and CCF Oregon LLC	Gresham	Multnomah	34.99	26.00	S
113	Henningsen Cold Storage	Forest Grove	Washington	28.57	26.44	Yes
114	Colwood Ltd Partnership	Portland	Multnomah	47.55	39.42	S
Tier 2 Sites						
112	Hally Waworth	Forest Grove	Washington	38.19	36.15	Yes
115	SolarWorld	Hillsboro	Washington	46.23	46.23	S
Tier 3 Sites						
110	Davis Family Trust & Remi Taghon	Cornelius	Washington	49.01	40.21	Yes/No
116	Northwest Sand & Gravel INC	Unincorporated	Clackamas	26.2	21.10	S

2014 Inventory Update Conclusions

The 2014 industrial land inventory analysis finds that Portland metropolitan area's supply of large industrial sites has decreased over the past two and a half years. Supply continues to be most limited for sites of 50 acres or more, consistent with the 2011 inventory. The sites that are available are concentrated in the Columbia Corridor in Multnomah County, Hillsboro, and Wilsonville/Tualatin in Washington County. The location distribution reflects previous local and regional land use planning decisions to maintain a compact regional form.

Larger sites are more complex and take patience to acquire and develop. Parcel aggregation is a key issue to supplying larger sites to the market, affecting 25% of the sites in the inventory.

While this analysis has identified the available sites, and at a high level outlined the challenges that exist to bringing Tier 2 or 3 sites to development-ready status, the timeframes in the analysis assume that the jurisdictions, property owners, land-use regulatory bodies, and potential interveners are all working in support of the site's development and that appropriate public investments will be made to move these sites to market.

It is important to note that this inventory is a snapshot in time. As Tier 1 sites are absorbed by the marketplace, the expectation is that Tier 2 sites will continue to move to Tier 1 status and Tier 3 sites will continue to move to Tier 2. The inventory should be updated over time to ensure that the database of market-ready industrial sites is current, helps identify and prioritize required site readiness investments, and supports the region's recruitment and expansion efforts.

The experience of state and regional economic development experts indicates that accomplishing our region's traded-sector industrial retention, expansion, and recruitment strategy depends in part on the availability of an adequate supply of well-located, market-priced, and developable large industrial sites. The inventory can be used as a reference for monitoring and tracking changes of absorption of industrial land in the region, and can also be used by the public sector as the basis for making informed land use and investment decisions around the supply, regulation, and market readiness of industrial lands.

NEXT STEPS

The *2011-12 Regional Industrial Site Readiness* project found that many large industrial sites in the region are not development-ready, impacting the region's ability to meet forecasted job growth requirements[30], and potentially causing the region to miss business growth, recruitment opportunities, and the jobs and payroll they represent. The 2014 inventory update reinforces the importance of continued state and regional focus on the market-readiness of large industrial sites within the region. The well-paying jobs provided by traded-sector industries will help Oregon achieve economic prosperity, reduce income disparity, and secure funding for public services and amenities.

Regional policymakers have acknowledged the importance of a development-ready supply of large industrial sites in local and regional land use planning documents, such as Metro's *2014 Urban Growth Report* and separate local comprehensive plan updates, and should retain a policy focus on identifying and prioritizing funding to move industrial sites within the region to market. In addition to this work, the PMT has identified five next steps that could be helpful in the region and statewide.

Improvements to Regulatory Processes that Reduce Uncertainty for Firms Seeking Sites

Existing permitting processes sometimes add uncertainty and extend development timelines to the extent that targeted industry employers may choose sites in other regions, states, or countries. Options could include alignment of federal, state, regional, and local permitting processes; allowing wetland permitting and mitigation occur prior to identifying a site user; prioritizing technical assistance and funding; and dedication of staff with industrial development expertise within state permitting agencies. In addition, a regional focus on environmental mitigation strategies to support industrial development is appropriate (wetland banks, technical assistance). Although brownfield remediation is an issue, which affects a smaller number of larger industrial sites, industrial to industrial brownfield remediation is a significant challenge facing the region with remediation costs two to four times the sale price of industrial land[31]. Portland Harbor superfund sites have even greater costs challenges and require special focus. The state and region should consider incentives and regulatory relief to move these sites to productive industrial uses.

Expansion of and Support for Existing Business Development Programs

Existing state programs like Industrial Site Certification, Regionally Significant Industrial Areas, Immediate Opportunity Fund, Special Public Works Fund, and the brownfield programs deserve ongoing support and increased funding. Business Oregon and the Metro Regional Solutions Team should continue to collaborate on strategic efforts and prioritize site-specific work, leveraging Business Oregon programs to address the array of infrastructure and development constraints in the region.

Creation and Funding of New Capital and Financial Tools

New or refined tools are needed to address the upfront costs of capital investments for transportation, sewer, water, brownfield cleanup, wetlands mitigation, and site aggregation. Because of the personal income tax benefits that accrue to the state when large firms locate here, the state could play a role in providing upfront capital for industrial land site preparation.

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[30] The draft *2014 Metro Urban Growth Report* forecasts 85,000 to 440,000 additional jobs and 300,000 to 485,000 additional people inside the Metro urban growth boundary by the year 2035.

[31] *Metro Brownfield Scoping Project and Portland Brownfield Assessment* – Maul, Foster & Alongi, Inc. 2012.

In 2013, the Oregon Legislature approved enabling legislation for two sources of state funding for industrial site readiness (Senate Bill 246 and Senate Bill 253), but did not provide funding for these programs. To support the region's job growth requirements identified in the draft *2014 Urban Growth Report*, state funding for these two new Industrial Site Readiness Programs should be pursued, including due diligence assessments and forgivable loans to address the broad range of industrial site readiness constraints.

To address the limited supply of larger industrial sites and assembly challenges affecting 25% of sites in the inventory, the region should develop new tools to support the acquisition and aggregation of industrial lands needed for "game changer" traded-sector investments (e.g., Coffee Creek in Wilsonville, North Hillsboro industrial lands). The region should also retain a policy focus on identifying sources of infrastructure funding to meet the region's $21-47 billion[32] in infrastructure funding needs.

Completion of Due Diligence Work on Sites

Continued work on industrial site due diligence (such as identifying needed infrastructure improvements, scoping environmental cleanup, understanding the scale of wetlands, and producing preliminary cost estimates for brownfield and wetland mitigation) will help to remove uncertainty surrounding sites. A relatively small investment in due diligence work could catalyze accelerated site preparation and prioritize scarce funding.

Regular Update of the Inventory and Completion of Follow Up Studies

Since the June 2014 inventory was completed, three Tier 1 sites have been absorbed into the market[33]. Regular updates to this inventory and due diligence on sites could significantly benefit the region's economic development efforts. Statewide application of this methodology could benefit other regions.

[32] *Regional Infrastructure Analysis*, Metro July 2008

[33] **Site 13:** Specht Properties Inc. in Portland; **Site 46:** Development Services of America (Westmark site) in Hillsboro; **Site 114:** Colwood Ltd Partnership in Portland.

August 27, 2014

Executive summary: Preliminary results of a residential preference study for the Portland region

Introduction

We all make choices when buying or renting a home. Some of the factors we weigh include price, proximity to work, size of the home, size of the yard, and the type of neighborhood. Understanding what's important to residents of the metro area can inform local and regional policies, as well as public and private investment decisions.

In the spring of 2014, a partnership of public and private sector interests conducted an innovative residential preference study for the four-county Portland metropolitan area.[1] The study seeks to develop a better understanding of:

- Preferences for different housing, community, and location characteristics
- How factors such as income, number of household members, presence of kids, the age of the householder, and lifestyle relate to residential preferences

[1] Clackamas, Clark, Multnomah, and Washington counties

The project partners consider this a first effort at gaining a better understanding of a complex topic and intend to conduct this study periodically in the future to gauge whether and how preferences may be changing. This document summarizes the study's preliminary findings. The project partners have also identified possible topics for research and plan to continue investigating trends in the data. Additional detail about the partnership, survey methods, and survey results can be found in the full report.

Survey design

This study seeks to go beyond typical opinion survey methods in order to gain a better understanding of how people make choices when faced with real-life tradeoffs. The survey presented respondents with two types of preference questions. In the first type, respondents were asked straightforward questions about their preferences. In the second type, respondents were asked with words and images to make tradeoffs like those they would consider when choosing where to live. For this tradeoffs section, respondents were asked to choose one of two housing situations that differed by housing type, commute time, house size, renting vs. owning, neighborhood type, and price. Repetition of those choices by thousands of respondents allows us to understand how important each of these factors is for people from different market segments.

This study used an online survey tool. To ensure that the study produced valid results, the survey was completed by a managed representative panel of 800 respondents (200 respondents for each of the four counties – Clackamas, Clark, Multnomah, and Washington). In order to collect enough data for in-depth statistical analysis, the survey was also distributed via e-mail advertisement, including to Metro's Opt In panel, resulting in an additional 5,700 responses (the "public engagement panel"). In total, more than 6,500 people responded to the survey. For both panels, the survey responses were weighted by respondent county, age, and tenure (whether they currently rent or own) to ensure that the sample was representative of the region's population distributions as described in the 2010 U.S. Census.[2] A comparison of survey responses from the managed panel and the public engagement panel indicates that the demographic profile is comparable enough that the full data set can be used for analysis, but that there are some differences that warrant additional study.

For any survey, the phrasing of questions and selection of images play a critical role in producing meaningful results. The project partners brought diverse perspectives to this study and sought to use words and images in the survey that clearly describe different housing and neighborhood types without introducing bias. Over the course of about six months, the project partners worked together to refine those words and images to describe the following housing and neighborhoods types for use in the survey. A description of these housing and neighborhood types can be found in the full report.

<u>Housing types</u>

Three different housing types were described in the survey:

[2] For example, before weighting, both panels under-represent renters and don't reflect the proportions of people living in each of the four counties. Weighting techniques such as these are standard practices used on any sample, including the U.S. Census.

- Single-family detached
- Single-family attached
- Condo or apartment

Neighborhood types

Four different neighborhood types that illustrate a variety of activity and density levels were described in the survey:

- Urban central or downtown
- Urban neighborhood or town center
- Outer Portland or suburban
- Rural

Even with a deliberate effort to use clear text descriptions and images, people will understand these neighborhood types differently, perhaps more so than housing types. Additional work could be done to understand how differing interpretations may influence responses.

Preliminary results

Overall, most respondents live in and prefer single-family detached homes[3]

When asked simple questions about their preferences, most respondents live in and prefer single-family detached housing.

Single-family detached homes

65 percent of respondents currently live in a single-family detached home. 87 percent of the respondents living in a single-family detached home prefer this housing type. 80 percent of all respondents prefer this housing type.

Single-family attached homes

8 percent of respondents currently live in a single-family attached home. 11 percent of the respondents living in a single-family attached home prefer this housing type. 7 percent of all respondents prefer this housing type.

Key takeaways:

Most respondents live in a single-family detached home and this is the most preferred housing type, not just for those that live in this type of home, but also for respondents who currently live in single-family attached homes, condos and apartments.

[3] Results for this section are reported for the managed panel only. See the full report for a description of survey results from public engagement.

Condos or apartments

28 percent of respondents currently live in a condo or apartment. 26 percent of the respondents living in a condo or apartment prefer this housing type. 13 percent of all respondents prefer this housing type.

Respondents typically live in their preferred neighborhood type[4]

When asked simple questions about preferences, most respondents prefer their current neighborhood type. Since the majority of respondents live in the *outer Portland or suburban* neighborhood type, this is the most preferred neighborhood type overall. However, current residents of *outer Portland or suburban neighborhoods* report the lowest level of satisfaction with their current neighborhood type, followed by residents of *urban central or downtown* neighborhoods. Residents of *rural* neighborhoods, followed by *urban neighborhood or town center* residents are most satisfied with their current neighborhoods.

> ***Key takeaways:***
> *Most respondents identified their neighborhood type as outer Portland or suburban and about half of those residents prefer this neighborhood type. Though a smaller share of respondents lives in urban central or downtown neighborhood types, about half of them prefer that neighborhood type.*

- 11 percent of respondents currently live in an *urban central or downtown* neighborhood. 55 percent of the respondents living in this neighborhood type prefer this neighborhood type. 13 percent of all respondents prefer this neighborhood type.
- 25 percent of respondents currently live in an *urban neighborhood or town center*. 62 percent of the respondents living in this neighborhood type prefer this neighborhood type. 27 percent of all respondents prefer this neighborhood type.
- 56 percent of respondents live in an *outer Portland or suburban* neighborhood type. 51 percent of the respondents living in this neighborhood type prefer this neighborhood type. 34 percent of all respondents prefer this neighborhood type.
- 8 percent of respondents live in a *rural* neighborhood. 70 percent of the respondents living in this neighborhood type prefer this neighborhood type. 26 percent of all respondents prefer this neighborhood type.

> ***Key takeaways:***
> *Current residents of rural neighborhoods, which account for 8 percent of respondents, are most satisfied with their neighborhood.*

[4] Results for this section are reported for the managed panel only. See the full report for a description of survey results from public engagement.

Controlling for other factors such as commute time and price, people are most likely to choose their current neighborhood type

This survey went beyond typical questions about preferences to collect information about how various factors affect housing choices. The next section of the survey presented respondents with multiple housing option choice sets where factors such as price, commute time, housing type, neighborhood type, size of residence, and tenure (own vs. rent) varied. All 6,500 plus survey responses (weighted to match Census distributions) are used for reporting the results of these choice sets. The larger number of responses makes it possible to conduct more complex analysis.

To understand the importance of neighborhood type when people make housing choices, statistical analyses were conducted on the response data. Those analyses held all other factors such as price, commute time, and housing type constant. If respondents could pay the same price, have the same type of housing, same commute distance, etc. but in different neighborhood types, they are most likely to choose the neighborhood type that they currently live in. However, in no case is there a majority of respondents that would be likely to choose their current neighborhood type. Residents of *urban central or downtown* neighborhoods have the highest likelihood of choosing their current neighborhood type (44 percent probability) and residents of *outer Portland or suburban neighborhoods* have the lowest likelihood (31 percent probability). Controlling for other factors, residents of the *urban central or downtown* neighborhood type have a secondary likelihood (32 percent) that they will choose an *urban neighborhood or town center*. As a secondary choice, respondents living in *urban neighborhood or town center* locations were split on whether to choose more or less urban neighborhoods. As a secondary choice, those living in *outer Portland or suburban* neighborhoods were twice as likely to choose more urban as opposed to rural neighborhood types.

Key takeaways:
All other things being equal, people are most likely (though not a majority) to choose to live in their current neighborhood type. As a secondary choice, respondents living in urban neighborhood or town center locations are split on whether to choose more or less urban neighborhoods. As a secondary choice, those living in outer Portland or suburban neighborhoods are twice as likely to choose more urban as opposed to more rural neighborhood types.

Controlling for other factors, the importance of owning vs. renting varies by neighborhood choice

Respondents that choose *urban central or downtown* neighborhoods are more likely to prefer renting their home. Respondents that choose *rural* neighborhoods are more likely to prefer owning their home. These preferences are less clear for respondents that choose the other two neighborhoods types, *urban neighborhood or town center* and *outer Portland or suburban* neighborhoods.

Some people's neighborhood choices change when they are asked to consider other factors

Though people are generally satisfied with their current housing and neighborhood types, some make different choices when they consider other factors. To understand how respondents make tradeoffs regarding neighborhoods, statistical techniques were used to test a series of "what if" scenarios. These "what if" scenarios are not intended to be policy recommendations. They are used for illustrative purposes only to help understand how people make housing choices. Different "what if" scenario assumptions would produce different results.

Key takeaways:
People are most likely to choose their current neighborhood type regardless of tradeoffs in price, commute time, square footage, and ownership.

What if housing prices increase?

Some people may change their neighborhood choices if housing prices go up by one-third in their current neighborhood type. Current residents of the *outer Portland or suburban* neighborhood type are most sensitive to increased housing prices; 11 percent would choose different neighborhood types under this scenario. Of these suburban respondents that shift neighborhood choices based on price, the most common response is to shift to more urban neighborhoods, but a portion would also switch to a *rural* neighborhood (3 percent shift to *urban central or downtown*, 5 percent to *urban neighborhood or town center*, and 3 percent to *rural*).

Additional context:
Relatively small percentages of the region's population represent large numbers of people. Seemingly minor shifts in housing or neighborhood choices can thus have a large impact on housing demand and traffic. For perspective, there are likely to be about 820,000 households inside the urban growth boundary in 2035. Just five percent of that is 41,000 households.

What if ownership of single-family detached homes is more limited?

Some people may choose a different neighborhood type if they are unable to own a single-family detached home in their current neighborhood type. Current residents of *rural* neighborhoods place the most importance on owning a single-family detached home and there is a 27 percent probability that they will shift to a more urban neighborhood type to accommodate that housing preference. On the other hand, current residents of *urban central or downtown* neighborhoods place the least importance on owning a single-family detached home; most would rather choose a different housing type than

Key takeaways:
Residents of rural neighborhoods feel strongly about owning a single-family detached home. Over a quarter of them would choose a more urban neighborhood type if that was their only option to own a single-family detached home.

leave their current neighborhood type. 6 percent would choose a different neighborhood type.

What if commute times increase?

Some people may choose a different type of neighborhood if commute times go up by ten minutes in their current neighborhood type.[5] Current residents of the *urban neighborhood or town center* type are most sensitive to commute times. 7 percent of *urban neighborhood or town center* respondents would shift neighborhood choices based on increased commute time. 3 percent would choose an *urban central or downtown* neighborhood, 2 percent would choose an *outer Portland or suburban* neighborhood, and 1 percent would choose a *rural* neighborhood.[6] Current residents of *rural* neighborhoods are least sensitive to increased commute times, with 3 percent shifting their neighborhood choice when faced with increased commute time.

> ***Key takeaways:***
> *Most respondents don't change their neighborhood preference when faced with longer commutes.*

What if residences are smaller?

Some people may choose a different neighborhood type if the size of residences in their current neighborhood type decrease by 500 square feet.[7] Current residents of the *urban central or downtown* neighborhood type are most sensitive to decreases in residence size. Making up the 12 percent of urban central respondents that shift neighborhood choices based on decreased home size, 7 percent choose an *urban neighborhood or town center*, 4 percent choose an *outer Portland or suburb*, and 2 percent would choose a *rural* neighborhood.[8]

Other factors that people consider when deciding where to live[9]

In addition to asking respondents to weigh potential tradeoffs, the survey also included traditional opinion polling to address other factors that may influence residential choices, but that are not possible to quantify to present as tradeoffs. Safety of neighborhoods and public school quality are two such factors that were addressed with more traditional survey techniques.

Respondents say that housing price, safety of the neighborhood, and characteristics of the house, in that order, are the most important factors when choosing a home.

- 44 percent rank housing price as their top influencer when choosing a home.

[5] That increase is about a third of the average commute time.
[6] Numbers don't add up to 7 percent because of rounding.
[7] This would represent a decrease by about a third of average residence size.
[8] Numbers don't add up to 12 percent because of rounding.
[9] Results for this section are reported for the managed panel only. See the full report for a description of survey results from public engagement.

- Safety of the neighborhood (19 percent choose this as their top priority) and characteristics of the house (19 percent) are the next most influential factors.
- Quality of public schools was the number one influencer for just 3 percent of respondents and was ranked in the top three by 11 percent.

A majority of respondents prefer neighborhoods with a moderate amount of foot and vehicle traffic.

- 55 percent prefer moderate foot and vehicle traffic during the day with some activities within a 15 minute walk.
- Those living in Multnomah County were twice as likely to desire "heavy foot and vehicle traffic" than those in Clackamas, Clark, and Washington counties.

Key takeaways:
Most respondents want to live in neighborhoods where they can enjoy activities such as shopping and entertainment within a 15 minute walk

The largest share of respondents, though not a majority, prefer a medium-sized yard.

- 32 percent of respondents prefer a medium sized yard separating their home from a neighbor.
- Owners are more likely than renters to prefer a medium sized or large yard.
- Renters are more likely than owners to prefer no yard or little private outdoor space.

Next steps

This study provides initial insight into the complex topic of how people decide where to live. Together, we hope this work can inform public and private sector efforts, such as the upcoming regional growth management decision, to provide the diversity of housing and neighborhood choices that people desire. The project partners hope to improve upon and update this study to understand how preferences may change over time. The project partners have identified several topics that warrant additional research:

- Even with text descriptions and images, people may have different perceptions about what is meant by the various housing and neighborhood types. How might this affect survey responses? How might we improve the survey instrument?
- Every survey sample has limitations in its ability to represent the full population. This study attempts to account for that by weighting for housing tenure, age, and county of residence of the respondents. However, as with any sample, there are some variables that cannot be validated (for example, how to balance residents of different neighborhood types when there is no objective way to define neighborhood types).
- This study relies on different respondent sources. Are there significant differences in how respondents from the different panels make choices?
- What are the best methods for incorporating these survey results into forecast models?
- This study represents a snapshot of preferences today. How might they change in the future?

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METRO

Residential Preference Study

May 2014

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1. | INTRODUCTION AND METHODOLOGY

Between April 18 and May 9, 2014, Davis, Hibbitts & Midghall, Inc. (DHM Research) conducted an online survey of respondents living in Clackamas, Multnomah, Washington and Clark counties about their current and preferred residential and neighborhood preferences. The objective of the survey was to assess general opinions and preferences around housing and neighborhood choices and factors that may influence those choices. Portland State University and Metro developed the questionnaire with input from DHM.

Research Methodology: The study was administered in two tracks. Track 1 consists of an online survey conducted with respondents through a managed panel. Enough surveys were completed in each of the four counties to permit statistically reliable analysis at the county level. The research design used quotas and statistical weighting based on the U.S. Census to ensure a representative sample within counties by age and tenure. The regions were then weighted proportionally by population per the U.S. Census to yield regional results. A total of 813 surveys were completed through Track 1.

Track 2 was a public involvement process; residents were invited to complete the survey from outreach partners including Home Builders Association of Metropolitan Portland, Northwest Natural, Portland Metropolitan Association of Realtors, Clackamas County, Washington County, City of Hillsboro, City of Portland, Metro, and Opt In. No quotas were set for the public involvement track. However, statistical weighting was applied to bring demographic variables in line with census data for the region. A total of 5,783 surveys were completed through the public involvement track.

Altogether, over 6,500 respondents participated in the Residential Preference Study.

Questionnaire design: The survey was primarily designed by Portland State University and Metro with input from DHM and included three sections:

- **Revealed Preference (RP)** – The revealed preference section of the survey focused on respondent's current housing and neighborhood decisions. Questions were asked to determine current neighborhood type, housing type, tenure, and home value. The combination of these variables was used to direct the respondent to the appropriate set of paired choices in the stated preference section of the questionnaire.
- **Stated Preference (SP)** – The stated preference section of the questionnaire presented respondents with 12 pairs of housing and neighborhood types. Statistical analysis of this data can be found in the complimentary document.
- **Attitudinal** – The third section of the survey presented respondents with a more traditional series of attitudinal questions, including their priorities and values.

This report contains analysis for the revealed preference and attitudinal sections of the questionnaire. All graphics and initial analysis is based on Track 1 sample with supporting analysis coming from Track 2.

Statement of Limitations: Any sampling of opinions or attitudes is subject to a margin of error. The margin of error is a standard statistical calculation that represents differences between the sample and total population at a confidence interval, or probability, calculated to be 95%. This means that there is a 95% probability that the sample taken for this study

would fall within the stated margins of error if compared with the results achieved from surveying the entire population.

For a sample size of 813, the margin of error would fall within +/-2.1% and +/-3.4% at the 95% confidence level. The reason for the difference lies in the fact that when response categories are relatively even in size, each is numerically smaller and thus slightly less able--on a statistical basis--to approximate the larger population.

DHM Research Background: DHM Research has been providing opinion research and consultation throughout the Pacific Northwest and other regions of the United States for over three decades. The firm is non-partisan and independent and specializes in research projects to support public policy making. www.dhmresearch.com

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2. | SUMMARY & OBSERVATIONS

A majority of respondents currently live in a single-family detached home, which is also the most preferred type of housing.

- 65% currently live in a single-family detached home and 80% prefer to live in a single-family detached home.
  - It should be noted that respondents were not asked to take any other variables into account when choosing their preferred housing type (i.e. commute time, price, etc.)
- 8% live in a single-family attached home and 7% prefer a single-family attached home.
- 28% live in a condo or apartment and 13% prefer a condo or apartment.

In general, respondents currently live in their preferred neighborhood type.

- 56% currently live in a suburban neighborhood.
  - 51% who currently live in a suburban area prefer this type of neighborhood.
  - Those who prefer suburban living tend to be from Clackamas and Washington counties, aged 35-54, and have a household income of $150,000 or more.
- 25% currently live in an urban neighborhood or town center.
  - 62% who currently live in an urban neighborhood or town center prefer this type of area.
  - Those who prefer urban neighborhood living tend to be from Multnomah County, aged 18-34, and have a household income of $25,000 to $50,000.
- 11% currently live in an urban central or downtown neighborhood.
  - 59% who currently live in an urban central or downtown area prefer this type of neighborhood.
  - Those who prefer urban central living tend to be from Multnomah County and have a household income of less than $25,000.
- 8% live in a rural neighborhood.
  - 70% who currently live in rural area prefer this type of neighborhood.
  - Those who prefer rural living tend to be from Clackamas and Clark counties, and have household incomes of between $25,000 and $50,000.

All other things being equal, people are most likely to choose to live in their current neighborhood type. To understand the importance of neighborhood type when people make housing choices, statistical analyses were conducted on the Stated Preference data. If respondents could pay the same price, have the same type of housing, same commute distance, etc. but in different neighborhood types, they are most likely to choose the neighborhood type that they currently live in.

- 44% who currently live in an urban central or downtown neighborhood are likely to choose that same type of area, all other factors held constant; the highest percentage of any neighborhood type.
- 39% who currently live in an urban neighborhood or town center are likely to choose that same type of area.
- 31% who currently live in a suburban neighborhood are likely to choose that same type of area; the lowest percentage of any neighborhood type.

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- 38% who currently live in a rural neighborhood are likely to choose that same type of area.

People's neighborhood type preferences can change when faced with making tradeoffs. Generally, when faced with tradeoffs that prompt them to reconsider their neighborhood preferences, those living in urban neighborhood or town center locations are split on whether to go more towards more or less density. Those living in suburban neighborhoods are twice as likely to go towards more density rather than less as opposed to rural).

- Neighborhood preferences change for some based on an increase in current housing price.
    - Residents of outer Portland or suburban neighborhoods are most sensitive to increased housing prices.
    - Residents of rural neighborhoods are least sensitive to an increase in housing price.
- Neighborhood preferences change for some if commute times increase.
    - Residents of the urban neighborhood or town centers are most sensitive to an increase in commute times.
    - Residents of rural neighborhoods are least sensitive to increased commute times.
- Neighborhood preferences change for some if the size of the residence decreases.
    - Residents of the urban central or downtown neighborhoods are most sensitive to decreases in residence size. This is likely because they are already living in relatively smaller residences.

Aside from price, safety of the neighborhood and characteristics of the house have the largest influence on where respondents choose to live.

- 44% rank housing price as their top influencer when choosing a home.
- Safety of the neighborhood (19% choosing this as their top priority) and characteristics of the house (19%) are the next most influential factors.
    - Quality of public schools was the number one influencer for just 3% of respondents and was ranked in the top three by 11%.

Respondents prefer a moderate amount of foot and vehicle traffic in their preferred neighborhood and a medium sized yard for their home.

- 55% prefer moderate foot and vehicle traffic during the day with some activities within a 15 minute walk.
    - 27% prefer less traffic.
        - Those living in Clackamas, Clark, and Washington counties are more likely to prefer "very light foot and vehicle traffic," than those in Multnomah County.
    - 18% prefer more traffic.
        - Those living in Multnomah County were twice as likely to desire "heavy foot and vehicle traffic" than those in Clackamas, Clark, and Washington counties.

- 32% prefer a medium sized yard separating their home from a neighbor.
  - 39% prefer a smaller yard (small private yard: 22%; small private courtyard: 14%).
  - 29% prefer a larger yard (large private yard: 16%; acreage: 13%).

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3. | KEY FINDINGS

3.1 | Current/Preferred Housing Types

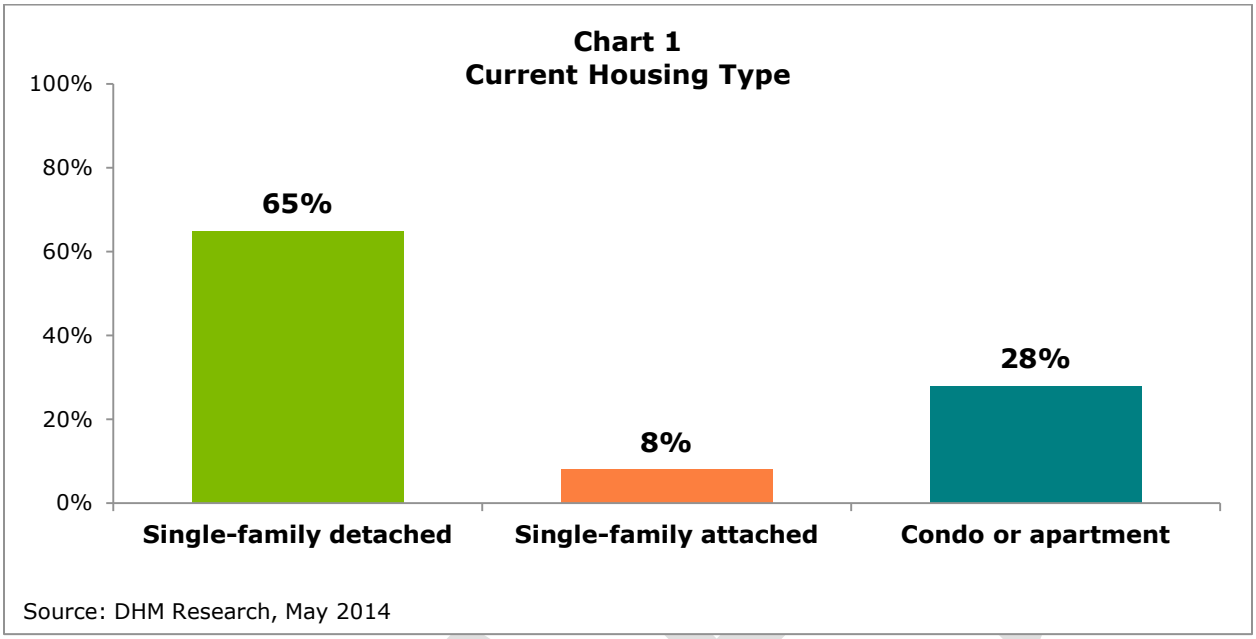
Respondents were given detailed descriptions and shown representative images of three different housing types.

Single Family Detached - These homes have a yard or patio, and do not share walls with other homes.

Single Family Attached - These homes share walls with other homes, but have their own private ground floor entrance. They are normally part of townhomes, row houses, duplexes, or triplexes and share a common yard or have a small private yard.

Condo or Apartment - These homes are in multiple story buildings with other units. There are often shared common areas and recreation facilities.

They were then asked what type of home they currently live in and what type of home they would prefer to live in.



Overall, two in three (65%) currently live in a single-family detached home. This is followed distantly by a condo or apartment (28%). Just one in ten currently live in a single family attached home (8%).

Demographic Differences: A majority of respondents in all four counties currently live in a single-family detached home. However, demographic differences in current housing type do exist.

Single-family detached home (65%)

- Clackamas County respondents (77%) vs. Multnomah (59%) and Washington (66%) counties
- Respondents age 35 and older (67-74%) vs. those younger (49%)
- Households making $100K or more (88-93%) vs. lower income households (47-76%)

Condo or apartment (28%)

- Multnomah County respondents (35%) vs. Clackamas (19%), Washington (23%), and Clark counties (19%)
- Respondents age 18-34 (41%) vs. those older (20-26%)
- Households making $50K or less (42-44%) vs. higher income households (7-25%)
- Renters (58%) vs. those who own their home (7%)

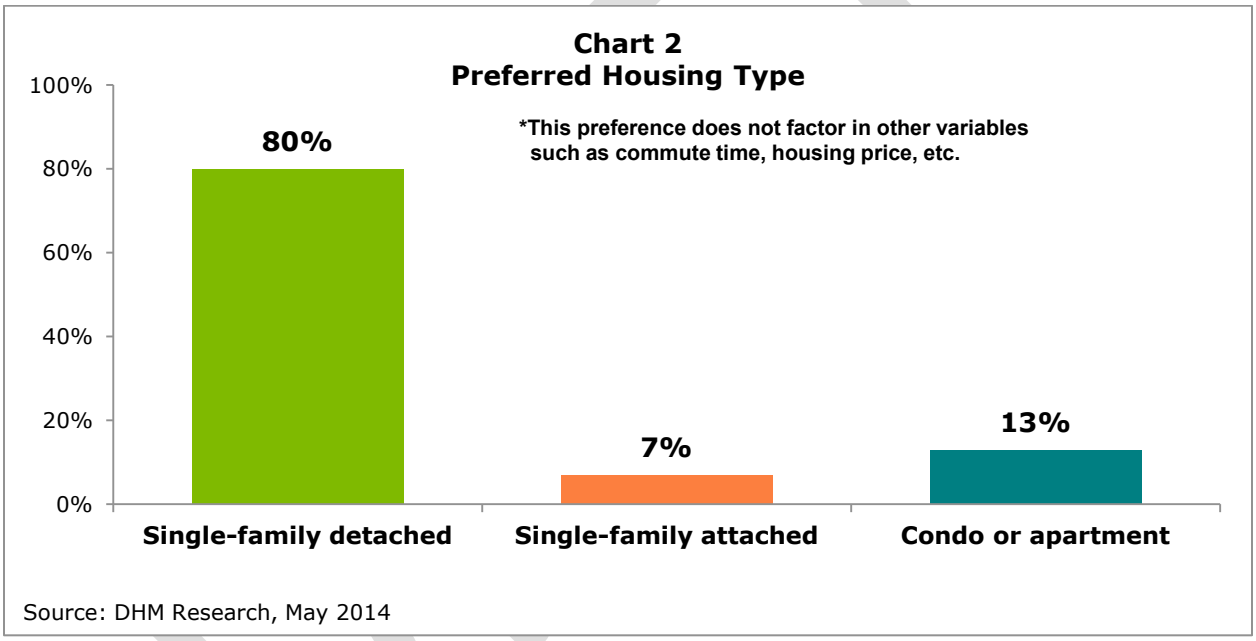
Single-family attached home (8%)

- Washington County respondents (11%) vs. Clackamas (4%) and Multnomah (6%) counties
- Renters (11%) vs. those who own their home (6%)

Public Engagement: Similar results are seen in terms of current housing type in the public engagement data. Seven in ten (68%) live in a single-family detached home; just under one in ten (7%) live in a single family attached home; and one in four (25%) live in a condo or apartment. Nearly all of the same demographic differences from the representative sample also exist.

3.2 | Preferred Housing

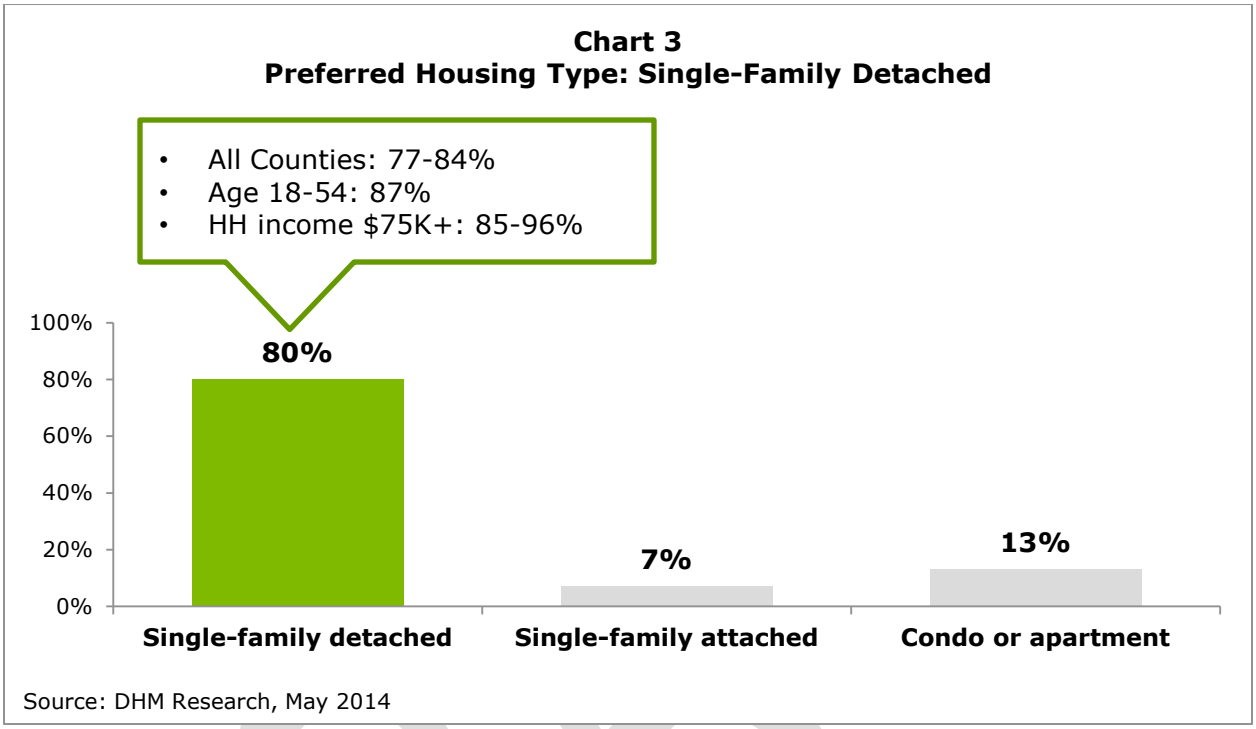
Not considering other variables, respondents were asked what their preferred housing type would be.



Overwhelmingly, the most preferred housing type among respondents is the single-family detached home (80%). This is followed distantly by a condo or apartment (13%) and a single-family attached home (7%). It should be noted that respondents were not asked to take any other variables into consideration such as price, neighborhood type, commute time, etc.

Single-family detached

A strong majority of all subgroups prefer single-family detached housing. Those most likely to prefer single-family detached housing include those under the age of 55 and higher income households.



Demographic Differences:

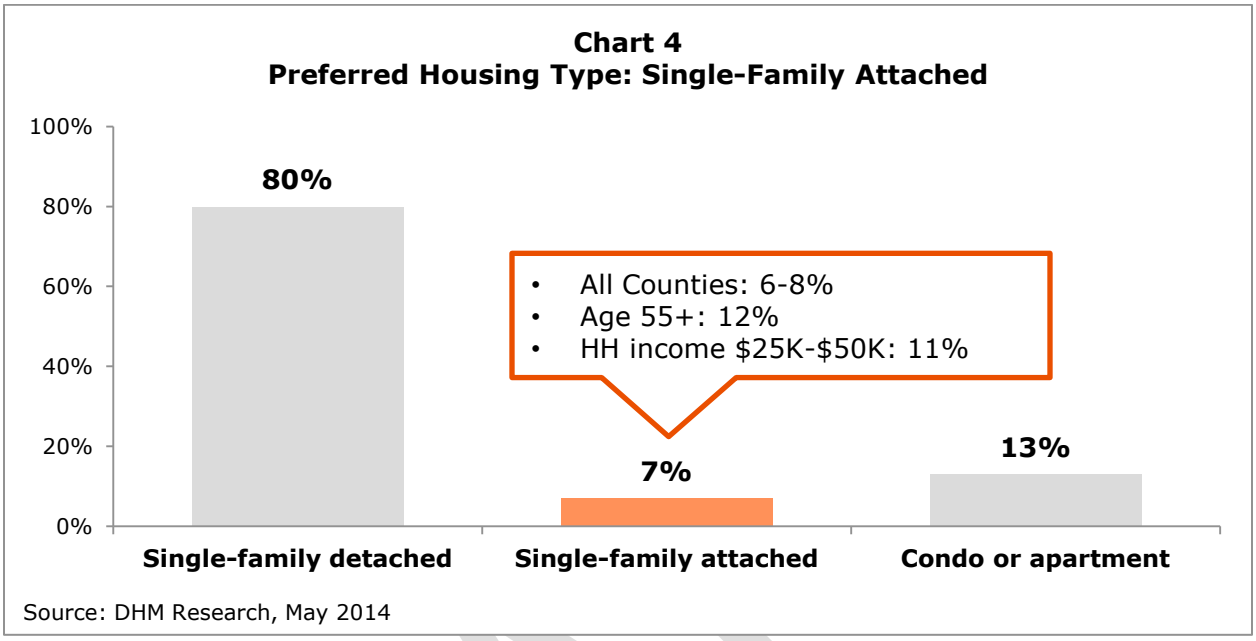
- Age 18-34 (88%) and 35-54 (87%) vs. age 55 and older (68%)
- Household income of $100K to $150K (87%) and $150K and higher (96%) vs. households with incomes less than $75K (73-75%)

Public Engagement: Similar preference is seen in the public engagement data. Eight in ten (81%) prefer a single-family detached home. This was the most preferred housing type across all counties, though some demographic differences do exist:

- Clackamas (88%), Washington (86%) and Clark counties (94%) vs. Multnomah County (73%)
- Household income of $50K and higher (83-86%) vs. households making less than $50K (70-74%)
- Those who own their home (87%) vs. renters (71%)

Single-family attached

Preference for single-family attached housing is fairly low across all subgroups, though there is higher preference among lower income and older respondents.



Demographic Differences:

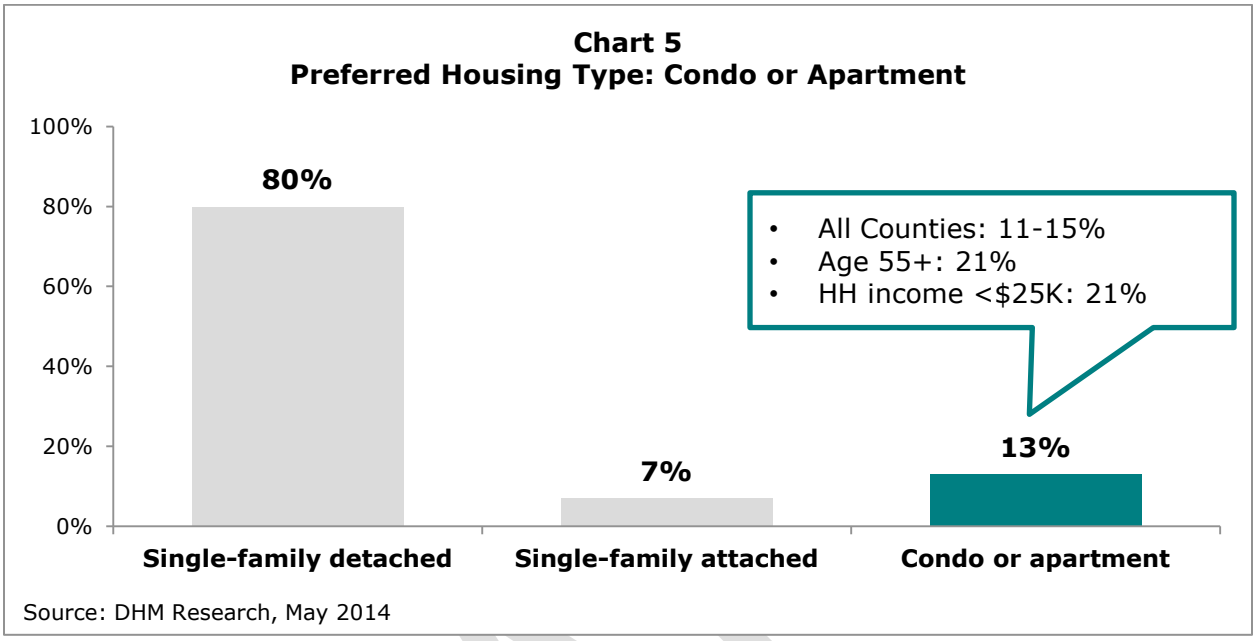
- Respondents age 55 and older (12%) vs. those younger (4%)

Public Engagement: Again, similar preference is seen in the public engagement data. One in ten (9%) prefer a single-family attached home. However, some different demographic differences emerge:

- Multnomah (11%) and Washington (8%) counties vs. Clackamas County (5%)
- Respondents age 18-34 (13%) vs. those older (6-9%)
- Households making $25K-$50K (13%) vs. higher income households (6-8%)
- Renters (12%) vs. those who own their home (6%)

Condo or apartment

Overall, about one in ten (13%) prefer to live in a condo or apartment. Higher preference for this type of housing is seen among older and lower income respondents.



Demographic Differences:

- Age 55 and older (21%) vs. those younger (8%)
- Household incomes of less than $75K (15%) vs. households making $150K or more (2%)

Public Engagement: Similar preference is also seen for living in a condo or apartment in the public engagement data. One in ten (11%) prefer a condo or apartment. However, some different demographic differences emerge:

- Multnomah County (15%) vs. Clackamas (7%) and Washington (6%) counties
- Age 55 and older (15%) vs. those younger (7-10%)
- Household incomes of less than $25K (18%) vs. higher income households (8-13%)
- Renters (17%) vs. those who own their home (6%)

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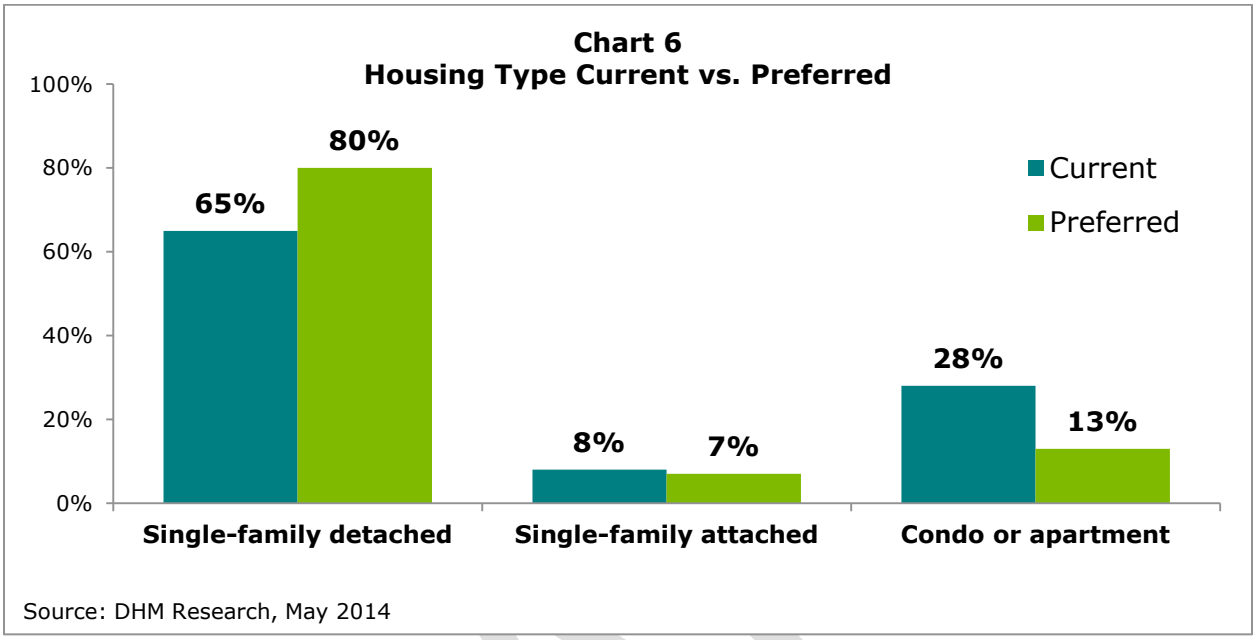
3.2 | Current vs. Preferred Housing

When looking at preferred housing, compared to current housing we see that not all respondents are currently living in the type of house that they would prefer to.



There is a 15 point gap between those who currently live in a single-family detached house (65%) and those who prefer to live in this type of house (80%). We also observe an opposite gap in the percentage of respondents that currently live in a condo or apartment (28%) compared to those who prefer to (13%).

Current: Single-family detached

Respondents who currently live in a single-family detached home largely prefer this type of housing. Less than one in ten would prefer to live in a single-family attached home or a condo or apartment. Preferred housing type among those currently living in a single-family detached home:

- **Single-family detached (87%)**
- Single-family attached (5%)
- Condo or apartment (8%)

Public Engagement: Similar to the representative sample, nearly all who currently live in a single-family detached home prefer this type of housing. Less than one in ten prefer to live in a single-family attached home or a condo or apartment.

- **Single-family detached (92%)**
- Single-family attached (5%)
- Condo or apartment (4%)

Current: Single-family attached

Respondents who currently live in a single-family attached home largely do not prefer this type of housing. Most would prefer to live in a single-family detached home. One in ten would prefer to live in their current type of housing or a condo or apartment. Preferred housing type among those currently living in a single-family attached home:

- Single-family detached (78%)
- **Single-family attached (11%)**
- Condo or apartment (11%)

Public Engagement: Again, similar to the representative sample, a majority who currently live in a single-family attached home prefer to live in a different type of housing. Nearly seven in ten prefer a single-family detached home; three in ten prefer a single-family attached home; and one in ten prefer a condo or apartment.

- Single-family detached (67%)
- **Single-family attached (28%)**
- Condo or apartment (8%)

Current: Condo or apartment

Respondents who currently live in a condo or apartment generally do not prefer this type of housing. A majority would prefer to live in a single-family detached home. One in ten would prefer to live in a single-family attached home, while one in four a condo or apartment. Preferred housing type among those currently living in a condo or apartment:

- Single-family detached (64%)
- Single-family attached (10%)
- **Condo or apartment (26%)**

Public Engagement: As was seen in the representative sample, a majority who currently live in a condo or apartment would prefer to live in a single-family detached home. Just over one in ten prefer a single-family attached home, and three in ten prefer their current type of housing, a condo or apartment.

- Single-family detached (56%)
- Single-family attached (14%)
- **Condo or apartment (30%)**

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3.1 | Current/Preferred Neighborhood Types

Respondents were given detailed descriptions and shown representative images of four different neighborhood types.

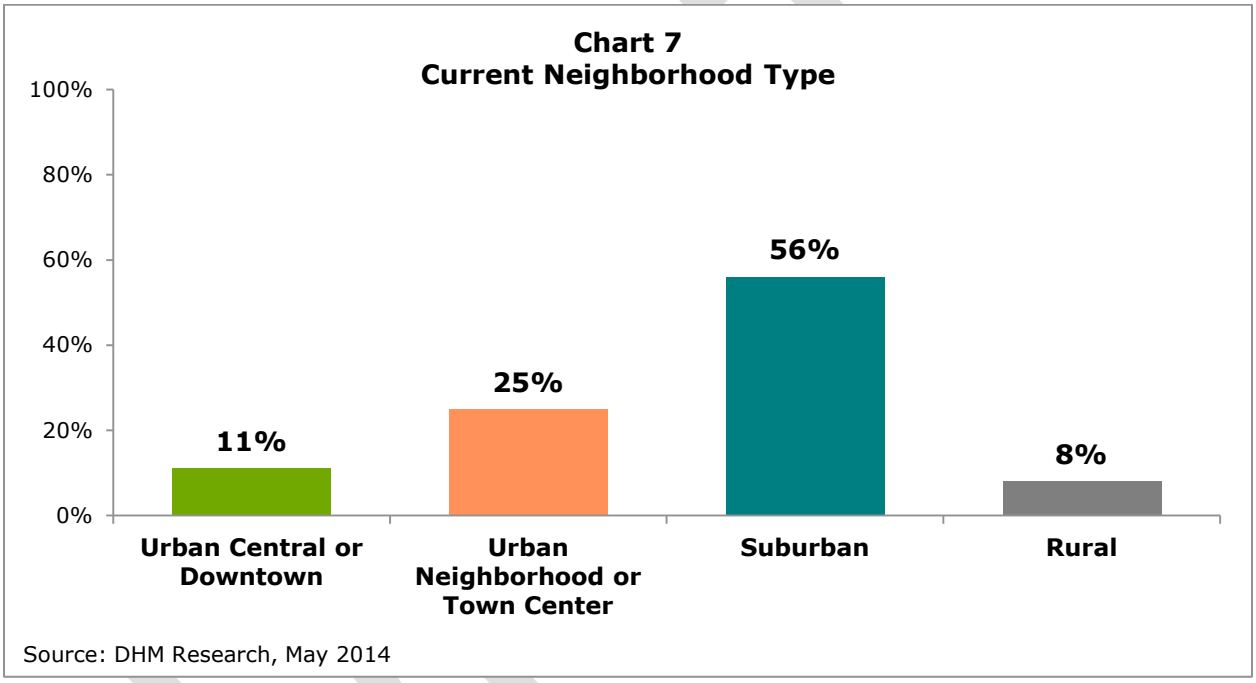
Urban Central or Downtown - These are neighborhoods that have activity during the day and night. Restaurants, shops, parks, and transit are within a short walk. People mostly live in condos or apartment buildings that are five stories high or taller. These neighborhoods have continuous sidewalks, crosswalks, bicycle lanes, and crossing signals.

Urban Neighborhood or Town Center - These are neighborhoods that have activity during certain times. Restaurants, shops, parks, and transit are within a short walk. Most people live in single-family homes, but these neighborhoods also have condos and apartments mixed in, particularly along major streets and in commercial areas, where buildings are typically two to six stories high. These neighborhoods have continuous sidewalks, crosswalks, bicycle lanes, and crossing signals.

Outer Portland or Suburban - These neighborhoods may or may not have light activity during the day. Restaurants, shops, parks, and transit stops are generally not within walking distance and most people drive to get there. Most people live in single-family homes with yards, but some live in apartment buildings. The large majority of buildings in these neighborhoods are one or two-stories high. Sidewalks may or may not be present and crosswalks, bicycle lanes, and crossing signals are sparse.

Rural - These are quiet areas away from the city in agricultural or forest areas. People need to drive to get to restaurants, shops, parks, or transit. They mostly live in single-family homes on large lots or acreage and are further away from other homes. There are no sidewalks, crosswalks, bicycle lanes, or crossing signals.

They were then asked what type of neighborhood they currently live in and where they would prefer to live.



More than half (56%) live in a suburban neighborhood. This is followed distantly by an urban or town center neighborhood (25%). Just one in ten live in an urban central or downtown neighborhood (11%) or in a rural neighborhood (8%).

Demographic Differences: A majority of respondents in all four counties, with the exception of Multnomah, currently live in a suburban neighborhood. However, demographic differences in current neighborhood type do exist.

Suburban (56%)

- Washington County (81%) vs. Clackamas (71%), Multnomah (35%), and Clark (62%) counties
- Households with incomes of $50K or more (59-69%) vs. lower income households (44-49%)
- Those who own their home (62%) vs. renter (46%)

Urban neighborhood or town center (25%)

- Multnomah County (41%) vs. Clackamas (11%), Washington (10%), and Clark (15%) counties
- Renters (31%) vs. those who own their home (22%)

Urban central of downtown (11%)

- Multnomah County (20%) vs. Clackamas (2%), Washington (3%), and Clark (3%) counties
- Households making less than $25K (26%) vs. higher income households (6-10%)
- Renters (19%) vs. those who own their home (6%)

Rural (8%)

- Clackamas (15%) and Clark (20%) counties vs. Multnomah (3%) and Washington (7%) counties
- Those who own their home (10%) vs. renters (4%)

Public Engagement: The public engagement data differs slightly in terms of current neighborhood. Close to half (47%) live in a suburban neighborhood, nine points less than the representative sample. This is followed by an urban or town center neighborhood (39%), 14 points more than the representative sample. Similar to the representative sample, one in ten live in an urban central or downtown neighborhood (7%) or in a rural neighborhood (8%).

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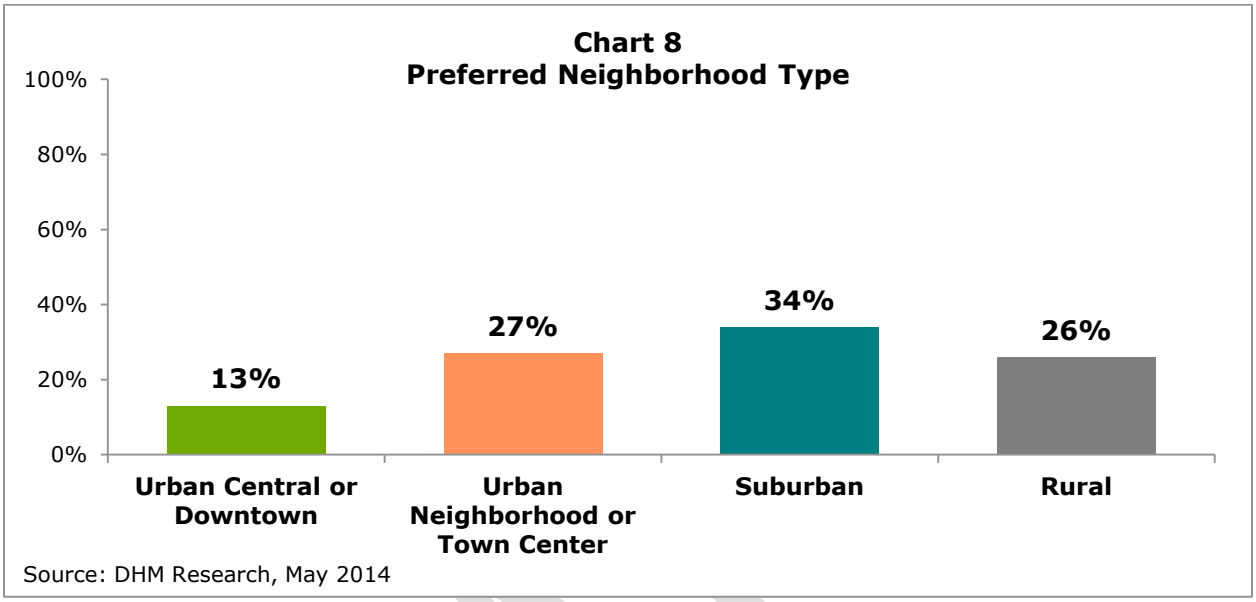
3.2 | Preferred Neighborhood

Not considering other variables, respondents were asked what their preferred neighborhood type would be.



Overall, respondents are fairly split on their neighborhood preferences. Four in ten would prefer to live in an urban neighborhood, either urban central or downtown (13%) or an urban town center (27%). One in three (34%) would prefer to live in a suburban neighborhood, while one in four (26%) would prefer to live in a rural neighborhood.

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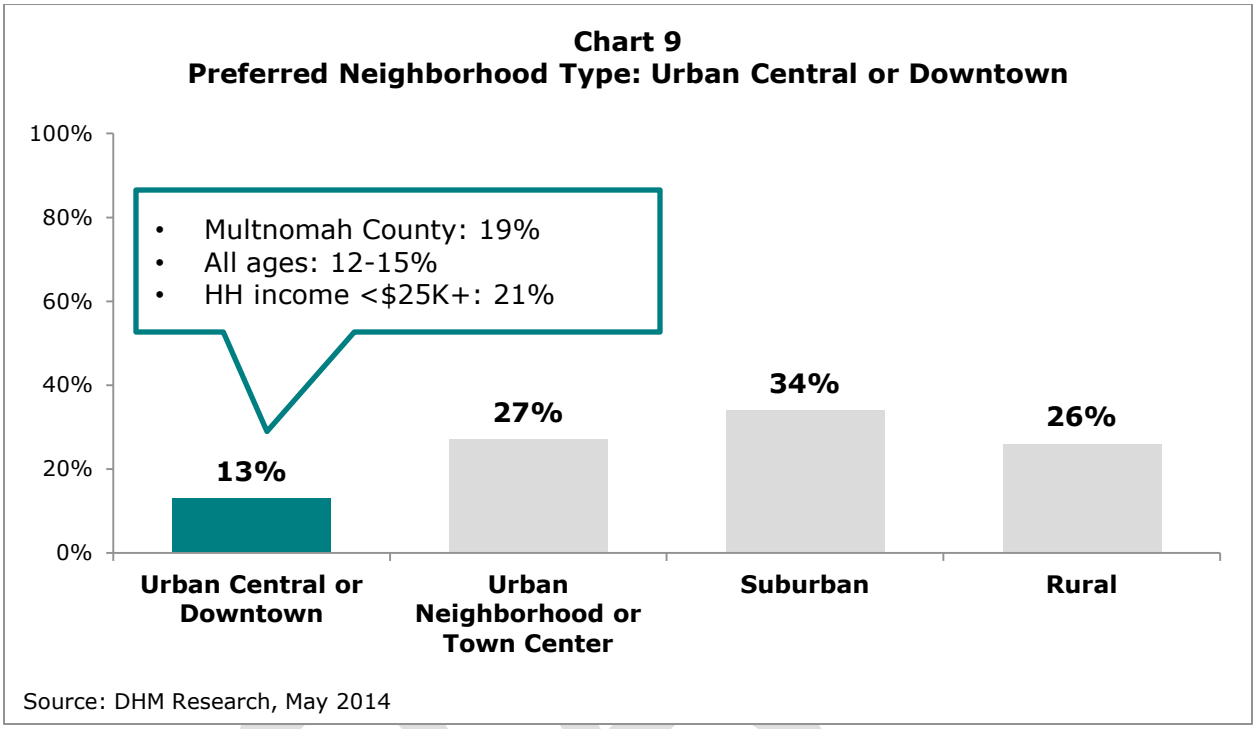
Urban central or downtown

One in ten would prefer to live in an urban central or downtown neighborhood. Respondents currently living in Multnomah County and those from lower income households are most likely to prefer this type of neighborhood.



Demographic Differences:

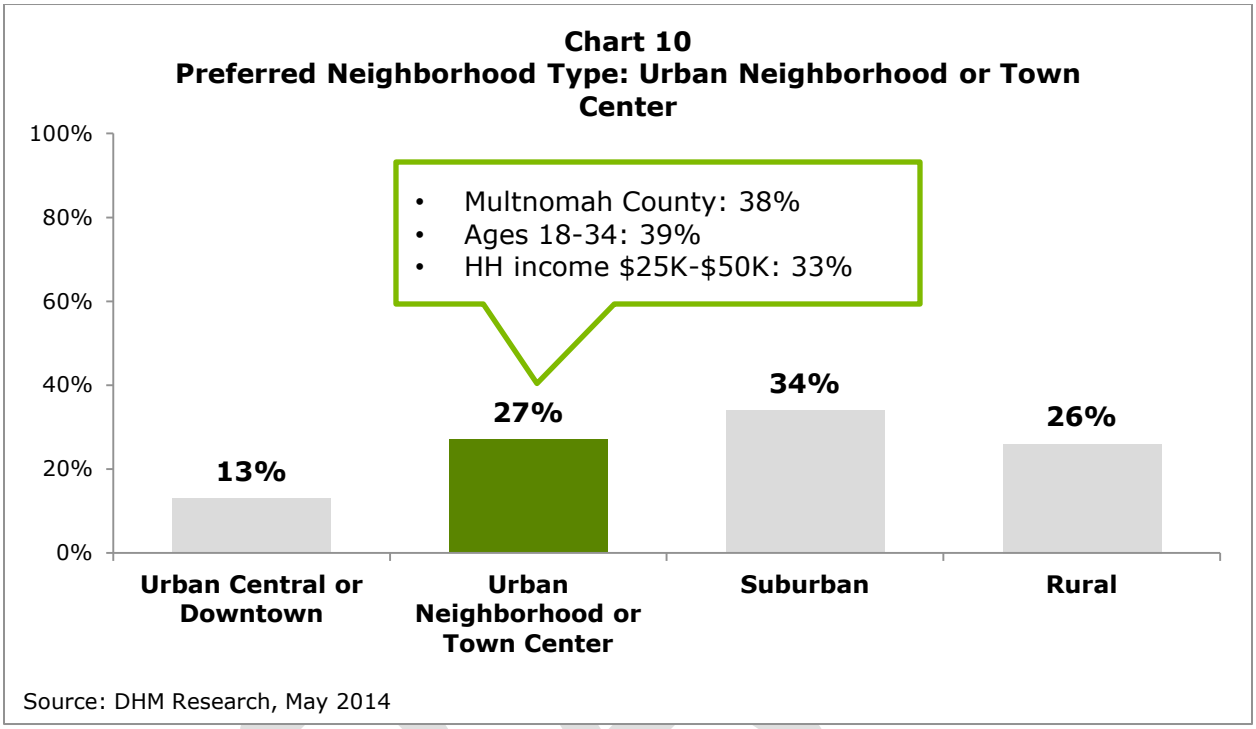
- Multnomah County (19%) vs. Clackamas (8%), Washington (7%), and Clark (11%) counties
- Renters (18%) vs. those who own their home (10%)

Public Engagement: Similar preference is given to living in an urban central or downtown neighborhood in the public engagement data. One in ten (10%) prefer to live in this type of neighborhood. Similar demographic differences were seen as well:

- Multnomah County (16%) vs. Clackamas (5%) and Washington (5%) counties
- Renters (14%) vs. those who own their home (7%)

Urban neighborhood or town center

One in four respondents would prefer to live in an urban neighborhood or town center. Respondents from Multnomah County as well as those who are younger are most likely to prefer this type of neighborhood.



Demographic Differences:

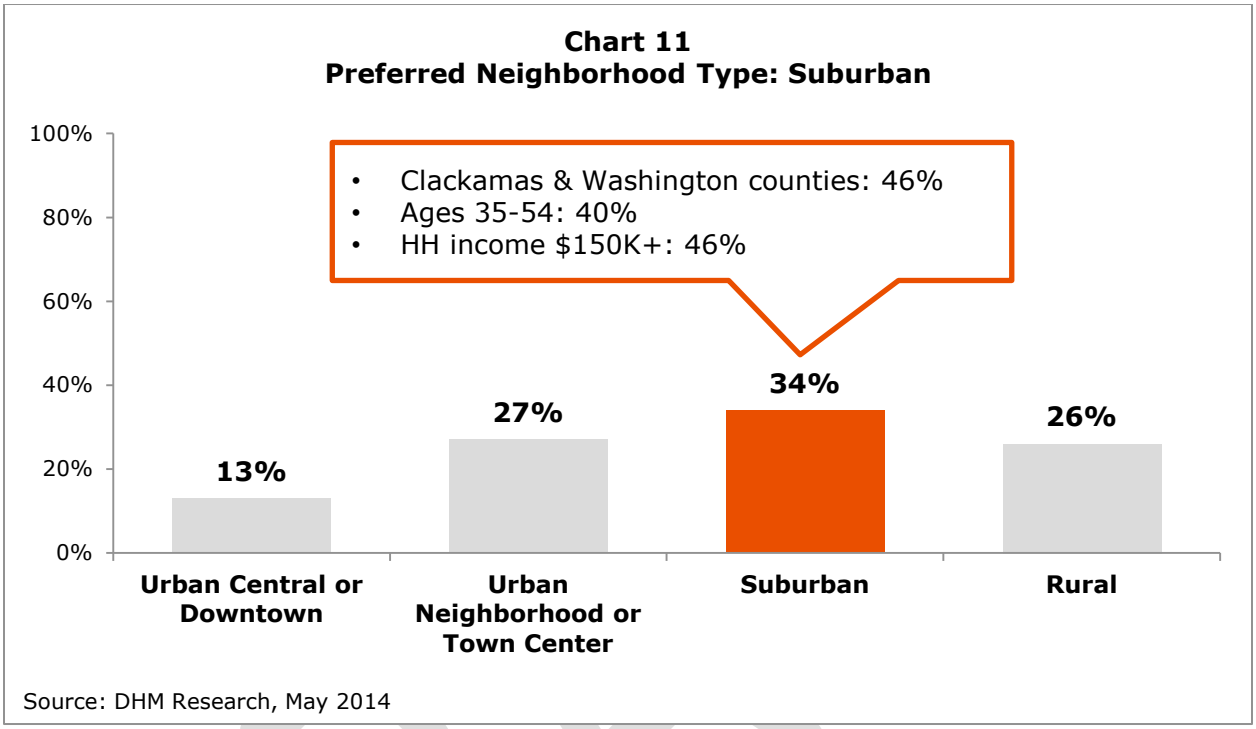
- Multnomah County (38%) vs. Clackamas (11%), Washington (18%), and Clark (19%) counties
- Age 18-34 (39%) vs. those older (22-24%)

Public Engagement: Respondents from the public engagement track are more likely than those from the representative sample to prefer an urban neighborhood or town center (48% vs. 27% respectively). However, demographic similarities exist:

- Multnomah County (65%) vs. Clackamas (28%) and Washington (37%) counties
- Age 18-34 (62%) vs. those older (41-49%)
- Renters (52%) vs. those who own their home (46%)

Suburban neighborhood

One in three respondents would prefer to live in a suburban neighborhood. Respondents most likely to prefer this type of neighborhood include those from Clackamas and Washington counties, age 35-54, and from higher income households.



Demographic Differences:

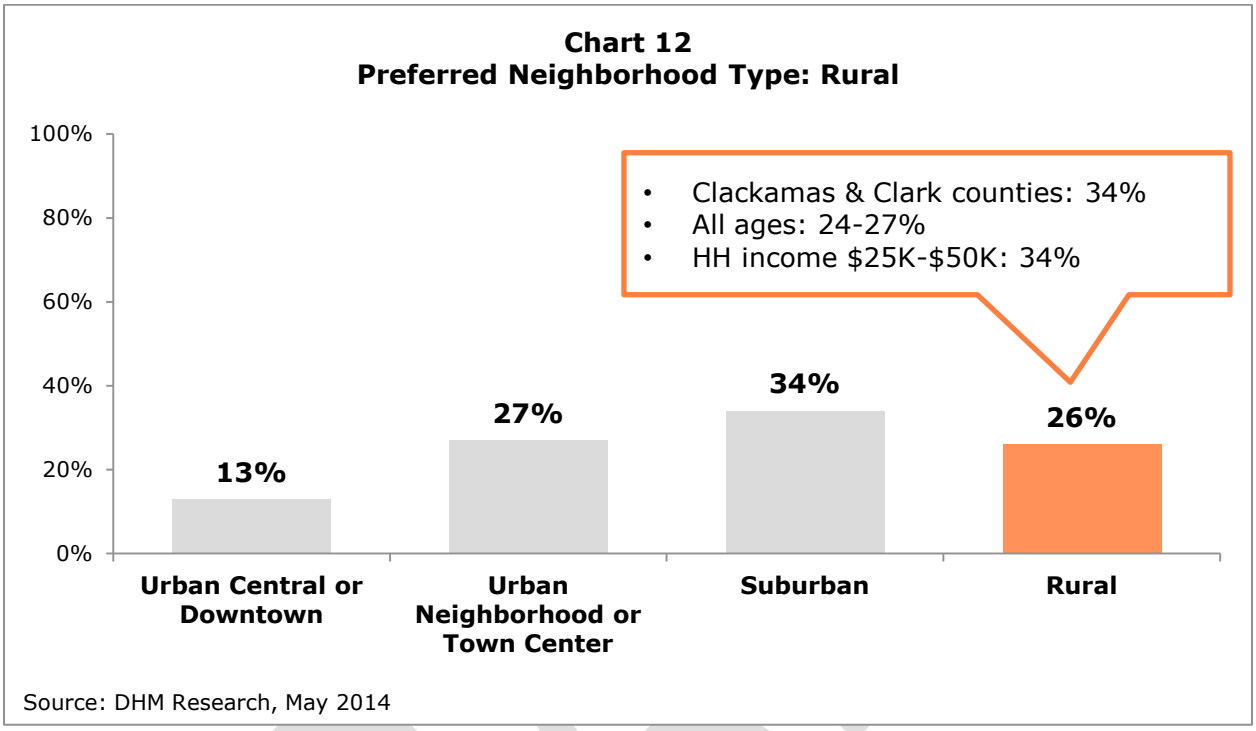
- Clackamas (47%), Washington (45%), and Clark (36%) counties vs. Multnomah County (23%)
- Household income of $50K or more (35-46%) vs. lower income households (23-33%)
- Those who own their home (39%) vs. renters (26%)

Public Engagement: Respondents from the public engagement track are less likely than those from the representative sample to prefer a suburban neighborhood (22% vs. 34% respectively). However, there are demographic similarities:

- Clackamas (32%) and Washington (35%) counties vs. Multnomah County (10%)
- Household income of $50K or more (23-26%) vs. lower income households (18-19%)
- Those who own their home (26%) vs. renters (17%)

Rural neighborhood

Overall, one in four respondents would prefer to live in a rural neighborhood. Those most likely to prefer this type of neighborhood currently live in Clackamas and Clark counties.



Demographic Differences:

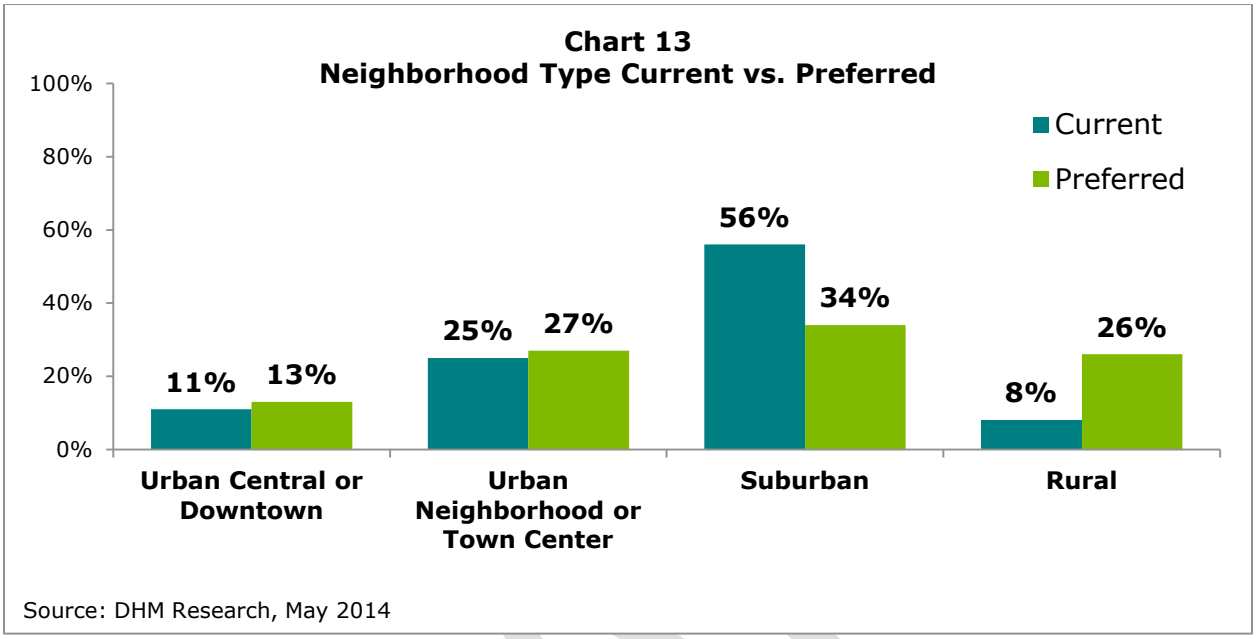
- Clackamas (34%), Washington (30%), and Clark (34%) counties vs. Multnomah County (20%)

Public Engagement: Respondents from the public engagement track are slightly less likely than those from the representative sample to prefer a rural neighborhood (19% vs. 26% respectively). However, there are some demographic similarities by area:

- Clackamas (35%), Washington (23%), and Clark (31%) counties vs. Multnomah County (9%)
- Age 35 and older (21%) vs. those younger (11%)
- Those who own their home (21%) vs. Renters (17%)

3.2 | Current vs. Preferred Neighborhood

When looking at preferred neighborhood compared to current neighborhood we see that largely, many respondents are currently living in the type of neighborhood that they would prefer to.



There is a 18 point gap between those who currently live in a rural neighborhood (8%) and those who prefer to live in this type of area (26%). We also see an opposite gap in the percentage of respondents that currently live in a suburban neighborhood (56%) compared to those who prefer to (34%).

Current: Urban central or downtown

A majority of respondents who currently live in an urban central or downtown neighborhood prefer to live in this area. One in ten would prefer to live in an urban neighborhood or town center or a rural neighborhood. Two in ten would prefer a suburban neighborhood. Preferred neighborhood among those currently living in an urban central or downtown neighborhood:

- **Urban central or downtown (55%)**
- Urban neighborhood or town center (13%)
- Suburban (17%)
- Rural (13%)

Public Engagement: Similar to results found in the representative sample, a majority of respondents who currently live in an urban central or downtown neighborhood prefer to live in this area. One in four would prefer to live in an urban neighborhood or town center. Two in ten would prefer a suburban or rural neighborhood.

Urban central or downtown (59%)

- **Urban central or downtown (59%)**
- Urban neighborhood or town center (24%)
- Suburban (10%)
- Rural (8%)

Current: Urban neighborhood or town center

A majority of respondents who currently live in an urban neighborhood or town center prefer to live in this area. One in ten would prefer to live in a central or downtown neighborhood or a suburban neighborhood. Two in ten would prefer a rural neighborhood. Preferred neighborhood among those currently living in an urban neighborhood or town center:

- Urban central or downtown (11%)
- **Urban neighborhood or town center (62%)**
- Suburban (8%)
- Rural (19%)

Public Engagement: As was seen in the representative sample, a majority of respondents who currently live in an urban neighborhood or town center prefer to live in this area. One in ten would prefer to live in a central or downtown neighborhood or a rural neighborhood. Just 4% would prefer a suburban neighborhood.

- Urban central or downtown (9%)
- **Urban neighborhood or town center (78%)**
- Suburban (4%)
- Rural (9%)

Current: Suburban

A majority of respondents who currently live in a suburban neighborhood prefer to live in this area. Two in ten would prefer to live in an urban neighborhood or town center or a suburban neighborhood. Less than one in ten would prefer an urban central or downtown neighborhood. Preferred neighborhood among those currently living in a suburban neighborhood:

- Urban central or downtown (6%)
- Urban neighborhood or town center (17%)
- **Suburban (51%)**
- Rural (26%)

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Public Engagement: A plurality of respondents who currently live in a suburban neighborhood prefer to live in this area. However, there is some desire to live in other types of neighborhoods as well. One in three would prefer to live in an urban neighborhood or town center, and two in ten a rural neighborhood. Just 5% would prefer living in an urban central or downtown neighborhood.

- Urban central or downtown (5%)
- Urban neighborhood or town center (33%)
- **Suburban (41%)**
- Rural (20%)

Current: Rural

Again, a strong majority of respondents who currently live in a rural neighborhood prefer to live in this area. There is a small preference for living in an urban central or downtown neighborhood or suburban neighborhood. Very few who currently live in a rural neighborhood would prefer to live in an urban neighborhood or town center. Preferred neighborhood among those currently living in a rural neighborhood:

- Urban central or downtown (10%)
- Urban neighborhood or town center (3%)
- Suburban (16%)
- **Rural (70%)**

Public Engagement: Again, similar to the representative sample, a strong majority of respondents who currently live in a rural neighborhood prefer to live in this area. Just one in ten or fewer prefer to live in each of the other types of neighborhoods.

- Urban central or downtown (5%)
- Urban neighborhood or town center (11%)
- Suburban (7%)
- **Rural (76%)**

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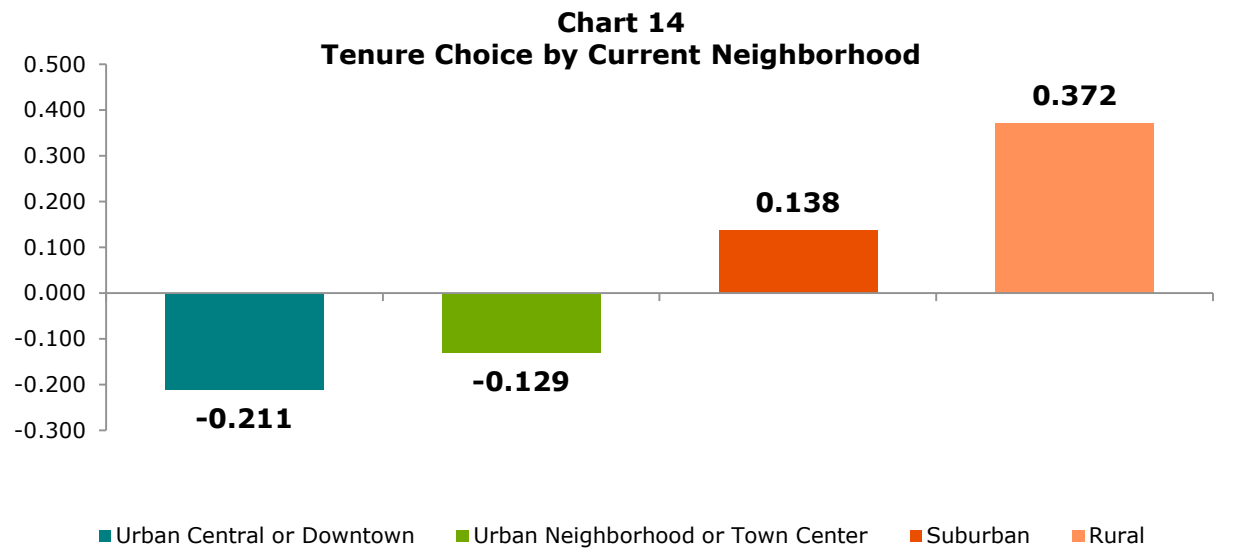
3.3 | Stated Preference Neighborhood Sensitivity

The following section contains initial findings of the stated preference data. Analysis was performed by Metro on a data file containing both managed panel and public engagement respondents combined. This was possible due to the similarities between the data files and allows for a larger sample size for statistical analysis.

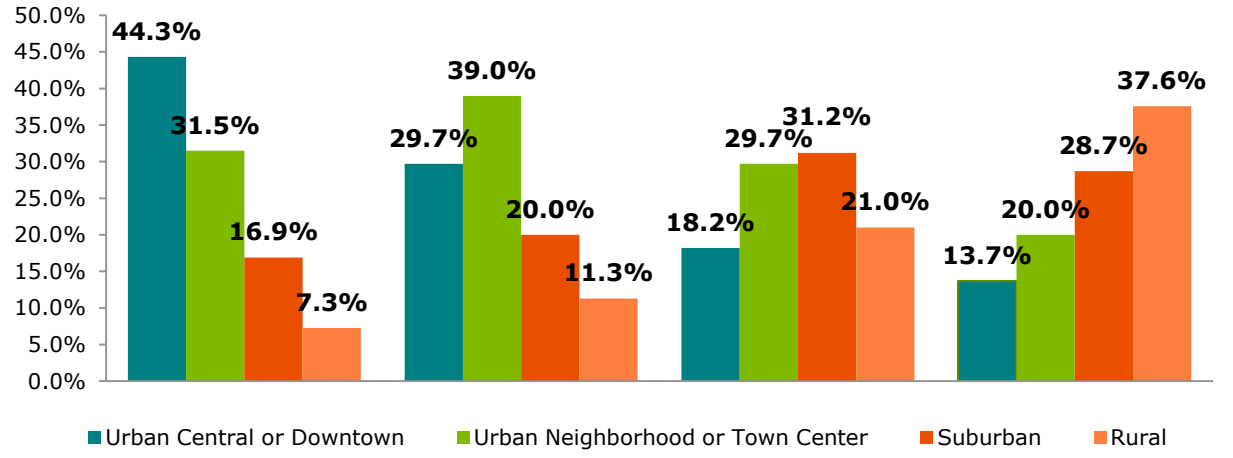
The chart below shows propensity to own a home by current neighborhood type. Negative own numbers mean that owning is less desirable than renting; while positive own numbers mean that owning is more desirable than renting. (Note that in the following chart, rent is always 0. Statistically we need to designate one state (own or rent) as the base state).



Source: DHM Research, May 2014

Residents living in urban central or downtown neighborhoods regard renting as preferable (slightly) over owning when housing type, size and price are held constant. This pattern also persists for residents of urban neighborhoods or town centers; though the difference between owning and renting is not statistically significant. In suburban and rural neighborhoods owning is predominant with the difference getting more pronounced as you move to rural.

The following chart displays the probability distribution, where the chances of choosing a neighborhood type is expressed as a percentage given that price, tenure, type, commute time, etc. are all the same between neighborhoods. Note that when all attributes are the same except the neighborhood of the respondent's choice; all choice alternatives could be selected.

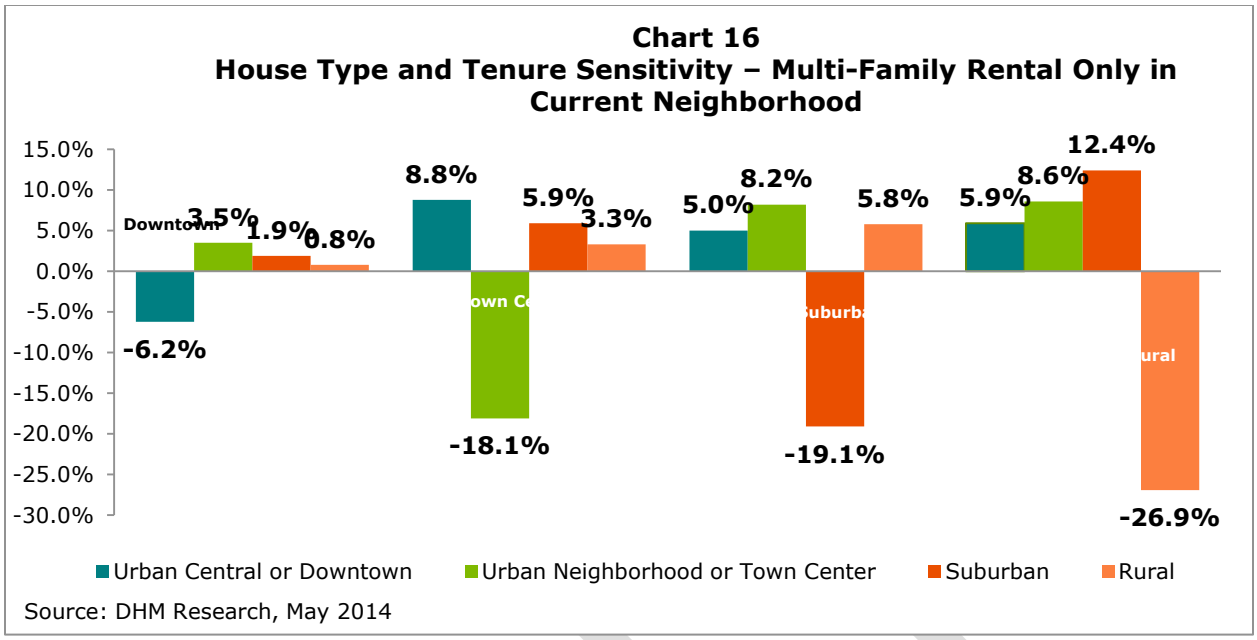


Source: DHM Research, May 2014

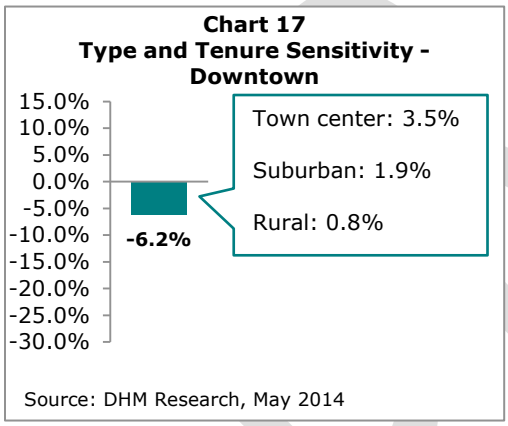
If respondents could pay the same price, have the same type of housing, same commute time, etc. but in different neighborhood types, they are most likely to choose the neighborhood type that they currently live in. However, in no case is there a majority of respondents that would be likely to choose their current neighborhood type. Residents of urban central or downtown neighborhoods have the highest likelihood of choosing their current neighborhood type (44%) and residents of suburban neighborhoods have the lowest likelihood (31%).

Of those whose neighborhood preference would change, respondents currently living in an urban central or downtown neighborhood are most likely to prefer an urban neighborhood or town center (31.5%); respondents in an urban neighborhood or town center are most likely to prefer an urban central or downtown neighborhood (29.7%); those in a suburban neighborhood prefer an urban neighborhood or town center (29.7%); and those in a rural neighborhood prefer suburban neighborhoods (28.7%).

In the following chart, tenure and type of housing is limited to rental and multi-family in respondent's current neighborhood. We then assess the probability of changing their neighborhood preference to a different type of neighborhood. Negative values indicate the percentage of respondents whose neighborhood preference would change based on the limited tenure and housing type. Positive values indicate neighborhood preference for those that would move.

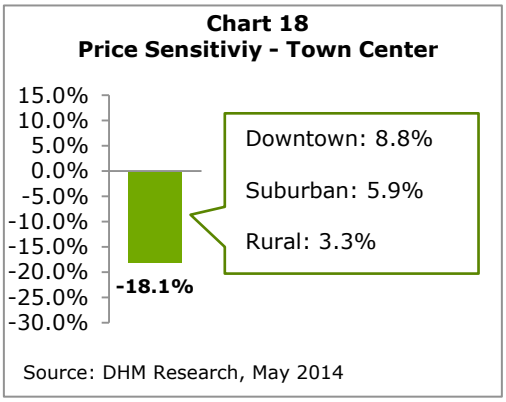


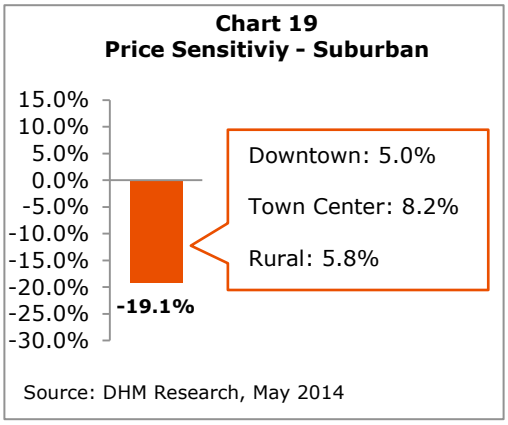
Respondents in urban central or downtown neighborhoods are the least likely change their neighborhood preference when tenure and type of housing is limited to rental and multi-family in their current neighborhood, while those living in rural neighborhoods show the highest likelihood to change preference. Likelihood to change neighborhood preference is similar among those in both urban town center and suburban neighborhoods.



Six percent (6.2%) who currently live in an urban central or downtown neighborhood would prefer a different type of neighborhood if tenure and type of housing are limited to rental and multi-family in their current neighborhood; the least sensitive of all neighborhoods. Those whose neighborhood preference would change are most likely to change preference to an urban neighborhood or town center (3.5%). Fewer would prefer a suburban neighborhood (1.9%), while fewer still would prefer a rural neighborhood (0.8%).

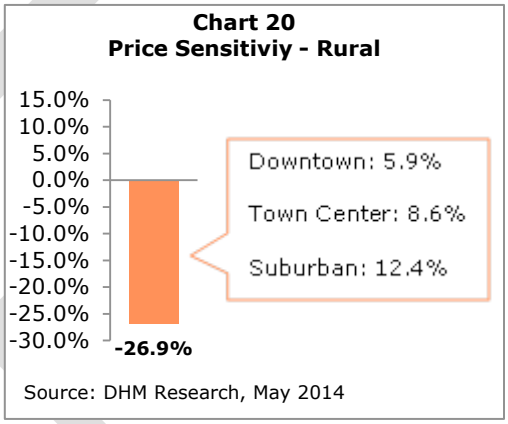
Eighteen percent (18.1%) who currently live in an urban neighborhood or town center would prefer a different type of neighborhood if tenure and type of housing are limited to rental and multi-family in their current neighborhood. Those whose neighborhood preference would change are most likely to change preference to an urban central or downtown neighborhood (8.8%). Fewer would prefer a suburban neighborhood (5.9%), while fewer still would prefer a rural neighborhood (3.3%).





Nineteen percent (19.1%) of respondents who currently live in a suburban neighborhood would prefer a different type of neighborhood if tenure and type of housing is limited to rental and multi-family in their current neighborhood. Those whose neighborhood preference would change are most likely to change preference to an urban neighborhood or town center (8.2%). Fewer would prefer a rural neighborhood (5.8%) or an urban central or downtown neighborhood (5.0%).

More than one in four (26.9%) respondents currently living in rural neighborhoods would prefer a different type of neighborhood if tenure and type of housing is limited to rental and multi-family in their current neighborhood; the most sensitive of all neighborhoods. Of those whose neighborhood preference would change, they are most likely to change preference to a suburban neighborhood (12.4%) Fewer would prefer a town center (8.6%), while fewer still would prefer to an urban central or downtown neighborhood (5.9%).



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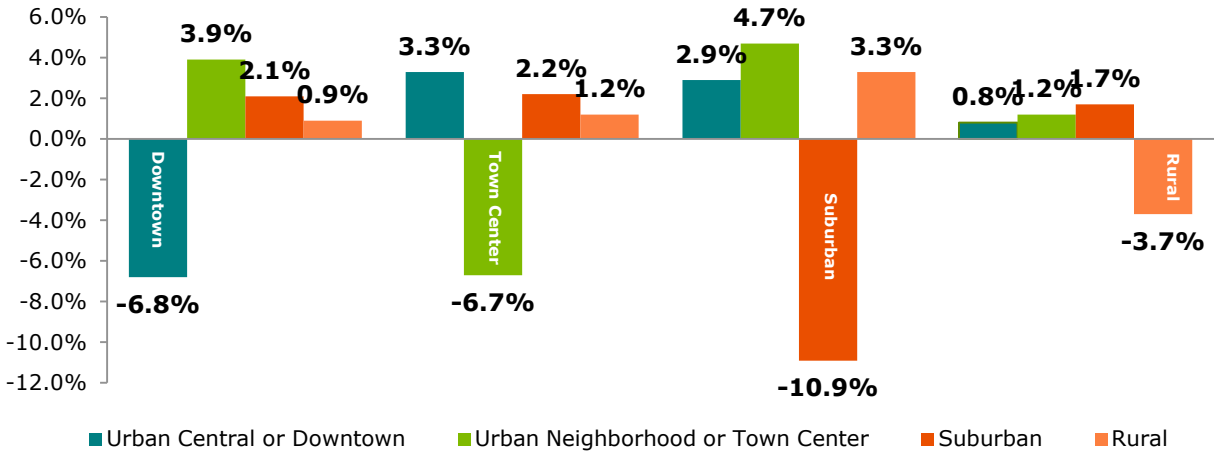
In the following chart, the price of housing has increased in the selected neighborhood by 1/3. We then assess the probability of changing their neighborhood preference to a different type of neighborhood considering an identical house with identical commute time, etc. in a different neighborhood. Negative values indicate the percentage of respondents whose neighborhood preference would change based on the price increase in their current neighborhood. Positive values indicate neighborhood preference for those that would shift.

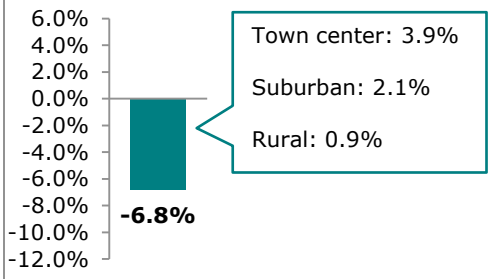
Chart 21
Housing Cost Sensitivity - 1/3 Increase Only in Current Neighborhood



Source: DHM Research, May 2014

Respondents in rural neighborhoods are the least likely change their neighborhood preference when price increases, while those living in suburban neighborhoods show the highest likelihood to change preference. Likelihood to change neighborhood preference is fairly modest, and equal, among those in both urban central and those who currently live in urban town center neighborhoods.

Chart 22
Price Sensitivity - Downtown

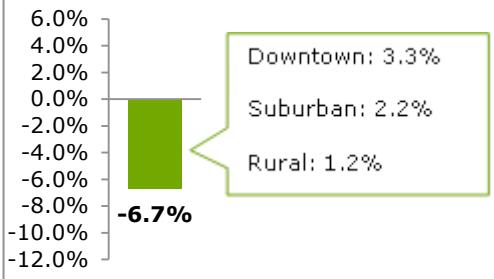


Source: DHM Research, May 2014

Just under seven percent (6.8%) who currently live in an urban central or downtown neighborhood would prefer an identical house with identical commute time, etc. in a different neighborhood if the price of their home in their current neighborhood increased by 1/3. They are most likely to change preference to an urban neighborhood or town center (3.9%). Fewer would prefer a suburban neighborhood (2.9%), while fewer still would prefer a rural neighborhood (0.9%).

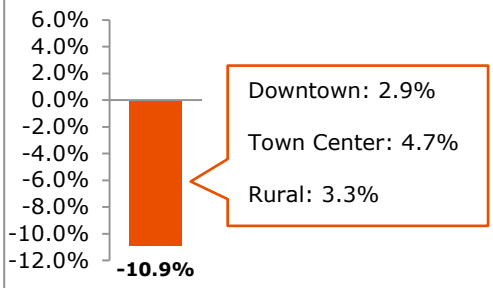
Just under seven percent (6.7%) who currently live in an urban neighborhood or town center would prefer an identical house with identical commute time, etc. in a different neighborhood if the price of their home in their current neighborhood increased by 1/3. They are most likely to change preference to an urban central or downtown neighborhood (3.3%). Fewer would prefer a suburban neighborhood (2.2%), while fewer still would prefer a rural neighborhood (1.2%).

Chart 23
Price Sensitiviy - Town Center



Source: DHM Research, May 2014

Chart 24
Price Sensitiviy - Suburban

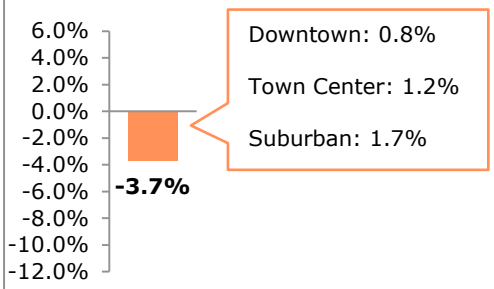


Source: DHM Research, May 2014

Eleven percent (10.9%) of respondents who currently live in a suburban neighborhood would prefer an identical house with identical commute time, etc. in a different neighborhood if the price of their home in their current neighborhood increased by 1/3; the most price sensitive of all neighborhoods. They are most likely to change preference to an urban neighborhood or town center (4.7%). Fewer would prefer a rural neighborhood (3.3%), while fewer still would prefer an urban central or downtown neighborhood (2.9%).

Nearly four percent (3.7%) of respondents currently living in rural neighborhoods would prefer an identical house with identical commute time, etc. in a different neighborhood if the price of their home in their current neighborhood increased by 1/3; the least price sensitive of all neighborhoods. They are most likely to change preference to a suburban neighborhood (1.7%) or town center (1.2%), while they are least likely to prefer an urban central or downtown neighborhood (0.8%).

Chart 25
Price Sensitiviy - Rural



Source: DHM Research, May 2014

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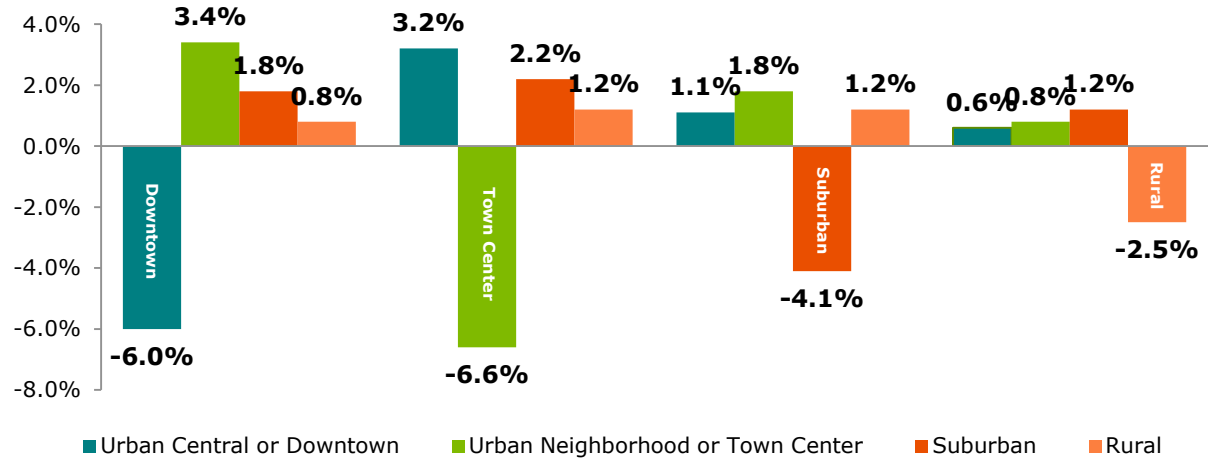
In the following chart, the commute time has increased in the selected neighborhood by 10 minutes. We then assess the probability changing their neighborhood preference to a different type of neighborhood considering an identical house with identical price, etc. in a different neighborhood. Negative values indicate the percentage of respondents whose neighborhood preference would change based on the increase in commute time in their current neighborhood. Positive values indicate neighborhood preference for those that would shift.

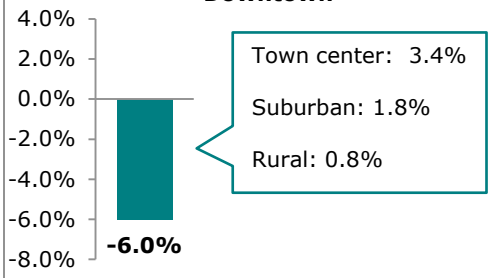
Chart 26
Commute Travel Time Sensitivity - 10 Minute Increase Only in Current Neighborhood



Source: DHM Research, May 2014

Respondents in rural neighborhoods are the least likely to change their neighborhood preference when commute time increases by 10 minutes, while those living in urban neighborhoods, both town centers and downtown, show the highest likelihood to change neighborhood preference. Likelihood to change preference is fairly modest among those living in suburban neighborhoods.

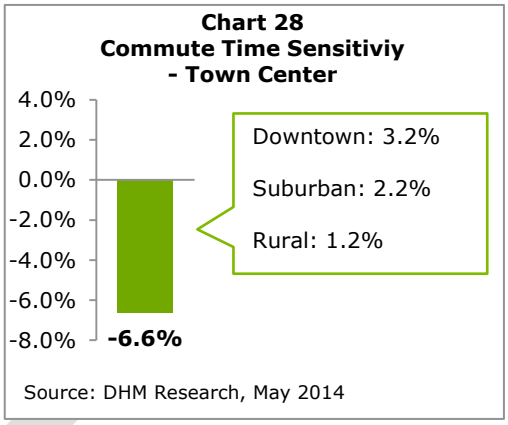
Chart 27
Commute Time Sensitiviy - Downtown

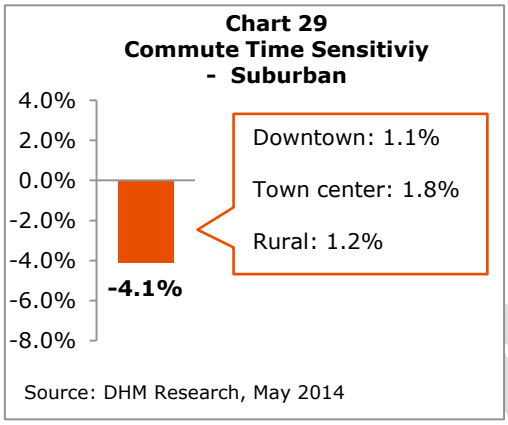


Source: DHM Research, May 2014

Six percent (6.0%) who currently live in an urban central or downtown neighborhood would prefer an identical house with identical price, etc. in a different neighborhood if commute time in their current neighborhood increased by 10 minutes. They are most likely to change preference to an urban neighborhood or town center (3.4%). Fewer would prefer a suburban neighborhood (1.8%), while fewer still would prefer a rural neighborhood (0.8%).

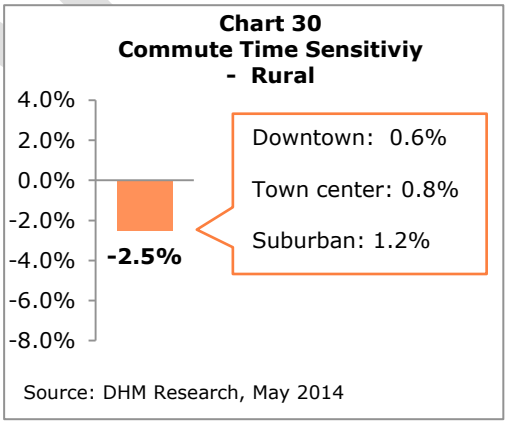
Under seven percent (6.6%) who currently live in an urban neighborhood or town center would prefer an identical house with identical price, etc. in a different neighborhood if commute time in their current neighborhood increased by 10 minutes; the most sensitive neighborhood to commute time. They are most likely to change preference to an urban central or downtown neighborhood (3.2%). Fewer would prefer a suburban neighborhood (2.2%), while fewer still would prefer a rural neighborhood (1.2%).





Four percent (4.1%) who currently live in suburban neighborhood would prefer an identical house with identical price, etc. in a different neighborhood if commute time in their current neighborhood increased by 10 minutes. They are most likely to change their preference to an urban neighborhood or town center (1.8%). Respondents currently living in a suburban neighborhood are equally likely to prefer an urban central or downtown neighborhood (1.1%) or a rural neighborhood (1.2%).

Under three percent (2.5%) of respondents who currently live in a rural neighborhood would prefer an identical house with identical price, etc. in a different neighborhood if commute time in their current neighborhood increased by 10 minutes (-2.5%); the least sensitive neighborhood to commute time. They are most likely to change preference to a suburban neighborhood (1.2%), while they are least likely to prefer an urban neighborhood or town center (0.8%) or an urban central or downtown neighborhood (0.6%).



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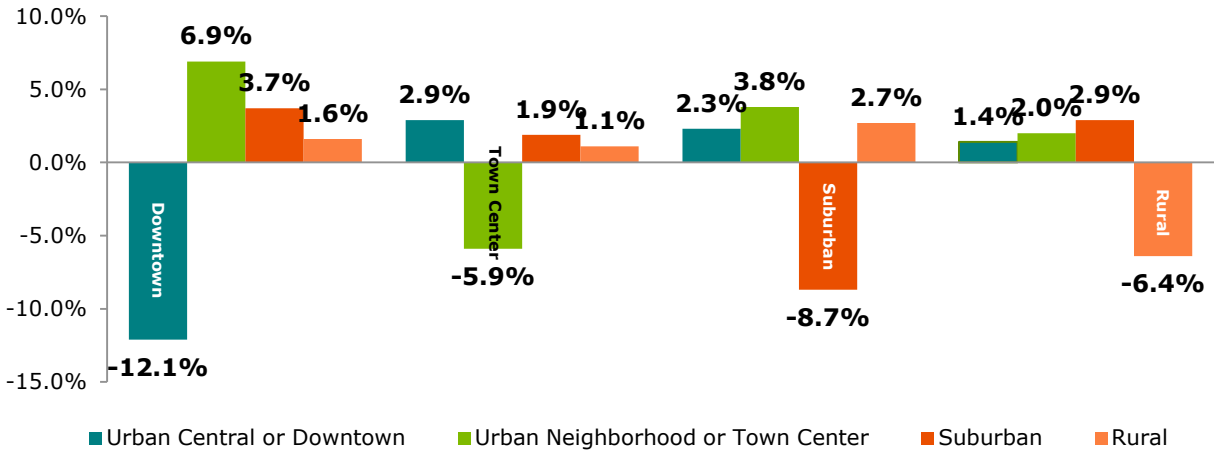
In the following chart, the square footage of the house has been decreased in the selected neighborhood by 500 square feet. We then assessed the probability of changing their neighborhood preference to a different type of neighborhood considering an identical house with identical price, etc. in a different neighborhood. Negative values indicate the percentage of respondents whose neighborhood preference would change based on the price decrease in square footage in their current neighborhood. Positive value indicated neighborhood preference for those that would move.

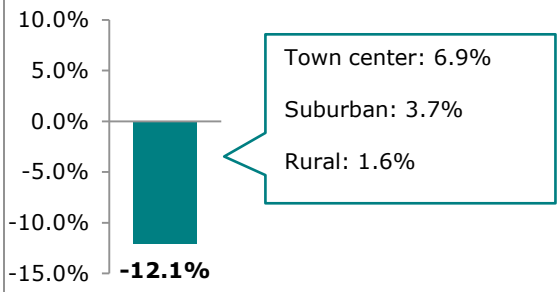
Chart 31
House Size Sensitivity - 500 Sq. Ft. Decrease Only in Current Neighborhood



Source: DHM Research, May 2014

Respondents in rural neighborhoods or town centers are the least likely change their neighborhood preference when square footage is decreased by 500 sq. ft., while those living in an urban central or downtown neighborhood show the highest likelihood to change neighborhood preference. Likelihood to change preference is fairly modest among those living in suburban neighborhoods, and even less among rural neighborhood respondents.

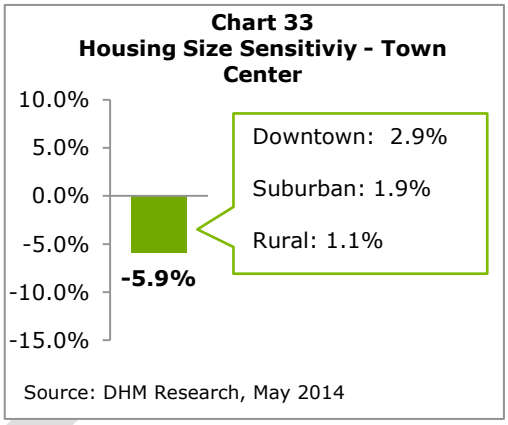
Chart 32
House Size Sensitiviy - Downtown

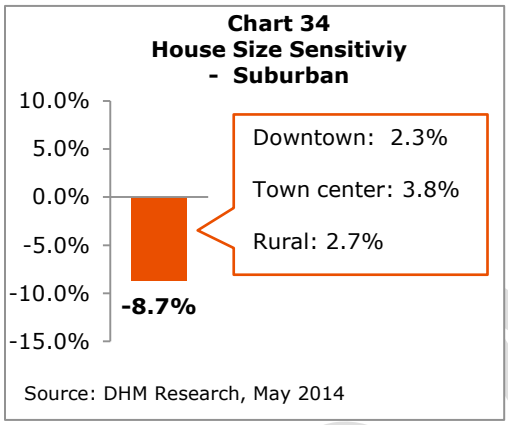


Source: DHM Research, May 2014

Twelve percent (12.1%) who currently live in an urban central or downtown neighborhood would prefer an identical house with identical price, etc. in a different neighborhood if square footage of the housing in their current neighborhood decreased by 500 sq. ft.; the most sensitive neighborhood to housing size. They are most likely to change their preference to an urban neighborhood or town center (6.9%). Fewer would prefer a suburban neighborhood (3.7%), while fewer still would prefer to a rural neighborhood (1.6%).

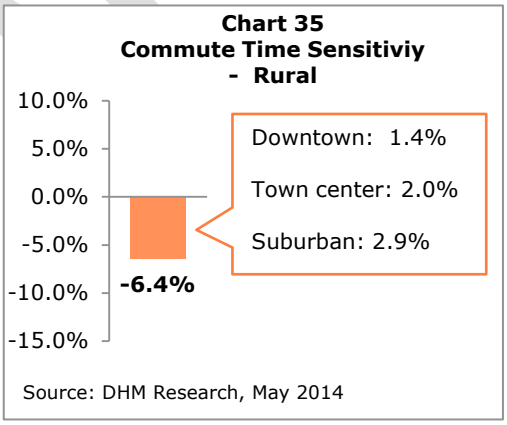
Six percent (5.9%) of respondents in an urban neighborhood or town center would prefer an identical house with identical price, etc. in a different neighborhood if square footage of the housing in their current neighborhood decreased by 500 sq. ft.; the least sensitive neighborhood to housing size. They are most likely to change their preference to an urban central or downtown neighborhood (2.9%). Fewer would prefer a suburban neighborhood (1.9%). While fewer still would prefer a rural neighborhood (1.1%).





Nearly nine percent (8.7%) who currently live in suburban neighborhood would prefer an identical house with identical price, etc. in a different neighborhood if square footage of the housing in their current neighborhood decreased by 500 sq. ft. They are most likely to change their neighborhood preference to an urban neighborhood or town center (3.8%), while they are less likely to prefer an urban central or downtown neighborhood (2.3%) or a rural neighborhood (2.7%).

More than six percent (6.4%) of those who currently live in rural neighborhoods would prefer an identical house with identical price, etc. in a different neighborhood if square footage of the housing in their current neighborhood decreased by 500 sq. ft. They are most likely to change their neighborhood preference to a suburban neighborhood (2.9%). Fewer would prefer an urban neighborhood or town center (2.0%), while fewer still would prefer an urban central or downtown neighborhood (1.4%).



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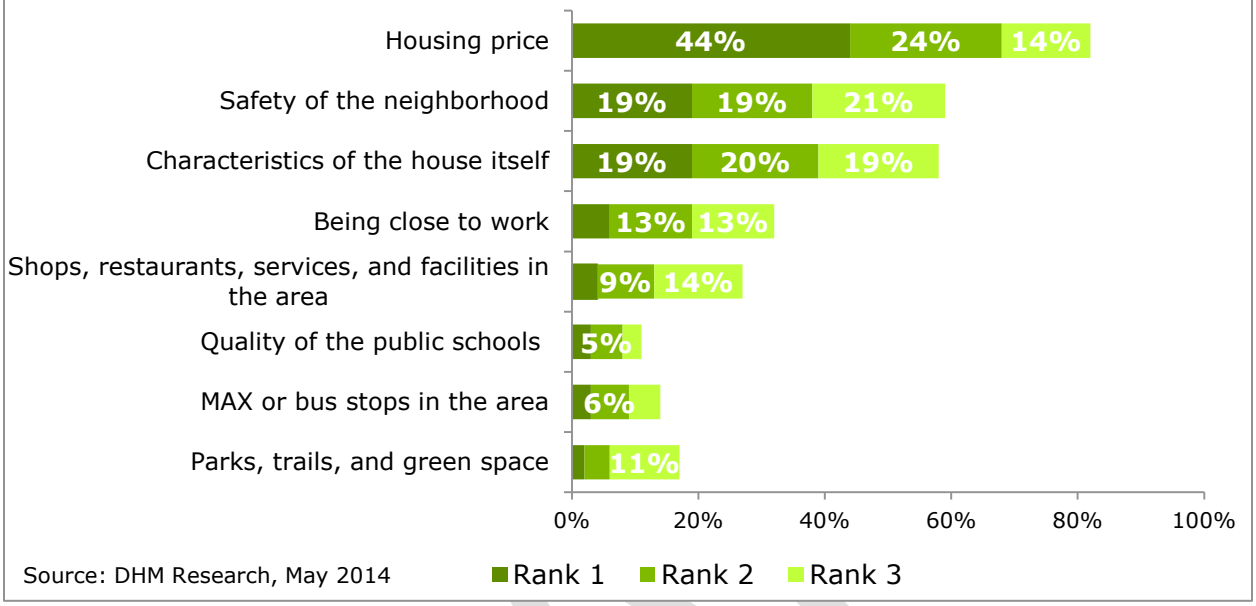
3.4 | Attitudinal

Respondents were asked to rank the top three items that had the largest influence on where they live.

Chart 36
Influencers of Housing Options



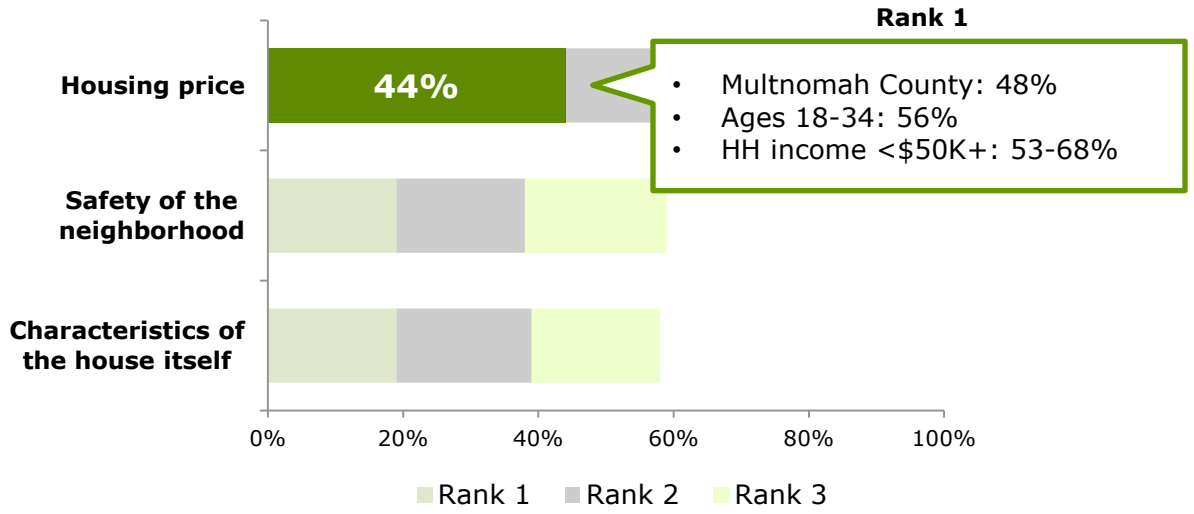
Source: DHM Research, May 2014

Not surprisingly, housing price has the largest influence on respondent's housing decision (44%, rank 1). Safety of the neighborhood (19%) and characteristics of the house (19%) follow as top influencers. Interestingly, these prove to be larger influencers than proximity to work (6%), shops and restaurants in the area (4%), and quality of public schools (3%).

Housing price

Housing price is the most influential factor in respondent's housing decision, with more than four in ten (44%) ranking this as most influential. Those most likely to be influenced by price include Multnomah County respondents, those age 18-34, and lower household incomes.

Chart 37
Influencers of Housing Options: Housing Price



Source: DHM Research, May 2014

Demographic Differences:

- No differences by county
- Age 18-34 (56%) and 55 and older (46%) vs. age 35-54 (34%)
- Household incomes of less than $25K (68%) and $25-50K (53%) vs. higher income households (29-39%)
- Renters (53%) vs. those who own their home (38%)

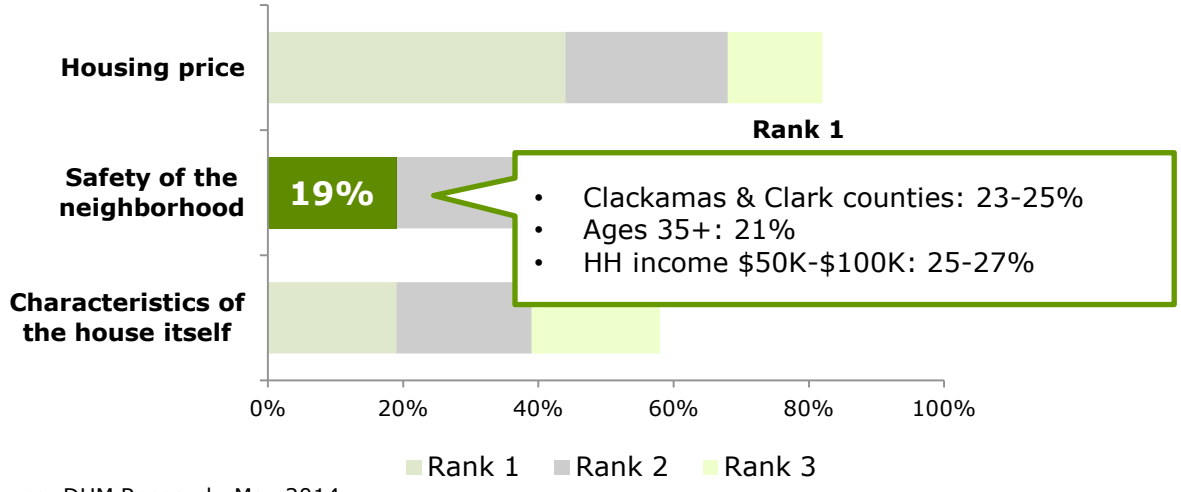
Public Engagement: Respondents from the public engagement track are slightly less likely than those from the representative sample to rank housing price as most influential (31% rank 1 vs. 44% respectively). Public engagement data shows some similar demographic differences:

- No differences by county
- Age 18-34 (40%) and 35-54 (32%) vs. age 55 and older (26%)
- Household incomes of less than $25K (48%) and $25-50K (46%) vs. higher income households (15-34%)
- Renters (42%) vs. those who own their home (24%)

Safety of the neighborhood

Two in ten are most influenced by safety of the neighborhood. Those most influenced by this are those living in Clackamas and Clark counties, over the age of 34, and household incomes of $50-$100K.

Chart 38
Influencers of Housing Options: Safety of the Neighborhood



Source: DHM Research, May 2014

Demographic Differences:

- Clackamas County (25%) vs. Multnomah County (16%)
- Those who own their home (22%) vs. renters (14%)

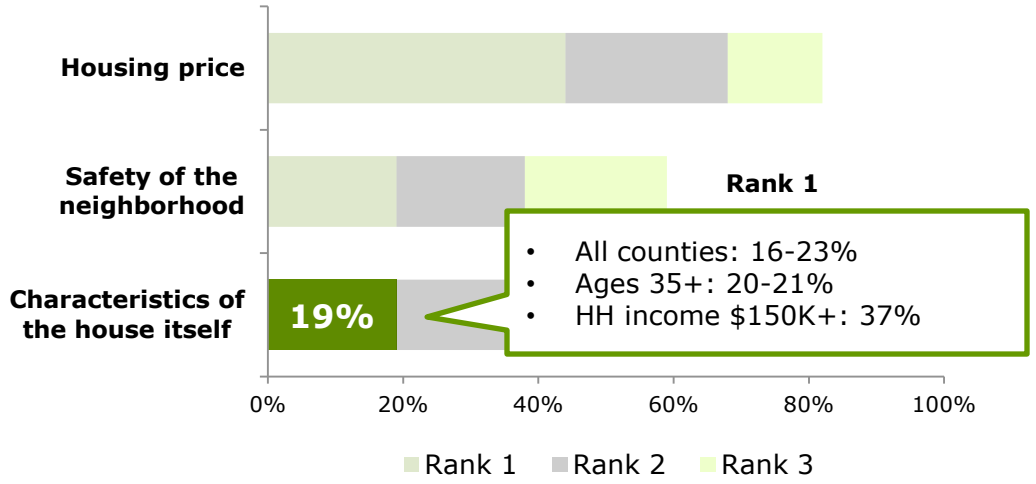
Public Engagement: Respondents from the public engagement track were slightly less likely than those from the representative sample to rank safety as a top influencer (14% vs. 19% respectively). Some similarities are seen between representative and public engagement samples:

- Clackamas (19%) and Washington (18%) counties vs. Multnomah County (9%)
- Age 55 and older (18%) vs. those younger (6-14%)
- Those who own their home (16%) vs. renters (11%)

Characteristics of the house

Two in ten are most influenced by characteristics of the house itself. Those most likely to be influenced by characteristics of the house are age 35 and older from households of $150K or higher income.

Chart 39
Influencers of Housing Options: Characteristics of the House Itself



Source: DHM Research, May 2014

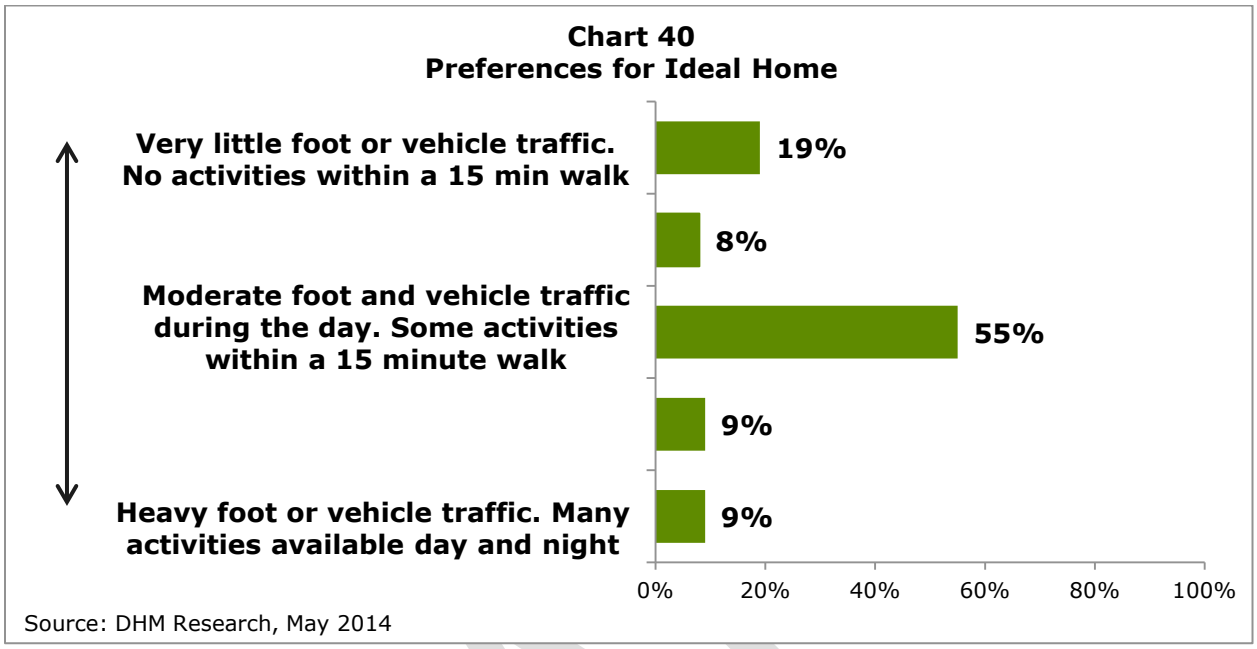
Demographic Differences:

- No differences by county
- Income of $150K or more (37%) vs. income of less than $75K (8-20%)
- Those who own their home (23%) vs. renters (12%)

Public Engagement: Respondents from the public engagement data showed similar preference to the representative sample in ranking characteristics of the house as a top influencer (20% vs. 19% respectively). However, some different demographic differences are observed.

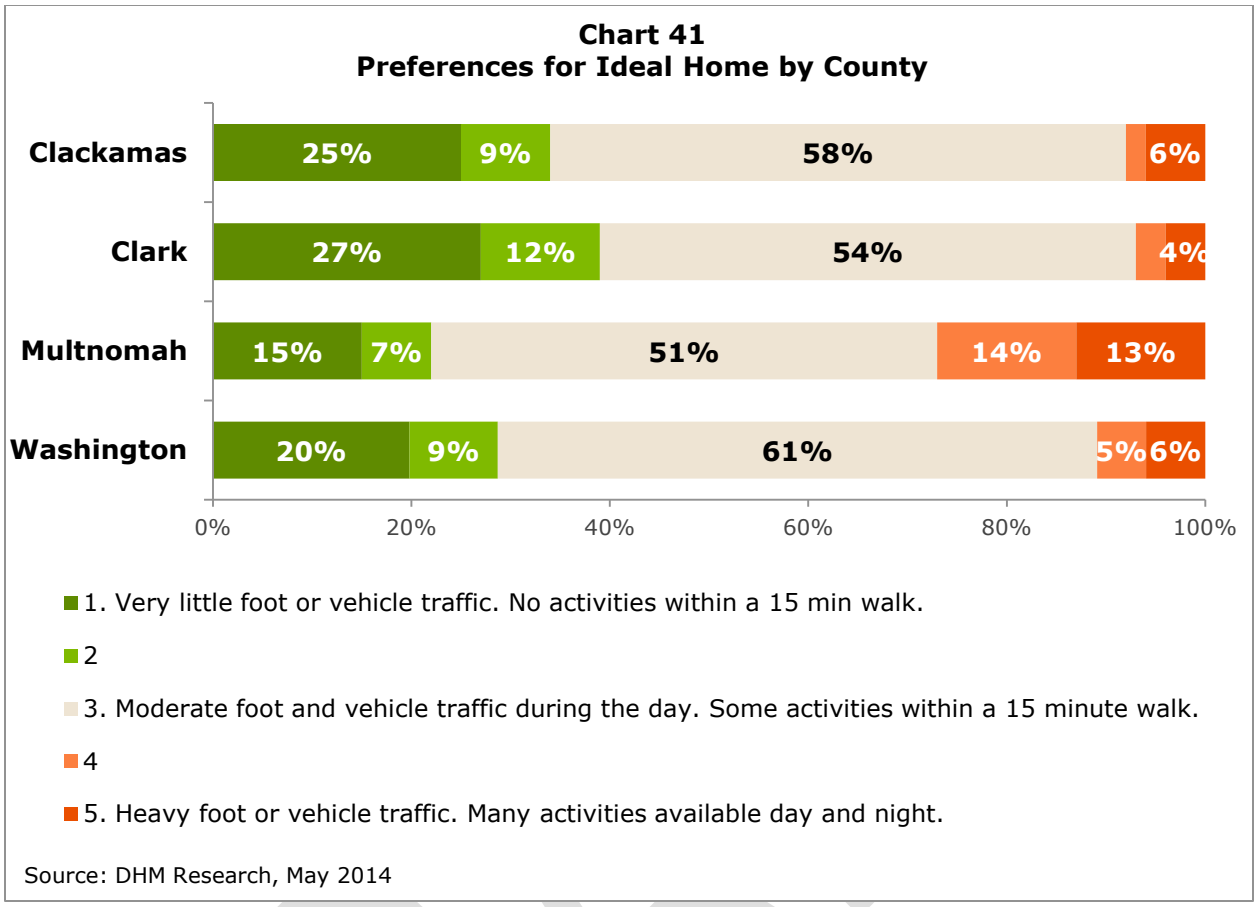
- Clackamas (23%) and Washington (21%) counties vs. Multnomah County (17%)
- Age 55 and older (26%) vs. those younger (11-18%)
- Household income of $75K or more (24-26%) vs. lower income households (8-19%)
- Those who own their home (25%) vs. renters (11%)

Respondents were asked to indicate their preference for level of activity in their ideal neighborhood on a scale ranging from very little foot or vehicle traffic to heavy foot or vehicle traffic.



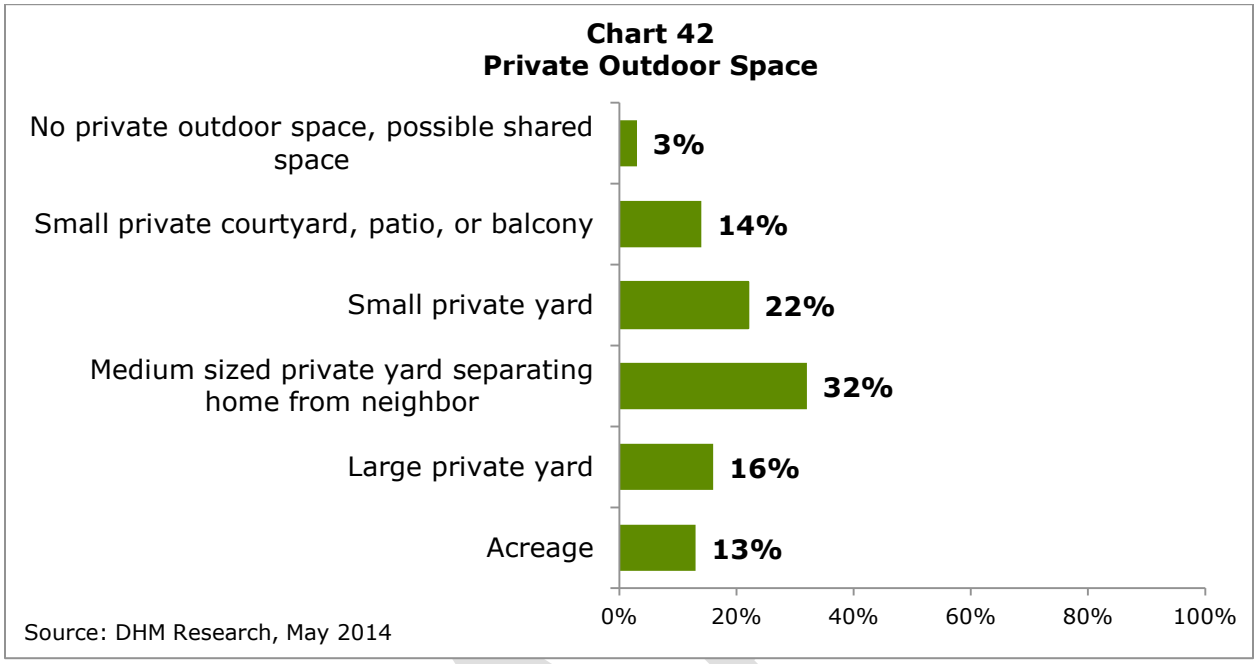
Not surprisingly, a majority of respondents would prefer a moderate amount of foot or vehicle traffic during the day with some activities within a 15 minute walk (55%). Overall, 27% would prefer less activity in their neighborhood, while 18% would prefer more.

Demographic Differences: Moderate foot traffic was preferred in across all demographic subgroups. However, some differences in preference do exist. Respondents currently living in Clackamas and Clark counties are most likely to prefer less vehicle and foot traffic. Multnomah County respondents showed the highest preference for heavier foot and vehicle traffic.



Public Engagement: Similar preferences were seen among the public engagement sample. A majority of respondents would prefer a moderate amount of foot or vehicle traffic during the day with some activities within a 15 minute walk (50%). Overall, 19% would prefer less activity in their neighborhood, while 31% would prefer more.

Respondents were asked to indicate their preferred outdoor space on a scale ranging from no private outdoor space to acreage.



The most preferred private outdoor space is a medium sized yard which separates the home from the neighbor (32%). One in three (36%) would prefer a smaller yard (small private courtyard: 14%; small private yard: 22%) while three in ten (29%) would prefer a larger yard (large private yard: 16%; acreage: 13%). Just 3% do not prefer to have a private yard.

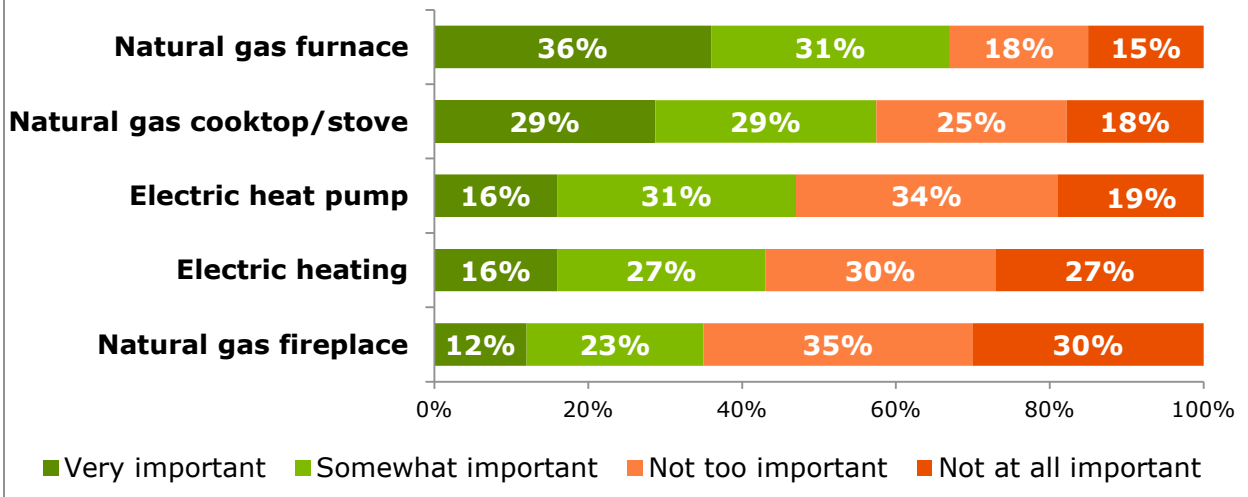
Demographic Differences: Preference for private outdoor space is fairly consistent across demographic subgroups. However, there are differences in preference among those who currently own their home and those who rent. Owners are more likely than renters to prefer a medium sized yard (Owners: 37% vs. Renters: 25%) and a large private yard (Owners: 19% vs. Renters: 11%). Renters are more likely than home owners to prefer no yard (Renters: 6% vs. Owners: 1%) and a small private courtyard (Renters: 20% vs. Owners: 9%).

Public Engagement: Similar preferences were seen among the public engagement sample. The most preferred private outdoor space is a medium sized yard, which separates the home from the neighbor (33%). One in three (36%) would prefer a smaller yard (small private courtyard: 14%; small private yard: 22%) while three in ten (30%) would prefer a larger yard (large private yard: 17%; acreage: 13%). Just 2% do not prefer to have a private yard.

3.5 | Importance of Utility Features in Home

Finally, respondents were asked to rate the importance of having several features in their homes.

Chart 43
Importance of Features in Home



Source: DHM Research, May 2014

Overall, a natural gas furnace (67% very/somewhat important) and a natural gas cook top (58%) are rated as the most important features. These are followed by electric alternatives. Less than a majority rate electric heat pump (47%) and electric heating (43%) as important. A natural gas fireplace (35%) was the least important feature tested.

Demographic Differences: Importance of home features was fairly consistent across demographic subgroups. However, some differences do exist.

Natural gas furnace: Respondents age 35 and older (69-73%) are more likely than those younger (55%) to find a natural gas furnace important. Those from households making $150K or more (89%) are more likely than those from households with incomes of less than $75K (53-64%) to find this feature important.

Natural gas cooktop: Respondents from households making $150K or more (83%) are more likely than lower income households (51-68%) to find a natural gas cooktop or stove to be an important feature.

Electric heat pump: Importance is fairly consistent across demographic subgroups. No significant differences exist.

Electric heating: Respondents age 18-34 (58%) are more likely than those who are older (31-46%) to find electric heating important. Households with incomes of less than $25K (61%) are also more likely than those from households making $50K or more the find this important.

Natural gas fireplace: Respondents from households making $75K or more (44-54%) are more likely than households with incomes of less than $50K (15-30%) to find this to be an important feature. Owners (42%) were also more likely than renters (26%) to find a natural gas fireplace important.

DRAFT

APPENDIX A
Metro Residential Stated Preference Study
February/March 2014; N=800+; respondents ages 18+ in the Metro Region
DHM Research

INTRODUCTION

Thank you for taking time to participate in this survey.

We'd like to know about your housing and neighborhood preferences. It will help our regional government, developers and community partners in the region with ongoing planning for the Portland Metropolitan area. Your opinions will help shape these decisions.

For better visuals, this survey is best if completed on a computer versus a smartphone.

This survey should take no more than 10 minutes. Please know that your responses are completely confidential.

The following questions help ensure we have a representative sample. No personal information entered is used for anything other than this survey. The results are analyzed at the aggregate level only.

DEMOGRAPHIC INFORMATION NEEDED FOR STATED PREFERENCE LOGIC

These first few questions will help us to ask you the right mix of housing and neighborhood preferences.

1. How would you describe your current residence?

Response Category	Panel N=813	Public Engagement N=5,783
Single family detached home	65%	68%
Single family attached home	8%	7%
Condo or apartment	28%	25%

2. Do you own or rent your home?

Response Category	Panel N=813	Public Engagement N=5,783
Own	60%	59%
Rent	40%	41%

3A. (If own in Q2) What is the current square footage of your home? Do not include garages and/or unfinished spaces. Your best estimate is fine.

Response Category	Panel N=588	Public Engagement N=4,340
Less than 999 sq ft	6%	8%
1,000-1,499 sq ft	28%	24%
1,500-1,999 sq ft	31%	26%
2,000-2,499 sq ft	16%	19%
2,500-2,999 sq ft	11%	11%
3,000-3.499 sq ft	5%	6%
3,500 sq ft or more	3%	5%

3B. (If rent in Q2) What is the current square footage of your apartment or condo? Do not include garages and/or unfinished spaces. Your best estimate is fine.

Response Category	Panel N=225	Public Engagement N=1,444
Less than 600 sq ft	20%	11%
600-899 sq ft	45%	41%
900-1,249 sq ft	26%	37%
1,250-1,749 sq ft	7%	8%
1,750 sq ft or more	2%	2%

4A. (If own in Q2) Which category best represents the **current** sales value of your home and property? Your best estimate is fine.

Response Category	Panel N=485	Public Engagement N=3,421
Less than $200,000	17%	9%
$200,000-$249,999	21%	14%
$250,000-$299,999	21%	16%
$300,000-$349,999	15%	16%
$350,000-$399,999	7%	12%
$400,000-$449,999	10%	15%
$500,000 or more	10%	18%

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4B. (If rent in Q2) Which category best represents your total monthly rent? Your best estimate is fine.

Response Category	Panel N=328	Public Engagement N=2,362
Less than $500/month	10%	5%
$500-$649	13%	9%
$650-$799	22%	14%
$800-$999	18%	23%
$1,000-$1,499	27%	33%
$1,500 or more	10%	15%

5. Including yourself, how many people currently live in your household? (RECORD NUMBER)

Response Category	Panel N=813	Public Engagement N=5,783
1	22%	19%
2	42%	42%
3	17%	17%
4	12%	15%
5 or more	7%	7%

6. (IF Q5>1) And how many are younger than 18? (RECORD NUMBER)

Response Category	Panel N=635	Public Engagement N=4,675
0	69%	64%
1	15%	15%
2	12%	16%
3	3%	3%
4 or more	2%	2%

7. For your MOST RECENT trip from home to work, school or main destination, what was your primary form of transportation?

Response Category	Panel N=813	Public Engagement N=5,783
Car	83%	69%
Carpool	1%	1%
Walk	5%	6%
Bike	1%	9%
Transit	8%	14%
Other	1%	1%

8. For your MOST RECENT trip from home to work, school or main destination, how many minutes did it take you to make a one-way trip?

Response Category	Panel N=813	Public Engagement N=5,783
Less than 10 minutes	26%	18%
10-19 minutes	36%	33%
20-29 minutes	22%	25%
30-44 minutes	11%	15%
49-59 minutes	4%	6%
60 minutes or more	1%	3%

Housing type preferred

Response Category	Panel N=813	Public Engagement N=5,783
Single family detached home	80%	81%
Single family attached home	7%	9%
Condo or apartment	13%	11%

Current Neighborhood Type

Response Category	Panel N=813	Public Engagement N=5,783
Urban or Central Downtown	11%	7%
Urban Neighborhood or Town Center	25%	39%
Outer Portland or Suburban	56%	47%
Rural	8%	8%

Preferred Neighborhood Type

Response Category	Panel N=813	Public Engagement N=5,783
Urban or Central Downtown	13%	10%
Urban Neighborhood or Town Center	27%	48%
Outer Portland or Suburban	34%	22%
Rural	26%	19%

DRAFT

STATED PREFERENCE EXERCISE

ATTITUDINAL QUESTIONS

We have just a few more questions that will help us evaluate you housing and neighborhood preferences. The survey is almost complete. Thank you for your continued participation.

Which of these has the most influence on your housing decision? Please rank the top 3, where 1=most influential 2=second most influential and 3=third most influential (randomize)

Response Category—Panel, N=795	1st Choice	2nd Choice	3rd Choice
17. Safety of neighborhoods	19%	19%	21%
18. Quality of the public schools	3%	5%	3%
19. Parks, trails, green spaces, and recreational facilities in the area	2%	4%	11%
20. Shops, restaurants, services, social, religious, and civic facilities in the area	4%	9%	14%
21. MAX or bus stops in the area	3%	6%	5%
22. Being close to work	6%	13%	13%
23. Characteristics of the house itself	19%	20%	19%
24. Housing price	44%	24%	14%

Response Category—Public Engagement N=5,550	1st Choice	2nd Choice	3rd Choice
25. Safety of neighborhoods	14%	13%	14%
26. Quality of the public schools	6%	6%	5%
27. Parks, trails, green spaces, and recreational facilities in the area	4%	8%	13%
28. Shops, restaurants, services, social, religious, and civic facilities in the area	12%	12%	16%
29. MAX or bus stops in the area	4%	7%	8%
30. Being close to work	9%	14%	13%
31. Characteristics of the house itself	20%	18%	16%
32. Housing price	31%	21%	15%

DRAFT

What would you prefer most in your ideal home?

33. Level of activity in neighborhood (walking, shopping, entertainment, etc.)

Response Category	Panel N=794	Public Engagement N=5,546
1—Very little foot traffic. No activities within a 15 minute walk	19%	14%
2	8%	6%
3—Moderate foot and vehicle traffic during the day. Some activities within a 15 minute walk	55%	50%
4	9%	15%
5—Heavy foot traffic. Many activities available day and night	9%	16%
Bottom 2 (1+2)	27%	19%
Top 2 (4+5)	18%	31%
Mean	2.8	3.1

34. Private outdoor space, property

Response Category	Panel N=794	Public Engagement N=5,569
No private outdoor space, possible shared space	3%	2%
Small private courtyard, patio, or balcony	14%	14%
Small private yard	22%	22%
Medium sized private yard separating home from neighbor	32%	33%
Large private yard	16%	17%
Acreage	13%	13%

NWN

Home appliances can be powered by different fuels, mostly electricity and natural gas in our region. We are going to ask your preferences for the following options, your answers will greatly help us plan for future utility needs in the region.

How important are the following features to you to have in your home? (Randomize)
very important, somewhat important, not too important, not at all important*

Response Category, Panel N=794	Very	Smwt	Not too	Not at all
35. Natural gas fireplace	12%	23%	35%	30%
36. Natural gas cook top/stove	29%	29%	25%	18%
37. Natural gas furnace	36%	31%	18%	15%
38. Electric heating	16%	27%	30%	27%
39. Electric heat pump	16%	31%	34%	19%

Response Category, Public Engagement N=5,537	Very	Smwt	Not too	Not at all

40. Natural gas fireplace	10%	22%	30%	38%
41. Natural gas cook top/stove	34%	29%	21%	15%
42. Natural gas furnace	38%	32%	17%	13%
43. Electric heating	7%	19%	31%	43%
44. Electric heat pump	10%	29%	34%	27%

DEMOGRAPHICS

45. In which year were you born? *

Response Category	Panel N=813	Public Engagement N=5,783
18-34	26%	19%
35-54	36%	42%
55+	38%	39%

46. How many years have you lived in the Portland Metropolitan region?

Response Category	Panel N=794	Public Engagement N=5,545
0-1 years	5%	2%
2-5 years	13%	11%
5-9 years	14%	14%
10-19 years	19%	23%
20 years or longer	49%	51%

47. How many years have you lived in your current residence?

Response Category	Panel N=794	Public Engagement N=5,545
0-1 years	18%	17%
2-5 years	29%	30%
5-9 years	15%	18%
10-19 years	22%	20%
20 years or longer	16%	15%

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48. Is your ethnicity*

Response Category	Panel N=794	Public Engagement N=5,545
White/Caucasian	89%	91%
Black/African American	2%	1%
Hispanic/Latino	2%	3%
Asian/Pacific Islander	7%	2%
Native American	2%	3%
Other	0%	1%
Refused	1%	3%

49. What is your gender identity? (Select all that apply).*

Response Category	Panel N=813	Public Engagement N=5,752
Male	47%	40%
Female	52%	59%
Transgender	1%	0%
Refused	0%	0%

50. What is your annual household income before taxes in 2013?

Response Category	Panel N=812	Public Engagement N=5,728
Less than $24,999	15%	11%
$25,000-$49,999	27%	20%
$50,000-$74,999	21%	22%
$75,000-$99,999	15%	16%
$100,000-$149,999	15%	19%
$150,000 or more	6%	12%

51. Zip code *See Crosstabs*

52. In what county do you live?

Response Category	Panel N=813	Public Engagement N=5,783
Multnomah	47%	47%
Washington	30%	31%
Clark	11%	1%
Clackamas	12%	22%

DRAFT

EXHIBIT B
STAFF REPORT

IN CONSIDERATION OF RESOLUTION NO. 14-4582, FOR THE PURPOSE OF ACCEPTING THE DRAFT URBAN GROWTH REPORT AS SUPPORT FOR DETERMINATION OF CAPACITY OF THE URBAN GROWTH BOUNDARY

Date: November 13, 2014 Prepared by: Ted Reid, 503-797-1768

BACKGROUND

Purpose of the forecast and the urban growth report

Every five years[1], to comply with Oregon land use laws, Metro assesses the region's capacity to accommodate the number of people expected to live or work inside the Metro urban growth boundary (UGB) over the next 20 years. To make this determination, Metro forecasts population and employment growth over a 20-year timeframe; conducts an inventory of buildable land inside the UGB; assesses recent development trends; assesses how forecast growth may occur on the region's buildable lands; and documents the results of these and other analyses in an urban growth report (UGR). The UGR becomes a basis for subsequent policy discussions about whether expected housing and employment growth can be accommodated inside the existing UGB.

In 2015, the Metro Council will consider its policy options for accommodating growth. Statewide Planning Goal 14 (Urbanization) instructs that "Prior to expanding an urban growth boundary, local governments shall demonstrate that needs cannot reasonably be accommodated on land already inside the urban growth boundary." In drafting the 2014 UGR, staff looked to the many policies and plans adopted by the state, Metro, counties and cities over the last several decades for guidance on how residents would like growth to occur, how to define needs, and what is reasonable.

A draft 2014 UGR was released in July 2014 after over a year of technical engagement. The draft 2014 UGR should be understood as a market analysis of how regional and local adopted plans and policies may play out over the next 20 years as population and employment growth occur. The draft report is not intended to be conclusive regarding the region's capacity needs, but is intended to inform discussions about whether it is reasonable to expect current plans and policies to accommodate growth inside the existing UGB.

Ultimately, it will be up to the Metro Council, with advice from the Metro Policy Advisory Committee (MPAC), to determine whether those outcomes are reasonable or whether additional actions are needed to accommodate anticipated growth in keeping with the region's desired outcomes. The Metro Council's adopted policy is to take an outcomes-based approach to managing urban growth. It is intended that growth management decisions will help to foster the creation of a region where:

1. People live and work in vibrant communities where their everyday needs are easily accessible.

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[1] Per HB 4078, for future cycles, the Urban Growth Report will be completed every six years. The next Urban Growth Report will be presented in 2020.

2. Current and future residents benefit from the region's sustained economic competitiveness and prosperity.
3. People have safe and reliable transportation choices that enhance their quality of life.
4. The region is a leader in minimizing contributions to global warming.
5. Current and future generations enjoy clean air, clean water and healthy ecosystems.
6. The benefits and burdens of growth and change are distributed equitably.

Implications of Metro Council accepting the draft UGR
If the Metro Council votes in favor of this resolution, it would be accepting the draft UGR as a reasonable basis to inform ongoing policy discussions leading to the council making an urban growth management decision in 2015. Council acceptance of the draft UGR would not be a land use decision and would not necessarily imply complete agreement with all of the draft UGR's assumptions or conclusions. Generally, the intent of the resolution is to signal a shift from the technical discussions that have happened in 2013 and 2014 to policy discussions in 2015. The resolution also serves the purpose of meeting state law requirements that every five years Metro must perform two analyses, which are included in the draft UGR:

- Inventory buildable lands within the urban growth boundary and determine their housing capacity
- Conduct an analysis of housing need

To inform policy discussions, the draft UGR includes considerably more analysis and information than is required under the law. For example, there is no burden on Metro to assess the adequacy of the region's employment land supply, but the report includes that analysis since it is a topic of interest to policy makers. Council will also note that the draft UGR that is attached as Exhibit A to the resolution includes two additional appendices that were not available at the time that the draft UGR was first released in July 2014. Council, MPAC, and the Metro Technical Advisory Committee (MTAC) have had discussions of both of these reports this fall. The new appendices are:

Appendix 13: Regional Industrial Site Readiness: 2014 inventory update
Appendix 14: Residential preference study (executive summary and full report)

Overarching policy considerations in the draft UGR and topics of interest to stakeholders
The draft UGR highlights a number of policy considerations for continued discussion in 2015. As noted in the proposed resolution, these topics can form the framework for ongoing discussions leading to the council's urban growth management decision in 2015. The two topics that have received the bulk of the Council's, MPAC's, and stakeholders' attention during discussions of the draft report are highlighted below:

- Future housing mix
- Growth potential in particular locations around the region

Following Council direction, staff intends to bring forward these topics for additional discussion in 2015.

<u>Future housing mix</u>
As previously noted in this staff report, the draft UGR is an assessment of how existing plans and policies may play out over the next two decades. Those policies have a consistent theme of focusing most growth in downtowns, along transportation corridors and main streets, and in transit station communities. Demographic factors also influence the kinds of housing that are expected to be built over the next 20 years, for example:

- 60 percent of new households will consist of just one or two people;
- 50 percent of new households will be headed by people over the age of 65;
- About 60 percent of new households will have annual incomes less than $50,000.

Collectively, with the demographic forecast and existing plans, this means that most new residential growth would be in the form of apartments and condominiums rather than single-family homes. However, single-family homes would still represent the majority (about 60 percent) of all housing in the UGB in 2035. This represents a shift compared to the historic housing mix and compared to the preference for single-family detached homes that was described in the 2014 Residential Preference Study. As the council engages in discussions about housing needs, following are some additional considerations that have been identified:

- Going forward, ensuring that half of new housing is single-family would require adding an area about the size of Forest Grove (4,000 acres) to the UGB every six years[2]. This would require that there be cities willing and able to govern and finance development of that many acres. No cities are working on concept plans for areas this large.
    - How would this scale of expansion match the general public's values and cities' ability to provide governance and infrastructure?
    - Would this scale of expansion be utilized by the market when 60 percent of new households are forecast to have incomes less than $50,000, making it questionable that they would be able to afford a single-family home?
- If the region is going to accommodate most of its new residential growth in existing downtowns and main streets, what can be done to ensure that more of that housing is family-friendly (multiple bedrooms, storage space, access to good schools and play areas, etc.)?
- Would policy makers like to consider UGB expansions in locations where cities have adopted concept plans for urban reserves, demonstrating their ability to address housing needs that may not reasonably be accommodated inside the existing UGB?

Growth potential in particular locations around the region

State law requires that UGB amendments made by the Metro Council be justified by demonstrated regional needs. While the UGR is a regional analysis, a great deal of work is done to understand growth capacity in different locations around the region. However, some stakeholders have expressed uncertainty about various communities' ability to accommodate forecast growth.

- What are the implications for regional population and employment growth if policy makers are unsure about the region's ability to accommodate growth in the existing UGB and substantial development of UGB expansion areas also does not appear feasible?
- The draft UGR estimates about 10,000 dwelling units will be built in the City of Damascus by the year 2035. However, challenges to urban development in Damascus continue to mount. The courts recently found that that the law allowing property owner de-annexation is unconstitutional, limiting the possibility that some development could occur through annexation to neighboring Happy Valley. In the November 4, 2014 election, Damascus voters did not approve the proposed comprehensive plan. A comprehensive plan will again be presented to Damascus' voters in early 2015, but will require a supermajority to prevail. Given these ongoing challenges, what amount of capacity is reasonable to assume in Damascus over the next 20 years?
- Like many downtowns around the U.S., the City of Portland has seen record levels of new residential development in recent years. However, those trends would need to persist for the next 20 years to achieve the levels estimated in the draft UGR, leading some to question whether this

[2] This should be understood as a "back-of-the-envelope" rough estimate for illustrative purposes.

will occur. Is Portland ready for this amount of growth? If this amount of growth doesn't occur in Portland, where might it happen? Or, will the region see lower population growth rates in general?

- For a variety of reasons – from infrastructure funding challenges to lack of city governance to voters turning down city annexations – past UGB expansions have not produced much housing (just 6 percent or 6,500 of the roughly 112,000 new homes built inside the UGB from 1998 through 2012). Are there reasons to believe that UGB expansions will produce more housing in the future?

Engagement activities related to the draft report

The region's general public has expressed their views on growth management on an ongoing basis since the early 1970's, with the establishment of Oregon's statewide land use planning system. While there are certainly opposing views, community member views are generally expressed in state law, the regional vision, local plans, zoning, and public expenditure plans. These are the plans and policies that are assessed in the draft UGR, which acts as a periodic check-in for the region on how we may accommodate anticipated growth while also preserving quality of life.

The draft UGR is a reflection of the expert knowledge of many stakeholders from around the region. Throughout the development of the draft UGR, staff engaged outside expertise from the public and private sectors. Some of the technical engagement conducted for the draft UGR dates back to fall of 2010 when staff engaged city and county planners in discussions of how to estimate the buildable land inventory used for the adopted 2035 forecast distribution[3]. As described in the draft UGR, from early 2013 through the fall of 2014, staff sought review and collaboration on a number of topics:

- A working group of approximately 30 public and private sector experts provided advice on the methods used for estimating the region's buildable land inventory, with a particular emphasis on how to estimate environmental constraints and redevelopment potential.
- All cities and counties in the region were given the opportunity to review a preliminary buildable land inventory at the tax lot level. All comments received by Metro were incorporated into the inventory used in the draft UGR.
- A working group of 10 public and private sector experts provided advice on the method used for estimating market absorption of the buildable land inventory.
- A peer review group of seven public and private sector economists and demographers advised on the assumptions built into the seven-county population and employment range forecast as well as the forecast results.
- A working group of six public and private sector experts advised on the assumptions about space needs for different types of jobs. Those assumptions are used to translate the employment forecast into land demand.
- A partnership of nine public and private sector organizations worked with Portland State University and DHM Research to conduct a residential preference survey to gain a better understanding of how people make choices about where to live.
- A partnership of six public and private sector organizations worked with the consulting firm Mackenzie on an update of the Regional Industrial Site Readiness project. The inventory of large industrial sites that was indentified through that work is used to describe the region's supply of such sites in the draft UGR.

<u>Metro Technical Advisory Committee engagement</u>

[3] Metro Ordinance No. 12-1292A

The Metro Technical Advisory Committee (MTAC) has discussed elements of the draft UGR on a number of occasions.

MTAC meeting date	Topic
9/18/13	The timeline, milestones, and engagement opportunities that will lead to a 2015 growth management decision
2/19/14	Recent economic conditions and their implications for the population and employment forecast; Performance of past Metro forecasts
4/2/14	Seven-county range forecast peer review process and results
4/16/14	Buildable land inventory; Residential development trends
8/20/14	Introduction to the draft 2014 UGR
9/3/14	Results of the residential preference study
10/1/14	Consideration of recommendations on the residential component of the draft UGR; 2014 update of the Regional Industrial Site Readiness project
10/15/14	Consideration of recommendations on the employment component of the draft UGR
11/5/14	Consideration of recommendations on the text of the Metro Council resolution accepting the draft UGR

MTAC recommendations

On October 1, 2014, MTAC made the following unanimous recommendations on two core technical elements of the Urban Growth Report:

- The residential buildable land inventory has undergone an appropriate level of technical review and provides a reasonable basis for policy discussions. (3 abstentions, 0 nays)
- The seven-county population and employment range forecast in the draft UGR has undergone an appropriate level of technical review and provides a reasonable basis for policy discussions. (2 abstentions, 0 nays)

On October 15, 2014, MTAC made two additional unanimous recommendations related to the draft 2014 Urban Growth Report:

- The employment buildable land inventory, including the inventory of large industrial sites, has undergone an appropriate level of technical review and provides a reasonable basis for policy discussions. (3 abstentions, 0 nays)
- The assumptions (building types, square feet per employee, and floor-area ratios) used to translate the employment forecast into demand for acres have undergone an appropriate level of technical review and provide a reasonable basis for policy discussions. (2 abstentions, 0 nays)

On November 5, 2014, MTAC reviewed the draft language of Resolution No. 14-4582 and forwarded the draft resolution to MPAC as is (no proposed changes to text) for their consideration. (1 abstention, 1 nay)

Metro Policy Advisory Committee engagement

The Metro Policy Advisory Committee (MPAC) has discussed the elements of the draft UGR on a number of occasions.

MPAC meeting date	Topic
1/8/14	Recent economic conditions and their implications for the population and employment forecast
2/12/14	Performance of past Metro forecasts
4/23/14	Seven-county range forecast peer review process and results
7/23/14	Introduction to the draft 2014 UGR
9/10/14	Results of the residential preference study
10/8/14	Review of the draft resolution; Residential component of the draft UGR
10/22/14	Employment component of the draft UGR; 2014 update of the Regional Industrial Site Readiness project
11/12/14	Consideration of recommendations on the Metro Council resolution accepting the draft UGR

MPAC recommendations

On November 12, 2014, MPAC unanimously recommended that the Metro Council adopt Resolution No. 14-4582 with a minor wording edit that is now incorporated into the draft resolution before the Council.[4]

MPAC also suggests that, in addition to the discussion topics listed in the resolution, the following topics be included in Council and MPAC discussions in 2015:

- The feasibility of development in Damascus over the next 20 years.
- Development trends and growth potential in Portland.
- Wilsonville's plans for the Advance Rd. urban reserve area.
- Alignment of the urban growth management decision with Metro's Equity Strategy.
- Housing affordability and its implications for the urban growth management decision.
- The implications of the 2014 Residential Preference Study, which describes a preference for single-family detached housing[5]:
    - How should policy makers reconcile preferences for single-family detached housing (which requires vacant land for growth) with other surveys that consistently show strong support for creating walkable communities, reducing carbon emissions, and protecting farms and forests?
    - How should policy makers reconcile preferences for single-family detached housing with state, regional, and local policies that call for focusing most growth in downtowns and main streets (by implication, plans call for most growth to be in the form of condos and apartments).
    - How should policy makers reconcile preferences for single-family housing with new households' expected budgets, which often will not be adequate to afford this type of housing (60 percent of new households are forecast to make less than $50,000 a year)?

[4] MPAC recommended that the second-to-last "whereas" clause be edited to read "WHEREAS, the Metro Council intends to continue a discussion in 2015 regarding several policy considerations reflected in the Draft Urban Growth Report including, but not limited to,…"

[5] The 2014 Residential Preference Study used a variety of survey techniques, some of which asked respondents to consider tradeoffs. The portion of the study that indicates that 80 percent of respondents prefer single-family housing did not ask respondents to consider tradeoffs or budgetary limitations.

- Actions being taken by jurisdictions doing to provide enough multifamily housing to meet people's housing needs in keeping with their budgets?
- The implications of cities and counties identifying local needs for jobs or housing to achieve local jobs/housing balance.[6]
- How MetroScope modeling is used to inform the draft Urban Growth Report and the urban growth management decision.
- The implications of not including Damascus' growth capacity in MetroScope modeling.

Metro Council engagement

The Metro Council has discussed elements of the draft UGR on a number of occasions.

Council meeting date	Topic
3/19/13	Urban growth management decision work program proposal
5/7/13	Urban growth management decision work program proposal
3/18/14	Recent economic conditions and their implications for the population and employment forecast; Performance of past Metro forecasts; Seven-county range forecast peer review process and results; Residential development trends
4/1/14	Background on residential preference study methods
4/22/14	Buildable land inventory
7/22/14	Introduction to the draft 2014 UGR
9/9/14	Results of the residential preference study
9/23/14	Residential component of the draft UGR
10/9/14	Review of the draft resolution; Employment component of the draft UGR; 2014 update of the Regional Industrial Site Readiness project
10/14/14	Identification of topics for MPAC's advice

Comments received on the draft UGR

Metro has a particular responsibility to coordinate with cities and counties in the region. At the date of this writing, Metro has received written comments on the draft UGR from Clackamas County, the City of Wilsonville, and Washington County. Those comments and Metro staff responses are summarized in Attachment 1.

Next steps

If the Metro Council votes in favor of this resolution, it accepts the draft UGR as a basis for policy discussions in 2015, ultimately leading to the Metro Council making an urban growth management decision before the end of 2015. Following the council's direction, in 2015, staff will work to bring forward discussions of the policy considerations described in the draft UGR, resolution, and this staff report. Staff proposes that the council's growth management decision in 2015 will generally include the following:

- Adoption of a final 2014 UGR, including identification of the number of households and jobs for which the council is planning (the point within the forecast range).

[6] Despite ongoing interest in this topic, state law is clear that the Metro Council can only expand the UGB if there is a demonstrated regional need. UGB expansions cannot be based on subregional needs alone.

- Direction to staff to complete a final housing needs analysis based on the number of households for which the council is planning.
- The regional growth management decision itself – actions to address housing or employment capacity needs, if any.
- Adoption of findings of fact and conclusions of law.

ANALYSIS/INFORMATION

1. **Known Opposition**

Though some stakeholders and local jurisdictions have differing views on the assumptions and results of the draft UGR and the nature of the growth management decision that the Council should make, staff is not aware of any opposition to the Council's adoption of this resolution.

2. **Legal Antecedents**

   The forecast and UGR are completed to satisfy:
   - Statewide Planning Goals 10 (Housing) and 14 (Urbanization)
   - Oregon Revised Statutes 197.296, 197.299, and 197.303 (Needed Housing in Urban Growth Areas)
   - Oregon Administrative Rules, Division 24 (Urban Growth Boundaries)
   - Metro Regional Framework Plan, Chapter 1 (Land Use)
   - Metro Code, section 3.07.14 (Urban Growth Boundary)

3. **Anticipated Effects**

   Council acceptance of the draft UGR will allow Metro to meet its legal requirements under State law and to begin work identifying possible policy options to accommodate forecast growth in keeping with its desired outcomes.

4. **Budget Impacts**

   The budget for fiscal year 2014/2015 includes staff resources for this work program. The fiscal year 2015/2016 budget will need to include staff resources to complete this work program and submission to the Oregon Land Conservation and Development Commission for review.

RECOMMENDED ACTION

Staff recommends that the Metro Council adopt the proposed resolution.

Attachment 1: Staff responses to written comments on the draft UGR

Date	Jurisdiction	Comment (summarized) and *Metro staff response*
10/14/14	City of Wilsonville (staff)	Damascus growth capacity is overstated *The draft UGR includes an estimate of growth capacity for the City of Damascus, but also points out the significant challenges in Damascus and uncertainty associated with producing any technical estimate of growth capacity.* *Staff recommends that, in advance of the 2015 urban growth management decision, policy makers discuss whether urbanization in Damascus is viable over the next two decades and whether there are more viable alternatives for accommodating that growth either in the existing UGB or through UGB expansions.* Portland growth capacity is overstated *The draft UGR is intended as a market analysis of how current plans and policies may play out over the next twenty years. Given currently adopted plans, the analysis indicates that the majority of the region's apartment and condo construction will occur in Portland. This would mean that Portland would, on average, see higher levels of development than seen in the past. Of course, looking 20 years out, there is no way to prove or disprove that this will occur. If policy makers have doubts about the amount of growth that Portland may see, they may wish to consider planning for a lower point in the range forecast for population growth since providing that capacity elsewhere appears more challenging.* *Staff recommends that, in advance of the 2015 urban growth management decision, policy makers discuss recent development trends in Portland and the likelihood and implications of a majority of the region's future housing growth occurring in Portland.* The Advance Rd. area should be considered for UGB expansion *The Metro Council may expand the UGB if they find that there is a demonstrated regional need. If there is a need, state law describes the factors that must be considered in determining where to expand the UGB. Additionally, the Metro Council has adopted policies that describe their intent to consider UGB expansions in urban reserve locations that have been concept planned by cities. Staff is aware that Wilsonville is working towards adoption of a concept plan for the Advance Rd. area* *Staff recommends that, in advance of the 2015 urban growth management decision, policy makers discuss Wilsonville's plans for the Advance Rd. area as well as ongoing work to*

		support the Wilsonville Town Center. <u>Metro underestimates household growth in Wilsonville</u> *Metro is required under the law to perform a regional, not local, analysis of housing needs. Likewise, Metro bases its analyses on forecasts, not simply a continuation of past trends. As described in draft UGR Appendix 1B, Metro's past regional forecasts have been reliable. However, any forecast will become less certain when it is for a smaller geography. It is entirely possible that Wilsonville or other cities will achieve higher or lower growth rates than forecast. However, it is not Metro's responsibility to ensure that individual city growth occurs by expanding the UGB (nor would it be legally defensible).* <u>Metro uses a one-size-fits-all approach for estimating redevelopment potential in suburbs that may result in an overestimation of multi-family capacity in the region</u> *When developing the methodology for estimating redevelopment potential, Metro solicited suggestions for alternative "redevelopment strike prices" from jurisdictions participating in the technical working group, but did not received any concrete suggestions. The 10/14/14 letter from Wilsonville also does not offer a concrete suggestion.* *It should be kept in mind that the multifamily capacity expressed in the buildable land inventory is less than is what is allowable under currently adopted plans. The draft UGR then only counts about half of the multi-family capacity in the buildable land inventory. However, if the city of Wilsonville or others believe that there is a shortage of multi-family housing capacity in the UGB, they and other cities may look for ways to encourage more redevelopment in downtowns and main streets.* <u>The MetroScope model should be reviewed by third party economists since it produces results that are difficult to reconcile with the residential preference study</u> *The Council may wish to consider whether it is a budget priority to undertake a peer review of MetroScope. While it is always useful to have peer review of models, staff believes that a peer review of MetroScope would primarily confirm that the model relies on classical economic theories of supply and demand equilibrium and uses existing policies as guidance for its input assumptions. Even with peer review, policy makers would still be left with the question of whether existing plans are "good."* *Models are simplified versions of reality and can only strive to tell us how different kinds of assumptions may play out. They are not intended to do the work of policy makers who must balance multiple objectives. Peoples' general preferences for*

		single-family homes are understood and are built into model behaviors. However, when producing results, the model doesn't ignore realities like adopted policies and people's incomes. Taken together, factors like these result in an increasing share of multifamily housing.
10/20/14	Clackamas County (Board of Commissioners)	<u>Clackamas County does not have enough large industrial sites</u> *Under state law, Metro may only expand the UGB if there is a demonstrated regional need. The draft UGR finds that the region has a surplus of large industrial sites. The notion of the county getting a proportional share of the region's large industrial sites doesn't comport with the law and ignores practical realities of land suitability. Clackamas County has different circumstances – many of them topographic – than Washington or Multnomah counties, which make it challenging to identify viable options for providing additional large industrial sites. The county has not identified specific locations that they would like added to the UGB.* *There is a process laid out for jurisdictions that are interested in UGB expansions. The first step is for a city to identify an urban reserve that is of interest and to develop a concept plan for the area. No cities in Clackamas County have come forward with a proposal or plan for a UGB expansion for employment uses.* *There are actions that the county and its partners can take to make the sites that it does have development-ready. Those actions are outlined in the 2014 update of the Regional Industrial Site Readiness project as well as the county's own industrial site study that was recently completed using grant funding from Metro.* *Staff recommends that, in advance of the 2015 urban growth management decision, policy makers continue their dialogue about how to make more of the lands already inside the UGB development-ready.* <u>Damascus does not provide the county with growth capacity for jobs</u> *As noted in the draft UGR, there are real challenges to urbanization in Damascus. The draft UGR notes that there are limits to what can be predict with technical analysis and that the Metro Council will need to exercise its policy judgment.* <u>Clackamas County has not recovered jobs lost in the Great Recession</u> *The county has reason for concern with its job creation trends. However, it is not clear that the county's primary challenge is land supply. Presumably the county's job losses also indicate that there are underutilized or vacant buildings and lands that could support job recovery. In the current draft Urban Growth*

		Report, city and county planners helped Metro staff to identify 1,232 acres of vacant land and 1,828 acres of potentially redevelopable land for job creation already in the Metro UGB in Clackamas County. Additional lands are in other cities' UGBs (e.g., Canby). <u>The lack of places to grow jobs places inordinate pressure on our transportation system</u> *As noted in the county's letter, local jobs/housing balance does not reduce commute distances. Census data illustrate that people commute all over the region for work regardless of whether there are jobs close to where they live. Using the City of Wilsonville as an example, about 90 percent of the people that work in Wilsonville commute from outside Wilsonville and about 80 percent of the workers that reside in Wilsonville commute elsewhere for work. Metro is eager to work with the county to enhance travel choices for its workers and residents.* *The county points to the Urban Mobility Report, prepared by Texas A & M as evidence of severe mobility problems in the region. Many transportation experts regard the report's methodology as flawed since it assesses travel delays compared to a hypothetical maximum speed rather than actual commute times.*[7] *In reality, the average commute times of residents of our region are shorter than most other metros because of the region's relatively compact form and transportation options. However, Texas A&M's methodology looks more favorably on region's with longer commutes, as long as traffic is moving close to hypothetical maximum speed limits.* *Under state law, Metro may only expand the UGB if there is a demonstrated regional need. The draft UGR finds that the region has a surplus of large industrial sites and that there is no regional need for additional UGB expansions.*
11/12/14	Washington County (County Commission Chair, Andy Duyck)	<u>Council should adopt Resolution No. 14-4582</u> *This is consistent with MPAC's recommendation to Council.* <u>Reconcile preferences for single-family housing with the UGR</u> *At the suggestion of MPAC, this is a topic that is listed in the draft resolution for additional discussion in 2015.* <u>The Metro Council should adopt the high end of the employment growth forecast range</u> *The Council will be considering where within the range forecast to plan as part of their 2015 urban growth management decision and will seek MPAC's advice on the matter.*

[7] See, for example, Joe Cortright's 2010 "Measuring Urban Transportation Performance" for a thorough critique: http://documents.scribd.com.s3.amazonaws.com/docs/8mi393oq0w1huf4e.pdf