

## Appendix 2: Documentation of MetroScope scenario assumptions

---

### Purpose

This technical appendix is intended to provide documentation of the policy and investment assumptions that were made for the MetroScope scenarios described in the UGR. The purpose of these scenarios is to illustrate the possible future outcomes of current policies and investments.

### Disclaimer

The assumptions made for these scenarios are for research purposes only and are not intended to reflect future policy direction. It is anticipated that many of these policy and investment assumptions will be subject to change as more is learned about local aspirations and as cities update their comprehensive plans through periodic review.

### About MetroScope

MetroScope is an integrated land use and transportation simulation model that operates on economic principles. The model's main purpose is to predict where the region's employment and housing will locate in the future. The total population number that the model attempts to locate is determined in a separate population forecast. Along with the prediction of location choices, the model estimates outcomes such as housing price appreciation. These outcomes are, in part, the consequences of explicit policy choices made both by Metro and local jurisdictions. Such policy choices include, for example, UGB expansions, investments in infrastructure, and zoning designations. MetroScope provides a means of considering how the market might respond to those choices in the long term.

A MetroScope scenario seeks equilibrium, the price point(s) at which housing or employment demand matches supply. For example, if demand for housing in a particular census tract outstrips capacity, prices will increase until a supply and demand equilibrium is reached.

### Local jurisdiction input on scenario assumptions

Metro staff consulted with representatives of the three counties (Clackamas, Multnomah, and Washington) the City of Portland in determining what assumptions should be made for these preliminary scenarios. These assumptions were also vetted with the Metro Technical Advisory Committee (MTAC).

### Major categories of scenario assumptions

The assumptions used for this and other MetroScope scenarios fall into three major categories. The details of these categories are explained further in this document.

- **Demand:** A range forecast establishes the total number of new households and jobs in the 7-county region that are distributed in the scenario.

- **Supply:** Capacity assumptions in the Metro UGB, Clark County, neighbor cities, and rural areas are based on inventories of vacant and buildable land as well as existing zoning.
- **Other variables:** Other assumptions that affect scenario behavior include the transportation network, construction costs and subsidies, and consumer preferences.

## Demand:

### Population and employment range forecast assumptions

MetroScope scenarios assume fixed population and employment control totals. The assumed totals are from a range forecast for the year 2040 for the larger 7-county region that includes all of Washington, Clackamas, Multnomah, Columbia and Clark counties, most of Yamhill County, and a small portion of Marion County.

Given a set of policy and investment assumptions, MetroScope predicts a possible future distribution of new households and jobs in the 7-county region. As an equilibrium model, MetroScope will find a “home” for all forecasted households and jobs; the model will not identify a capacity gap (because the maximum zoned capacity for the 7-county area easily accommodates the growth forecast).

In order to incorporate a range forecast into scenario modeling, it was necessary to conduct multiple scenarios, each with a different population and employment control total assumption. Three scenarios were conducted for the purposes of this preliminary UGR: high end of range forecast, low end of forecast, and midpoint of forecast. Control totals for each of these scenarios are summarized below:

Scenario	Household control total	Employment control total
High end of range forecast	1,469,400	1,985,697
Midpoint of range forecast	1,381,000	1,707,414
Low end of range forecast	1,292,600	1,433,738

# Supply:

## Metro UGB supply: zoning

Regional Land Information System (RLIS) data, maintained by Metro, provide zoning assumptions for scenarios. The three counties (Clackamas, Multnomah, and Washington) provide Metro with quarterly updates to the RLIS zoning data. Local zoning designations are translated into 44 generalized zoning classifications, each of which has an assumed maximum zoned capacity.

## Metro UGB supply: vacant land

Vacant land is defined in two ways:

- 1) Tax lots with no improvement value or buildings.
- 2) Partially developed parcels with an undeveloped portion of at least one-half acre.

Using aerial photography, Metro conducts surveys of vacant land inside the UGB. This survey is conducted using the aerial photographs as well as building permit and tax assessor data. All parcels inside the UGB are examined to determine if they qualify as vacant.

The vacant land designation does not indicate whether or not the parcel is for sale, if there are plans to develop it, if there are constraints to its development (e.g. zoning or environmental constraints such as wetlands or steep slopes), or if there is a market demand for its development.

This MetroScope scenario assumes the 2007 vacant land survey, the most up-to-date buildable land information that is available (the process of analyzing the aerial photographs and applying the buildable land definition is a time consuming one that prevents the use of a more current inventory).

## Metro UGB supply: buildable land

Buildable land is identified by deducting environmentally constrained land from the vacant land inventory. This MetroScope scenario assumes the 2007 buildable lands survey.

## Metro UGB supply: refill land

“Refill” refers to both redevelopment and infill development. Redevelopment occurs when a structure is removed and another is built in its place. Infill occurs when more units are constructed on an already-developed site. Since “vacant” land includes any tax lot or any part of a tax lot that has a vacant portion larger than ½ acre, infill only includes development on an existing developed lot or partially developed lot with a vacant portion smaller than ½ acre.

Refill development tends to occur when market conditions make it profitable to develop (or redevelop) these tax lots, typically when land prices reach a certain level. Thus, refill capacity is based on the relationship between a tax lot’s size, land value, and improvement value. Metro calculates refill capacity in consultation with local jurisdiction staff.

For scenario modeling purposes, tax lots that have a high enough ratio of land to improvement value and that are of sufficient size are counted as refill capacity. This determination varies by county and by

zoning designation. Like zoned capacity, refill capacity will not necessarily get used in the model simply because it exists. MetroScope scenarios subject refill capacity to a simulated market test. Whether or not the capacity gets used in the scenario is a function of many factors including price, accessibility, and zoning.

### Metro UGB supply: recent UGB expansion areas

In reality, lands are not immediately developable upon their inclusion in the UGB. In order for lands to be developable, planning must have been completed and infrastructure financing needs to be in place. To mimic that delay, these scenarios assume that there is a development delay for lands that have previously been added to the UGB. By the end of the delay, it is assumed that infrastructure funding has become available through an unspecified mechanism.

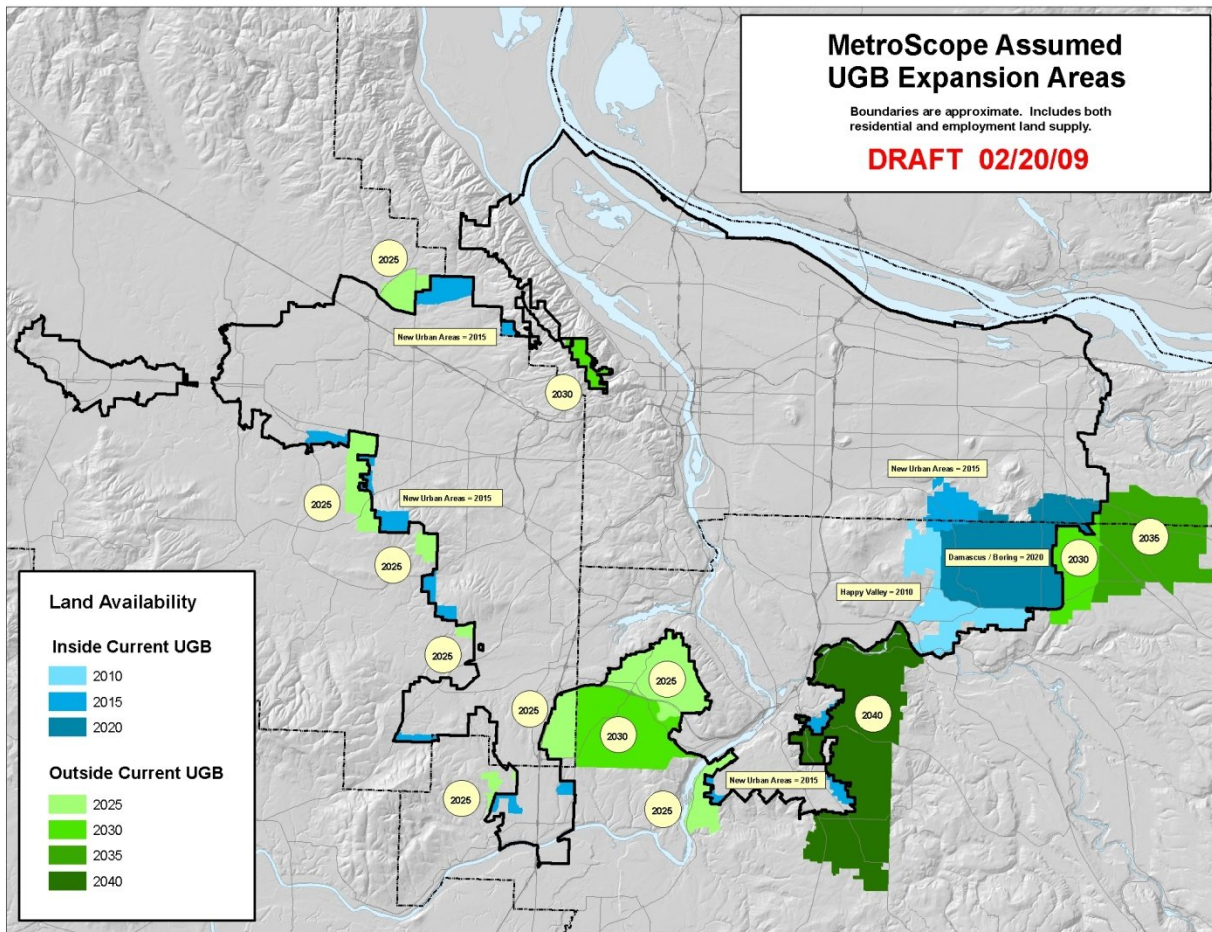
Metro UGB expansion area (past expansions only)	Assumed date of availability for development
Happy Valley	2010
Damascus	2020
All other areas added to the Metro UGB since 1998 (other than Happy Valley and Damascus)	2015



## Metro UGB supply: prospective UGB expansions

This scenario assumes a continuation of past policies and trends, including the trend of expanding the UGB according to state-mandated land hierarchies. It is assumed that there is no need for prospective UGB expansions until five years after the date that Damascus becomes available to the model (prospective UGB expansions are available in 2025, five years after Damascus is assumed available).

The map below shows the sequence of prospective UGB expansions that are assumed for this scenario, including the aforementioned areas that have been added to the UGB since 1998.



## Clark County supply: zoning

Zoning for Clark County is assumed to be the zoning that was in place in the year 2005.

## Clark County supply: vacant, buildable land

For vacant buildable land in Clark County, Washington, Metro uses the county's 2005 data. Clark County uses a different methodology for inventorying its vacant, buildable land than Metro.

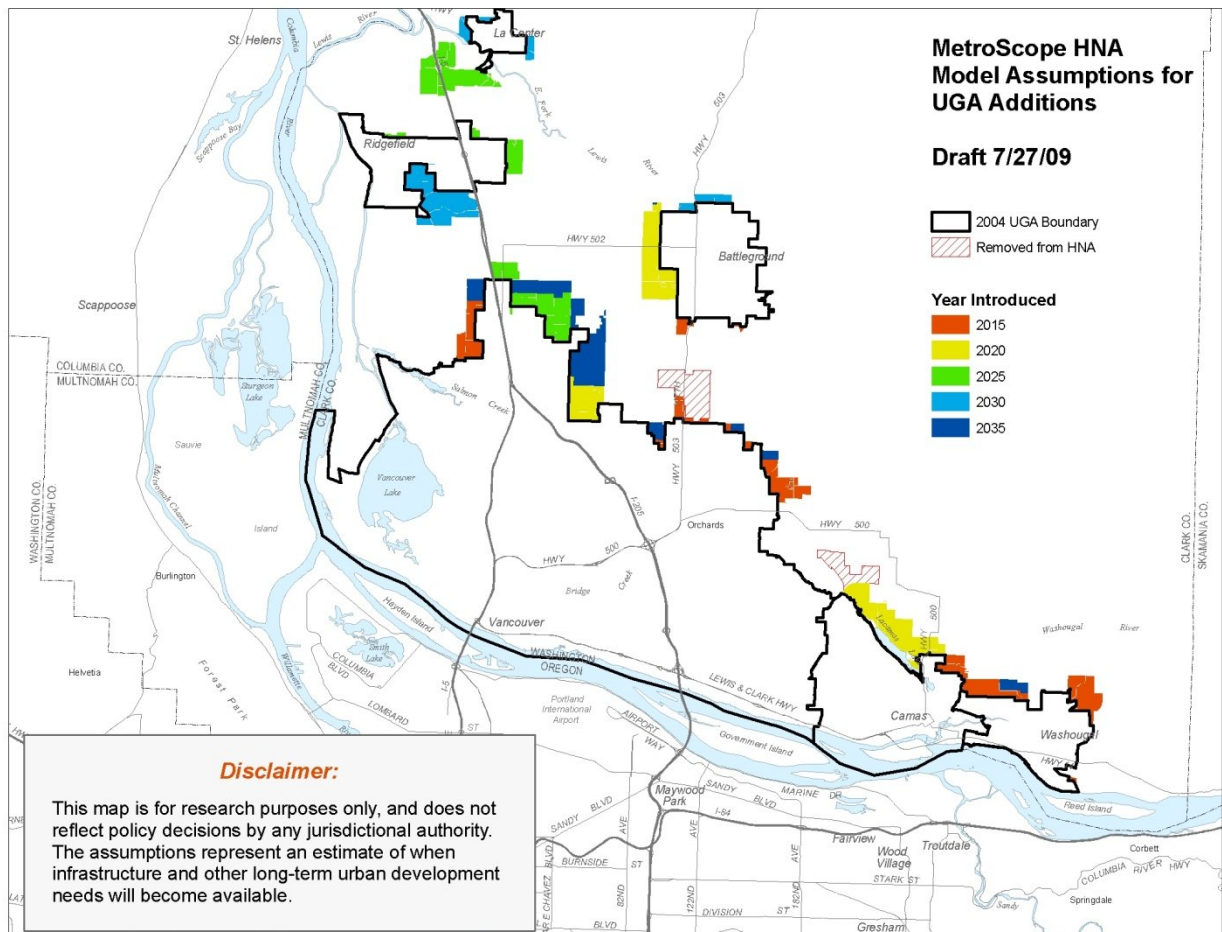
## Clark County supply: refill land

Clark County has a different method than Metro for identifying refill capacity. However, for MetroScope modeling purposes, Metro applies its refill definitions to Clark County land.

## Clark County supply: prospective urban growth area expansions

In January 2008, Clark County added approximately 19 square miles of urban growth areas. A portion of the 19 square mile expansion was overturned and was appealed at the Washington State Superior Court.

Scenario assumptions for Clark County urban growth boundary expansions are based on the Superior Court decision. It is assumed that the urban reserve areas are metered in roughly equal proportions as depicted on the map below. Areas removed as a result of the Superior Court decision are depicted as “removed from HNA.” This scenario assumes the zoning found in current comprehensive plans.



### Neighbor City supply:

MetroScope scenarios distribute growth not just to the Metro UGB and to Clark County, but to cities outside of the Metro UGB that are within the 7-county area (e.g. Canby, Sandy, Banks, North Plains, Newberg, etc.). Oregon's State economist's 2004 county-level population forecast is used to estimate future growth in these cities. Neighbor city capacities are assumed to match forecasted population growth.

City	County	Assumed capacity for new dwelling units
Canby	Clackamas	7500
Sandy	Clackamas	3000
Molalla	Clackamas	5000
Estacada	Clackamas	1000
North Plains	Washington	2500
Gaston	Washington	1000
Banks	Washington	2000
Clatskanie	Columbia	1000
Ranier	Columbia	600
Prescott	Columbia	400
Columbia City	Columbia	800
St. Helens	Columbia	2400
Scapoose	Columbia	1100
Vernonia	Columbia	500
Newberg	Yamhill	16000
Dundee	Yamhill	1000
Yamhill	Yamhill	2400
McMinville	Yamhill	8400
Dayton	Yamhill	1500
Amity	Yamhill	3400
St. Paul	Marion	1000
Aurora	Marion	3500
Gervais	Marion	2500
Woodburn	Marion	8500

### Measure 49 rural residential supply:

The passage of Measure 37 and its subsequent replacement by Measure 49 created the possibility of additional residential capacity outside of urban growth boundaries. The maximum possible amount of rural (non-UGB) Measure 49 capacity was assumed for these scenarios: three dwelling units of capacity for each residential-zoned Measure 37 claim, for a total of 6,087 dwelling units. It is unlikely that all of those Measure 37 claims have been re-filed under Measure 49 and unlikely that all those that were re-filed will be built. However, they are considered as available capacity in these scenarios. The effects of

this Measure 49 capacity on the overall (7-county) household distributions in these scenarios is likely negligible.

## Other variables:

### Accessibility: transportation network

This MetroScope scenario assumes the 2005 network for the 2005, 2010 and 2015 MetroScope allocation runs and then uses the 2035 RTP "true" financially constrained network for the 2020, 2025 and 2035 iterations. The "True" Financially Constrained RTP network only includes those projects that are in the Financially Constrained RTP for which there is an identified source of funding for construction (some projects in the Financially Constrained RTP only have an identified source of funding for planning and engineering).

Notable projects included in this scenario's transportation network:

- Sunrise from I-205 to 122<sup>nd</sup>
- Interchange improvements to US 26, OR 217 and I-205
- Milwaukie light rail
- Portland to Lake Oswego streetcar
- Eastside streetcar; Burnside/Couch streetcar to Hollywood Transit Center
- Bus rapid transit on McLoughlin from Milwaukie to OR City
- All day service for the WES commuter train
- New street connections and arterial street expansion are provided throughout the system. Major streets are retrofitted for walking, biking and transit (wider sidewalks, safer street crossings, landscaped buffers, improved bus stops and bikeways)
- Parking costs are increased in the Portland central city, regional centers and town centers

Notable projects that are not included in this scenario's transportation network for lack of an identified source of construction funding:

- I-5/99W connector
- The Columbia River Crossing
- I-5/I-84 interchange improvements

The 2035 Financially Constrained RTP assumes:

- An increase of one cent per gallon per year in the statewide gas tax for system operations and maintenance.
- A \$15 increase in the state vehicle registration fee every eight years to pay for system expansion.
- Continuation of past local and federal funding levels for system expansion.
- \$9.07 billion of investments that can be funded with resources the region expects.

### Construction costs: system development charges

This scenario assumes that all new dwelling units are assessed a \$25,000 per dwelling unit system development charge. This charge appears as an additional construction cost.

### Construction costs: residential subsidies

Cities throughout the region have implemented effective strategies for attracting more households to their centers and corridors. These strategies include urban renewal, tax abatement, and investments in public amenities. These scenarios assume that residential subsidies will be in place in the future as well. The guiding principle for making subsidy assumptions for these scenarios was to err on the side of being conservative and only include those locations that have active urban renewal or that have some other identifiable tool in place that acts as a residential subsidy (for instance, a vertical housing tax credit).

These scenarios assume varying levels of residential subsidies in different locations. Three different subsidy levels are assigned:

Tier A: \$50,000 per dwelling unit

Tier B: \$25,000 per dwelling unit

Tier C: \$10,000 per dwelling unit.

The upper end of the range, \$50,000 per dwelling unit, was estimated through staff conversations with the Portland Development Commission.

Assumptions are also made regarding the timing of the subsidy (expressed as the percentage of the total number of subsidized units that are available to the market in each five year increment). The level and timing of subsidies assumed in this scenario are professional judgments made by staff and, like all other scenario assumptions, were reviewed by representatives of the three counties, the City of Portland, and MTAC.

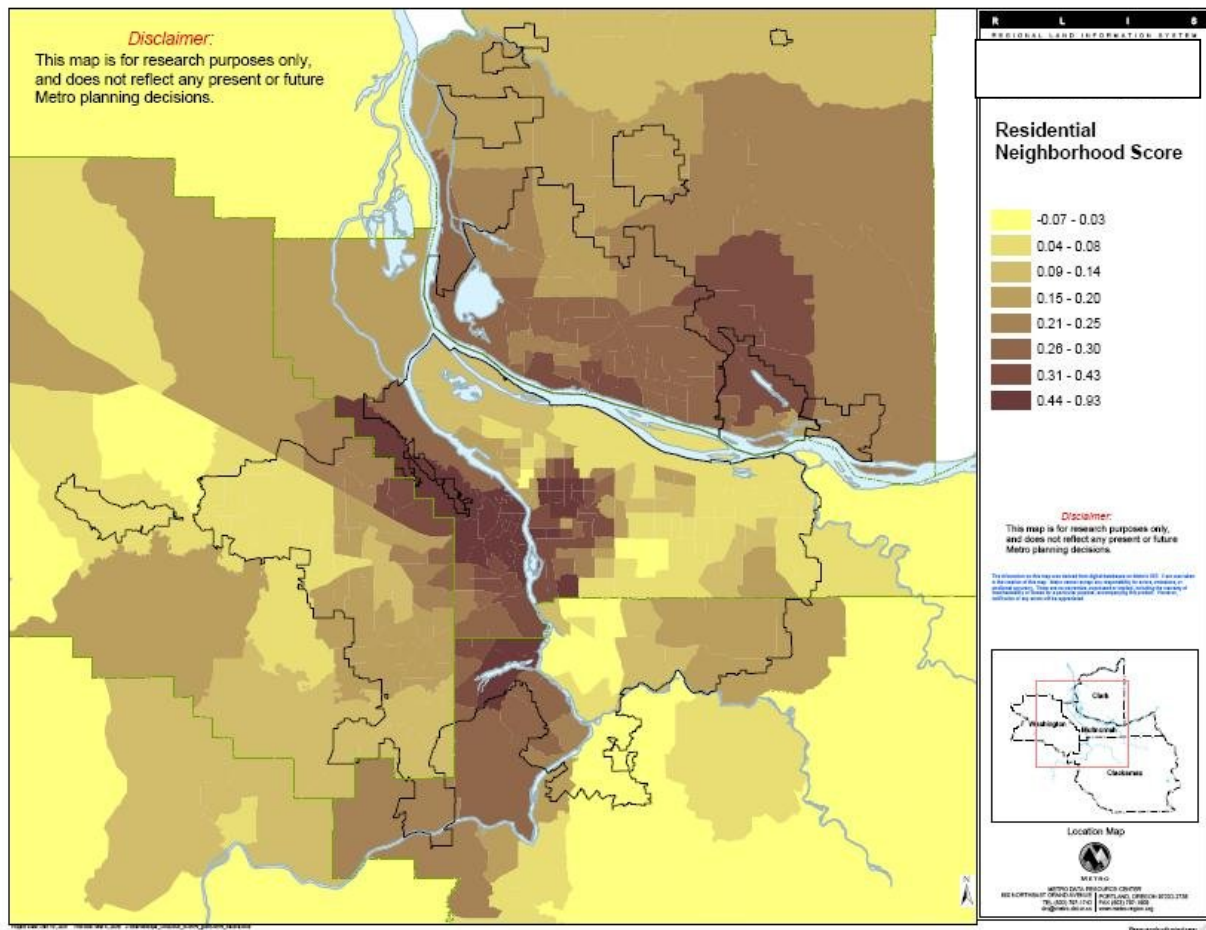
Location	Type	Active urban renewal? (residential only)	Reason for subsidy assumption (other than active urban renewal)	Tier*	Percent of subsidized dwelling units available (timing)							Total number of subsidized units
					2010	2015	2020	2025	2030	2035	2040	
Downtown	CC	yes		A	20%	40%	40%					13500
North Macadam	CC	yes		A	33%	33%	33%					7500
Oregon Conv. Center	CC	yes		A	33%	33%	33%					3000
River District	CC	yes		A	25%	25%	25%	25%				24000
South Park Blocks	CC	yes		A	25%	25%	25%	25%				2000
Clackamas	Reg. Ctr.	yes		B	25%	25%	25%	25%				2000
Gateway	Reg. Ctr.	yes		B	25%	25%	25%	25%				2000
Gresham	Reg. Ctr.		Vertical housing tax abatement	B	33%	33%	33%					2000
Oregon City	Reg. Ctr.	yes		C	33%	33%	33%					2000
Vancouver	Reg. Ctr.		Parking revenues go to redevelopment. City built parking structure	B	20%	20%	20%	20%	20%			6000
Gladstone	Town Ctr.	yes		C	20%	20%	20%	20%	20%			1200
Hollywood	Town Ctr.		tax abatement, TOD subsidies	B	25%	25%	25%	25%				1200
Lake Oswego	Town Ctr.	yes		B	20%	20%	20%	20%	20%	20%		1200
Lents	Town Ctr.	yes		B		20%	20%	20%	20%	20%		1200
Milwaukie	Town Ctr.		light rail to be built; vertical housing tax abatement	C				25%	25%	25%	25%	1200
Rockwood	Town Ctr.	yes		B			20%	20%	20%	20%	20%	1200
Sherwood	Town Ctr.	yes		C		20%	20%	20%	20%	20%		1200
Tigard	Town Ctr.	yes		C			20%	20%	20%	20%	20%	1200
Interstate	Non-ctr. UR	yes		A	25%	25%	25%	25%				8000
MLK	Non-ctr. UR	yes		A	20%	20%	20%	20%	20%			3500
Villebois	Non-ctr. UR	yes		C	33%	33%	33%					2,500
Canby	City	yes		C			20%	20%	20%	20%	20%	600
Sandy	City	yes		C			20%	20%	20%	20%	20%	600

Consumer preferences: neighborhood score



Recognizing that consumers would be willing to pay different prices for the same residence, were it in different locations, MetroScope scenarios have an input assumption called neighborhood score. A neighborhood score is assigned to each census tract. The score represents the relative market desirability of the census tract and is based on historic residential sales prices. Statistical regression analysis is used to determine what portion of a residence's value can be attributed to its location (neighborhood). This statistical analysis controls for private improvements (e.g. lot size, residential square footage, number of bathrooms, age of house, number of bedrooms, etc). The neighborhood score remains static through the course of the scenario.

The map below displays this scenario's neighborhood score assumptions. A higher score (darker color) indicates that the census tract historically has had a higher market desirability.<sup>1</sup>



<sup>1</sup> Areas with sparse residential sales data (i.e. rural areas) may exhibit exaggerated neighborhood scores (the result of a small number of high value sales). Urbanized areas with more sales activity are likely to have more accurate neighborhood scores.

## Appendix 3: Industry cluster forecast

Many recent economic development efforts in this region and others have referred to the concept of economic clusters as an organizing principle. Definitions of clusters abound, but the most accepted definition is offered by Michael Porter, who is often identified as having originally coined the term:

“A cluster is a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities. The geographic scope of clusters ranges from a region, a state, or even a single city to span nearby or neighboring countries... The geographic scope of a cluster relates to the distance over which informational, transactional, incentive, and other efficiencies occur.” (Porter, 2000)

Frequently-cited examples of clusters include information technology in California’s Silicon Valley, biopharmaceuticals in the Research Triangle in North Carolina, the garment district in New York City, insurance in Hartford, Connecticut, analytical instruments in Oregon, and the winemaking in northern and central California. Porter (2000) states that, in order for the concept of a cluster to be useful, it must not be defined too broadly ( e.g. “manufacturing, services, consumer goods, or high tech”) or narrowly equating a cluster with a single industry.

Several stakeholders and representatives of local jurisdictions have suggested that the concept of clusters should be incorporated into the UGR’s analysis. The concept of a cluster makes intuitive sense, but it is also a concept that has its share of detractors, criticized for being too vague to be of use for analysis purposes. Because it can be a vague concept, some writers (Martin & Sunley, 2002) suggest that it be used carefully within a policy context. With that caution in mind, this Draft UGR presents the employment forecast for five of our region’s commonly-recognized clusters, but does not extrapolate the forecast into a demand for capacity (specific limitations of a cluster approach to a forecast are listed later in this document).

### Cluster definitions

The Portland metropolitan region does not have an agreed upon economic development strategy, nor has Metro been asked to formulate one. With that caveat, this analysis uses the Portland Development Commission’s (PDC) list of five existing clusters:

- Active wear and outdoor gear
- Advanced manufacturing
- Bioscience
- Cleantech
- Software

Other cluster definitions could be used for this analysis. Though it also has limitation, this analysis uses the PDC’s definition of the above clusters. Those definitions are given below and include the NAICS codes that PDC has associated with each cluster. The following information is taken from a series of “Cluster Profiles” published by PDC and available on their website at [http://www.pdc.us/pubs/inv\\_detail.asp?id=932&ty=46](http://www.pdc.us/pubs/inv_detail.asp?id=932&ty=46)

Active wear and outdoor gear includes two general categories:

Activewear and Outdoor Gear: Companies that design, manufacture, and/or market sporting and athletic apparel and camping, hiking and outdoor gear.

(NAICS: 315, 33992, 3162, 5414, 42391, 4243)

Bicycle Frame Building: Companies that design, manufacture, and/or market bicycles and bicycle accessories.

(NAICS: 336991)

Example companies: Nike, Icebreaker, Nau, END Outdoor, Adidas, Keen, Yakima, Nautilus, Ziba, Columbia, S Group

### Advanced manufacturing

This cluster includes companies that produce or shape metal into parts or machinery; companies that manufacture equipment for transportation purposes; companies that manufacture computer, electronic and semiconductor components. PDC's cluster definition excludes wood product manufacturing, food manufacturing and paper manufacturing.

(NAICS: 331, 332, 333, 334, 336)

Example companies: Precision Castparts, Intel, Tektronix, Esco, Blount, Sapa Profiles, Columbia Steel Casting, Evraz, Xerox

### Bioscience

This cluster is comprised of companies that manipulate living cells and their components to make therapeutic drugs; genetically modified plants; and medical diagnostic tools. The regional cluster is anchored by Oregon Health and Sciences University (OHSU) and Genentech in Hillsboro. However, the Portland metropolitan region's niche within this industry is in the development of medical devices, rather than in medicinal drug development.

(NAICS: 3254, 3391, 42345, 54171, 62151)

Example companies: FEI, Acrymed/I-Flow, Welch Allyn, Biotronik, Precision Wire, Components, AVI Biopharma, Acumed, Genentech, HemCon, Virogenomics

Cleantech includes four general categories, however only two of them are identifiable by NAICS codes.

Alternative energy: Companies that research, develop, or operate alternative energy facilities, such as biomass, ethanol, solar and wind power generation facilities.

(NAICS: 221119, 333611)

Environmental consultation and remediation services: Companies that provide environmental engineering and consulting; environmental testing and analysis; and remediation services.

(NAICS: 54162, 541330, 562111, 562910)



Green Buildings: Companies that design, develop, or provide general contracting, remodeling and renovation services for residential, industrial or commercial buildings and use the LEED or comparable certification standards to ensure the buildings meet energy efficiency and environmental impact reduction standards. (No NAICS codes associated)

Energy Efficiency: Companies that promote weatherization and other energy efficiency investments, policies, and infrastructure. This cluster is growing rapidly in the Portland region. (No NAICS codes associated)

In addition, PDC includes companies that recycle industrial waste (NAICS: 42393).

Example companies: CH2M Hill, PECO, Solaicx, SERA Architects, Gerding Edlen, Vestas, David Evans and Associates, SolarWorld, Brightworks Northwest, Suzlon Wind Energy Co., Enxco, Energy Trust of Oregon

### Software

This cluster includes companies that design, develop, market, and support systems and application software used in personal computers, servers, embedded systems, and mobile devices.

(NAICS: 5112, 518, 5415)

Example companies: Jive Software, Webtrends, Survey Monkey, Vidoop, Tripwire, OpenSourcery, Sage Software, eRoi, AboutUs, Coaxis, Imagebuilder, i-OP

## Existing cluster employer locations

As shown in Table 1, the geographic distribution of existing (year 2006) cluster employment (cluster firms identified by PDC) throughout the region varies from one cluster to another. These market subareas are defined in the UGR. Employment in the Activewear cluster is concentrated in the Inner ring with much smaller proportions of employment located in the Central and Outer areas. Advanced Manufacturing and Bioscience are concentrated in the Outer ring with some employment in the Inner ring and very little in the Central area of the city. By contrast, the Central City has the highest proportion of Cleantech employment with diminishing Cleantech proportions located in the Inner and Outer rings. Software employment is fairly evenly distributed among the three areas.

Table 1: Distribution of existing (year 2006) cluster employment in the Portland metropolitan region by market subarea

Cluster	Central	Inner	Outer	In Metro UGB
Activewear	12%	71%	15%	98%
Advanced Manufacturing	2%	37%	60%	98%
Bioscience	14%	32%	53%	99%
Cleantech	44%	35%	17%	97%
Software	33%	34%	32%	99%

## Limitations of a cluster approach to the forecast

Global Insight data are the basis for the region's employment forecast. Because the Global Insight data use NAICS codes, it is also necessary to conduct this cluster forecast using NAICS codes. However, NAICS codes present some challenges for identifying the industry or cluster with which to associate an individual firm. This is because NAICS codes are self-reported and necessarily are a simplification of actual business activities. As Porter (Porter, 2000) states, "cluster boundaries rarely conform to standard industrial classification systems."

This issue is illustrated quite clearly by an examination of the examples of cluster employers provided by PDC. At least one third of the example companies listed by the PDC do not identify themselves under any of the NAICS codes that PDC lists as defining the cluster. Many of these firms are identified with NAICS code 551114 (Corporate, Subsidiary and Regional Managing Offices). Though the forecast does not predict the growth of individual firms, the unclear relationship between NAICS codes and clusters presents a complication for conducting a cluster forecast since historic employment data, by NAICS code, are used as a starting point. More details about the use of historic employment data in this analysis are included in the methods section, below.

Given the above challenges of linking NAICS codes to clusters, this cluster forecast should be interpreted with those caveats in mind. It should also be remembered that the original employment forecast results remain the same. The cluster analysis simply provides a way of organizing the forecast data in a format that resonates with some readers.

## Cluster forecast methods

To partially alleviate the mismatch between NAICS codes and clusters, this analysis includes the PDC example companies that identified themselves under NAICS code 551114 (Corporate, Subsidiary and Regional Managing Offices) despite the fact that this NAICS code does not appear in the PDC cluster definitions. However, example companies that identified themselves under other codes that are not listed in PDC's cluster definitions were not included. This exclusion was necessary to create a consistent approach. Companies that are listed as NAICS code 551114, but that are not listed by the PDC as cluster examples were also not included in this analysis (including all of them would make cluster definitions even more fuzzy). The resulting cluster employment data for the year 2006 is shown in Table 2.

Table 2: Cluster employment for the year 2006 for the three-county region (ES202 data)

Cluster	Number of firms	Number of employees
Activewear	542	10,361
Advanced Manufacturing	1,116	64,917
Bioscience	376	5,754
Cleantech	704	9,593
Software	1,478	14,803
Total	4,216	105,428

Steps to forecast employment for the identified clusters:

- (1) Categorize identified cluster NAICS codes in sectors (e.g. wholesale or information). Each cluster is divided among two to four sectors.
- (2) Determine what proportion of each sector's employment should be attributed to each cluster using the 2006 employment data. The proportions of sector employment by cluster for the 3-county area are shown in Table 3.

Table 3: Year 2006 proportions of sector employment by cluster in 3-county area (from 2006 ES202 data)

NAICS	Sector	Sector employment (3-county)	Cluster				
			Active Wear	Adv Mfg	Bioscience	Cleantech	Software
334	Mfg – High tech	33,539		100.0%			
31,32,33 (except 334)	Mfg – Non-high tech	69,056	1.7%	45.4%	3.2%		
42	Wholesale	49,178	13.9%		1.4%	2.3%	
51	Information	20,019					42.9%
54	Professional Services	43,273	2.8%		4.2%	15.4%	14.4%
55	Management	20,745	5.6%	0.3%		1.2%	
56	Admin, Waste	52,938				3.0%	
62	Health & Social Services	84,801			1.2%		
	Total (all sectors)	808,389	1.3%	8.0%	0.7%	1.2%	1.8%

- (3) The original employment forecast is for the 7-county region, while the cluster data is for the 3-county area. In order to align the geographies of the employment forecast and the 2006 cluster data, both datasets have been scaled down to the UGB for the rest of this analysis. Historic 3-county employment data indicates that the UGB capture rate for cluster employment is between 97 and 99 percent (depending on the cluster). The proportions of sector employment by cluster for the Metro UGB are shown in Table 4.

Table 4: Year 2006 proportions of sector employment by cluster in UGB (from 2006 ES202 data)

NAICS	Sector	Sector Employment (UGB)	Active Wear	Adv Mfg	Bioscience	Cleantech	Software
334	Mfg – High tech	33,246		100.0%			
31,32,33 (except 334)	Mfg – Non-high tech	64,872	1.7%	47.4%	3.3%		
42	Wholesale	47,675	14.0%		1.4%	2.3%	
51	Information	19,449					43.7%
54	Professional Services	42,596	2.8%		4.2%	15.1%	14.5%
55	Management	20,686	5.5%	0.3%		1.2%	
56	Admin, Waste	51,554				3.0%	
62	Health & Social Services	83,491			1.2%		
	Total (all sectors)	772,140	1.3%	8.2%	0.7%	1.2%	1.9%

The 7-county high and low growth employment projections were narrowed to the UGB using sector specific UGB capture rates derived from modeled scenarios (same capture rates by sector as reported elsewhere in this UGR). These high and low employment forecasts are shown in Tables 5 and 6.

Table 5: High growth UGB employment forecast (thousands of employees)

NAICS	UGB Capture Rates		UGB Employment Projections (thousands)				
	2010-2015	2015-2030	2010	2015	2020	2025	2030
11, 21	0.0%	0.0%	0.0	0.0	0.0	0.0	0.0
23	68.6%	73.3%	53.4	58.3	68.7	76.3	85.9
334	80.6%	68.6%	31.6	35.1	31.9	33.6	35.4
31,32,33 (except 334)	86.7%	82.2%	85.4	91.8	89.6	90.8	91.6
42	78.0%	74.6%	47.9	52.9	55.3	59.6	64.1
44,45	82.0%	86.5%	98.9	108.5	117.9	122.9	129.3
22, 48,49	82.8%	70.8%	33.8	40.0	37.5	40.1	43.0
51	92.0%	85.7%	24.8	29.0	31.3	35.7	40.3
52	73.6%	85.7%	35.4	41.7	53.3	57.9	62.1
53	84.0%	84.9%	23.9	26.5	29.4	31.9	34.5
54	92.0%	84.9%	55.9	66.1	69.5	77.1	85.1
55	84.2%	81.0%	22.6	28.2	32.2	37.2	42.7
56	85.0%	81.2%	65.5	81.0	88.4	98.4	107.8
61	87.3%	81.2%	22.6	25.3	27.0	30.4	33.8
62	82.1%	81.0%	98.4	117.9	138.1	157.4	178.0
71	78.9%	74.6%	12.0	13.3	14.1	15.6	17.1
72	83.5%	81.0%	73.5	81.9	87.5	94.9	102.4
81	82.0%	73.9%	34.3	42.0	44.5	50.4	56.2
92	82.3%	78.1%	132.8	135.8	137.1	145.0	152.6
Total			952.5	1,075.3	1,153.4	1,255.5	1,361.9

Table 6: Low growth UGB employment forecast (thousands of employees)

NAICS	UGB Capture Rates		UGB Employment Projections (thousands)				
	2010-2015	2015-2030	2010	2015	2020	2025	2030
11, 21	0.0%	0.0%	0.0	0.0	0.0	0.0	0.0
23	68.6%	73.4%	30.1	31.3	32.9	31.8	30.3
334	80.6%	70.0%	20.1	21.2	19.2	19.8	20.4
31,32,33 (except 334)	86.7%	84.3%	61.9	63.0	60.6	59.6	58.6
42	78.0%	77.0%	43.5	48.2	52.1	56.2	60.3
44,45	82.0%	87.5%	83.0	88.4	94.6	96.5	100.3
22, 48,49	82.8%	70.6%	29.9	35.7	33.4	35.6	38.0
51	92.0%	86.4%	17.6	18.9	19.7	22.0	24.5
52	73.6%	86.4%	30.5	35.1	45.0	48.8	52.6
53	84.0%	85.8%	20.2	22.0	24.7	26.7	28.8
54	92.0%	85.8%	44.1	50.1	52.8	58.6	65.0
55	84.2%	83.9%	14.8	16.3	17.9	19.8	22.4
56	85.0%	82.1%	38.2	41.8	42.4	44.7	46.9
61	87.3%	82.1%	18.9	20.9	22.3	24.7	27.0
62	82.1%	83.9%	88.2	104.0	125.7	142.4	160.1
71	78.9%	77.0%	9.6	10.6	11.7	12.9	14.1
72	83.5%	83.9%	69.0	76.9	85.1	92.2	99.4
81	82.0%	74.4%	25.0	29.2	30.7	34.6	38.5
92	82.3%	79.8%	122.6	124.4	127.6	134.7	141.4
Total			767.5	838.0	898.3	961.7	1,028.8

## Cluster forecast results

The UGB employment forecasts were allocated to clusters using the proportions in Table 4. These forecasts only represent the NAICS codes that comprise the identified clusters. There are additional jobs in other NAICS codes in the full forecast. The high growth employment forecast is shown by sector in Table 7 and by cluster in Table 8 and Figure 1.

Table 7: High growth cluster employment forecast for UGB by sector (thousands of employees)

NAICS	Sector	Cluster	Share of Sector	Number of employees (thousands)				
				2010	2015	2020	2025	2030
334	Mfg – High tech	Adv Mfg	100.0%	31.6	35.1	31.9	33.6	35.4
31,32,33 (except 334)	Mfg – non-high tech	Activewear	1.7%	1.5	1.6	1.6	1.6	1.6
		Adv Mfg	47.4%	40.4	43.5	42.4	43.0	43.4
		Bioscience	3.3%	2.9	3.1	3.0	3.0	3.1
42	Wholesale	Activewear	14.0%	6.7	7.4	7.7	8.4	9.0
		Bioscience	1.4%	0.7	0.8	0.8	0.9	0.9
		Cleantech	2.3%	1.1	1.2	1.3	1.4	1.5
51	Information	Software	43.7%	10.8	12.7	13.7	15.6	17.6
54	Professional Services	Activewear	2.8%	1.6	1.9	2.0	2.2	2.4
		Bioscience	4.2%	2.3	2.8	2.9	3.2	3.6
		Cleantech	15.1%	8.5	10.0	10.5	11.7	12.9
		Software	14.5%	8.1	9.6	10.1	11.2	12.3
55	Management	Activewear	5.5%	1.2	1.6	1.8	2.1	2.4
		Adv Mfg	0.3%	0.1	0.1	0.1	0.1	0.1
		Cleantech	1.2%	0.3	0.3	0.4	0.4	0.5
56	Admin, Waste	Cleantech	3.0%	1.9	2.4	2.6	2.9	3.2
62	Health & Social Services	Bioscience	1.2%	1.2	1.5	1.7	1.9	2.2
	Total			120.9	135.4	134.4	143.1	152.0

Table 8: High growth cluster employment forecast for UGB by cluster (thousands of employees)

Cluster	ES202 2006	2010	2015	2020	2025	2030
Activewear	10.4	11.0	12.4	13.0	14.2	15.3
Adv Mfg	64.9	72.0	78.7	74.4	76.7	78.9
Bioscience	5.8	7.1	8.1	8.4	9.1	9.8
Cleantech	9.6	11.8	13.9	14.8	16.4	18.0
Software	14.8	18.9	22.3	23.8	26.8	29.9
All Clusters	105.4	120.9	135.4	134.4	143.1	152.0
Cluster share of all employment	13%	13%	13%	12%	11%	11%



Under the high growth forecast, cluster employment represents a decreasing share of employment in the UGB between the years 2006 and 2030. The low growth employment forecast is shown by sector in Table 9 and by cluster in Table 10 and Figure 2.

Table 9: Low growth cluster employment forecast for UGB by sector (thousands of employees)

NAICS	Sector	Cluster	Share of Sector	Number of employees (thousands)				
				2010	2015	2020	2025	2030
334	Mfg – High tech	Adv Mfg	100.0%	20.1	21.2	19.2	19.8	20.4
31,32,33 (except 334)	Mfg – non-high tech	Activewear	1.7%	1.1	1.1	1.1	1.0	1.0
		Adv Mfg	47.4%	29.3	29.8	28.7	28.2	27.8
		Bioscience	3.3%	2.1	2.1	2.0	2.0	2.0
42	Wholesale	Activewear	14.0%	6.1	6.8	7.3	7.9	8.5
		Bioscience	1.4%	0.6	0.7	0.8	0.8	0.9
		Cleantech	2.3%	1.0	1.1	1.2	1.3	1.4
51	Information	Software	43.7%	7.7	8.3	8.6	9.6	10.7
54	Professional Services	Activewear	2.8%	1.2	1.4	1.5	1.7	1.8
		Bioscience	4.2%	1.8	2.1	2.2	2.5	2.7
		Cleantech	15.1%	6.7	7.6	8.0	8.9	9.8
		Software	14.5%	6.4	7.3	7.6	8.5	9.4
55	Management	Activewear	5.5%	0.8	0.9	1.0	1.1	1.2
		Adv Mfg	0.3%	0.0	0.0	0.0	0.1	0.1
		Cleantech	1.2%	0.2	0.2	0.2	0.2	0.3
56	Admin, Waste	Cleantech	3.0%	1.1	1.2	1.3	1.3	1.4
62	Health & Social Services	Bioscience	1.2%	1.1	1.3	1.6	1.8	2.0
	Total			87.4	93.1	92.3	96.6	101.3

Table 10: Low growth cluster employment forecast for UGB by cluster (thousands of employees)

Cluster	ES202 2006	2010	2015	2020	2025	2030
Activewear	10.4	9.2	10.2	10.8	11.7	12.5
Adv Mfg	64.9	49.4	51.1	48.0	48.1	48.2
Bioscience	5.8	5.6	6.2	6.5	7.0	7.5
Cleantech	9.6	9.0	10.1	10.7	11.7	12.9
Software	14.8	14.1	15.5	16.3	18.1	20.1
All Clusters	105.4	87.4	93.1	92.3	96.6	101.3
Cluster share of all employment	13%	11%	11%	10%	10%	10%

Under the low growth forecast, cluster employment represents a decreasing share of employment in the UGB between the years 2006 and 2030.

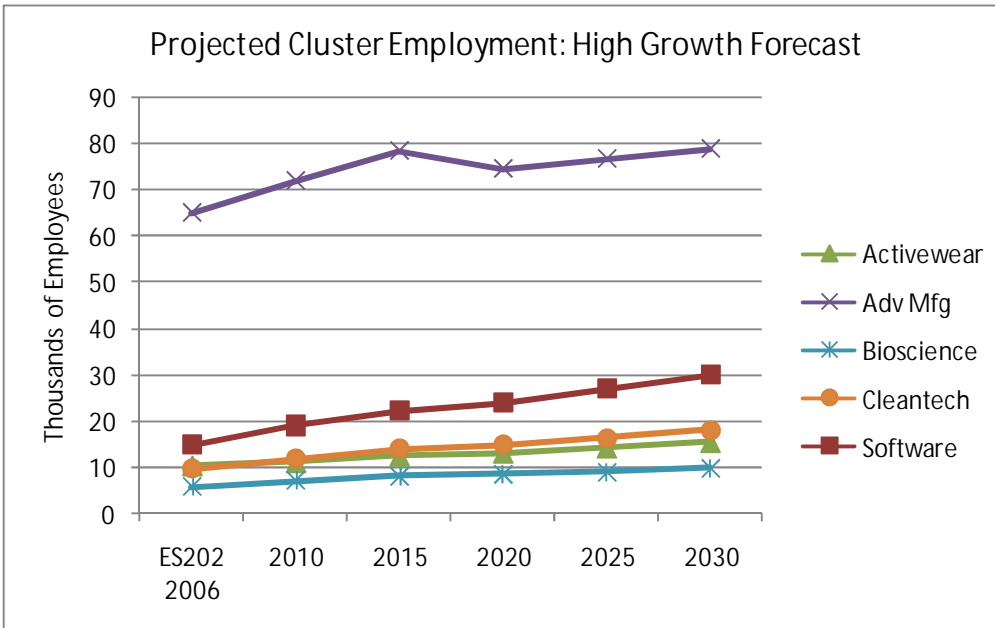


Figure 1: Projected cluster employment for UGB by cluster through 2030 (high and low growth forecasts)

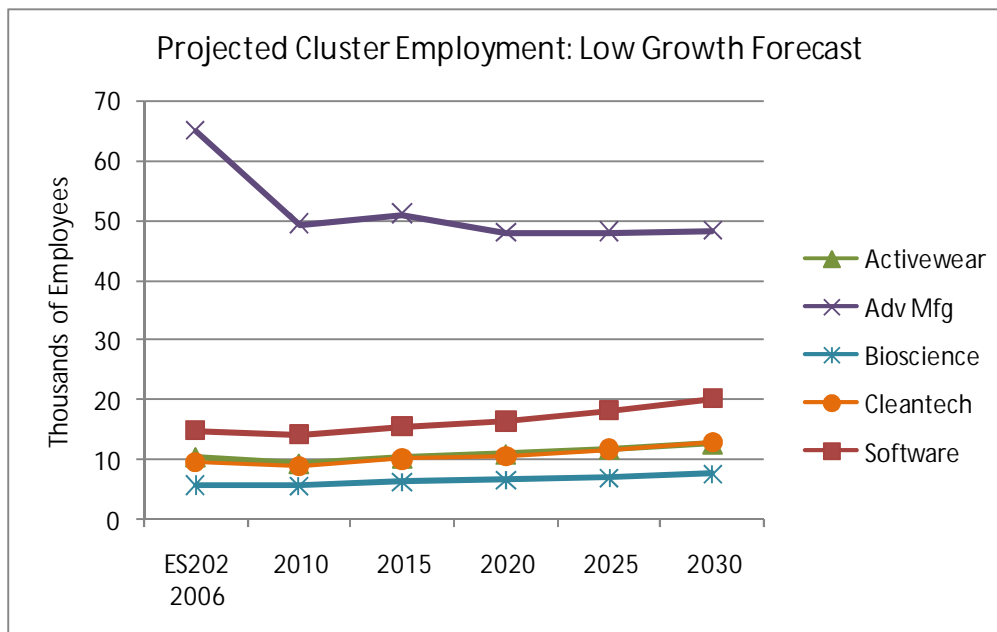


Figure 2: Projected cluster employment for UGB by cluster through 2030 (low growth forecast)

Under the high growth forecast, all five of the identified clusters would realize growth in employment by the year 2030. Under the low growth forecast, the Advanced Manufacturing cluster is forecasted to

suffer the most of the five clusters, with no recovery to 2010 employment levels by the year 2030. Under the low forecast, growth in the remaining four clusters is expected to occur, but at a slower rate than under the high growth forecast. By the year 2030, at both the high and low ends of the range, cluster employment is forecasted to comprise a smaller share of total employment in the Metro UGB than it did in 2006.

## Appendix 4: Forecast-based large employer / large lot 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. In addition to job capacity, factors that contribute to a strong regional economy include, an educated workforce, high value added businesses, wage levels, the mix of jobs, the success of economic development efforts, the transportation system, infrastructure investments and quality of life.

This appendix is intended to provide more detailed information than found in the urban growth report about how the relationship between demand for employment capacity and parcel formats and configurations may change over the next 20 years. The analysis approaches the topic from several angles to help inform growth management decisions.

This report includes the following contents. Some of the reports contents are strictly informational and do not impact the demand analysis:

- Inventory of existing large employers (by number of employees)
- Inventory of existing large parcel users (over 25 acres)
- Forecasted large lot demand (years 2010 to 2030)
- Reconciliation of large lot supply and demand
- Policy questions

### Inventory of existing large employers<sup>1</sup>

This analysis provides information on both large lot users and the region's large employers. An inventory of existing large employers (in 2006) suggests that not all large employers use large parcels of land. This portion of the analysis also draws attention to the region's many Oregon-originated, large employers that have been in the region for decades. Existing employers play a critical role in supporting the region's economy, and their needs should not be forgotten amongst efforts to attract the next big employer.

---

<sup>1</sup> This large employer portion of the analysis uses United States Bureau of Labor Statistics data (ES-202) from 2006. This data includes only those employees that are covered by unemployment insurance (about 98 percent of all non-farm employees). This data set is deemed confidential by the federal government, requiring that it be presented in a generalized format that does not identify individual employers.

## Methodology and results (large employers)

Different industries require different human resources. For instance, industrial uses typically require fewer employees per square foot than retail uses. This report's definition of a large employer recognizes these differences by varying employment minimums for each building type. To identify large employers, each North American Industry Classification System (NAICS) code<sup>2</sup> was first assigned to one of six building types.<sup>3</sup> A minimum employee number was applied to each building type, assuming that the building is on a 20-acre site (to control for parcel size). The large employer definitions are described in Table 1.

Table 1: definition of large employers by building type

Building type	NAICS codes	Number of equivalent jobs on 20 acres
Office	information finance real estate professional services management administration, waste	excluded from this large employer analysis because office uses would have too many employees on a 20-acre site to provide a means of identifying large employers
Flex	hi tech	600
General industrial	manufacturing (non high tech) transportation, warehouse, and utilities	400
Warehouse and distribution	wholesale	200
Retail	retail arts, entertainment, recreation accommodation and food service other services	700
Institution	education health and social services government	1,000

Using the definition of large employers found in Table 1 results in a list of 89 large employers inside the current urban growth boundary (UGB).

---

<sup>2</sup> NAICS codes are self-reported by firms and in a few cases do not appear to accurately represent the activities of the business on these particular sites. For instance one employer's NAICS code is in the wholesale category, placing them in the warehouse and distribution building type when most of their activities at this site appear to be office uses.

<sup>3</sup> This differs from the general methodology used in the urban growth report, which assigned each NAICS code to several building types. This difference in methodology does not appear to influence the results of this large lot/large employer analysis.

The original list of 89 large employers is described as follows:

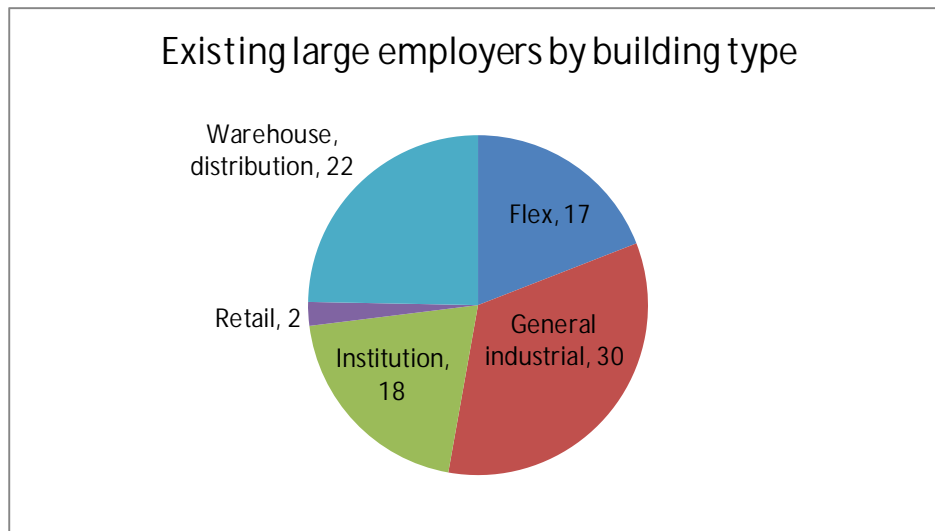


Figure 1: number of large employers inside the Metro UGB in 2006 by building type

- 16 percent of large employers are public sector
- 10 percent of large employers are in the central city
- 6 percent of large employers are in town centers or regional centers
- 9 percent of large employers are in corridors
- 61 percent of large employers are in Title 4 Employment, Industrial or Regionally Significant Industrial Areas (in some cases, these areas overlap with centers and corridors)

Nineteen of these 89 large employers are duplicates (same firm with multiple locations), leaving 70 unique large employers inside the UGB. Of these, 14 are public sector employers, leaving 56 large, unique, private-sector employers. Thirty-seven of these private firms (66 percent) originated in the Portland region. When public sector firms are included, 71 percent of the region's large employers originated in the Portland region (50 out of 70 employers).

As shown in Table 2, the 56 large, private employers have emerged in our region over the course of a century and a half. Many of them started as a small business that grew over time.<sup>4</sup>

This data is for information purposes only and does not impact the 2010 – 2030 large lot demand analysis.

Table 2: decade of origin of existing (year 2006) large, private employers in the Metro UGB

Decade	Number of existing (in 2006) large, private-sector employers by decade of origin in the Metro region	Number that are Oregon Originated
1850	1	1
1860	0	0
1870	2	2
1880	0	0
1890	1	1
1900	1	1
1910	4	4
1920	4	2
1930	4	4
1940	9	9
1950	3	2
1960	2	2
1970	8	5
1980	2	1
1990	6	4
2000-2006	3	0

---

<sup>4</sup> Additional information about these 56 firms as well as a description of methodology is available as Attachment 1 to this report.

## Existing large parcel users

In addition to identifying existing large employers, this study identifies existing large parcel users in the region. This provides an idea of what attributes future users may be looking for in large parcels. Large parcels were defined as 25 acres or larger.

### Methodology and results (existing large lot users)

To find existing large parcel users, taxlots larger than 25 acres that are being used for industrial or commercial purposes were identified. Other large employers (the 89 large employers as defined earlier in this report) that are located on an assemblage of more than 25 acres were added to this inventory. This survey finds a total of 60 existing firms inside the Metro UGB that are located on a parcel of land (or group of parcels) of at least 25 acres. Figure 2 shows the geographical distribution of these large parcels throughout the region. These large parcel users accounted for 8.1% of total employment in the region in 2006.

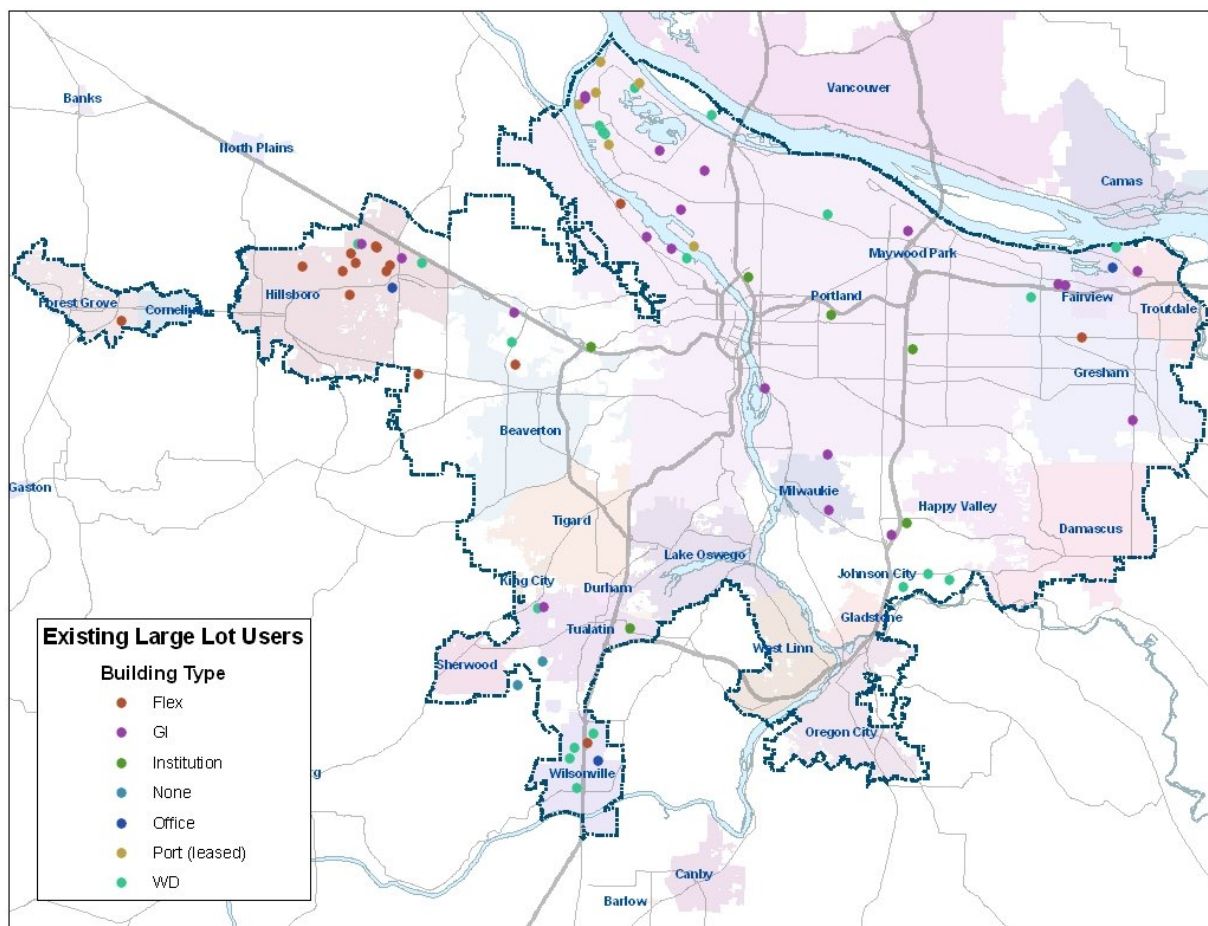


Figure 2: current large lot users by building type

GIS analysis indicates that these large parcels tend to be fairly flat. They may have some areas of slopes greater than 7% or even 15%, but these steep areas are usually small and scattered. Large parcel users with multiple buildings, like a hospital facility, are more likely to work around steeper slopes than a user



building a large warehouse or industrial building. There is evidence that all building types can work around small environmental limitations when necessary. Many of the parcels in the survey have areas that are protected by Title 3 or Title 13, usually in the form of a single stream corridor running through the property or protected areas along the edges of the parcel. Many large lot users have only developed a portion of their property, evidence of their preference for future expansion opportunities. Some basic attributes of these large parcels/users, organized by building type, are shown in Table 3. Additional information about employers on large parcels is included as Attachment 2.

Table 3: summary statistics for existing large lot users

Building type	Number of large employers	Total employees in building type	Proportion of regional employment	Average acreage per large employer	Average number of taxlots	Average employees per acre
Institutional	6	19,567	2.4 %	54.3	31.5	60.0
GI	21	10,475	1.3 %	53.2	3.0	9.4
WD	16	11,028	1.4 %	48.8	2.7	14.1
Flex	14	22,887	2.8 %	111.8	3.1	14.6
Office	3	1,635	0.2 %	82.2	5.0	6.6
Total	60	65,592	8.1 %			

#### Institutional large lot users

The six institutional employers inventoried here are all hospitals and related facilities. Together, they employed almost 20,000 people in 2006. There is strong evidence of taxlot assembly at these facilities, particularly those located in areas of higher density development. The total number of taxlots for each user ranges from 6 to 60 and total acreage ranges from 31 to 75 acres. For the large lot demand forecast section of this report, only medical uses are forecasted for the institutional building type. This is because other institutional large lot needs (e.g. schools) are better handled through the major UGB amendment process, which specifically addresses public facility needs.

#### General Industrial (GI) large lot users

There are 21 employers on large lots in the General Industrial category. The total lot sizes for these employers range from 25 to 164 acres, with an average of about 53 acres. There seems to be less taxlot assembly in this category. Eight of these employers are located on a single taxlot and the average number of taxlots for all GI large lot users is 3.0. GI buildings tend to be mostly one story, so coverage ratios provide a good indication of what the FARs might be on these lots. Coverage ratios were calculated for a sample of these employers and range anywhere from 0.16 to 0.67, with an average of 0.31. This is fairly consistent with the assumption in the preliminary employment urban growth report of an average FAR of 0.26 for the GI building type.

### Warehouse and Distribution (WD) large lot users

There are 16 examples of WD employers located on large lots. Taxlot sizes range from 25 to 112 acres with an outlier (Nike<sup>5</sup>) at 452 acres on an assembly of 17 taxlots. Most of these companies own fewer than five taxlots. A sample of coverage ratios for these lots provides a range of 0.07 to 0.58 and an average of 0.29.

### Flex large lot users

There are 14 examples of Flex employers located on large lots. Flex buildings tend to be located on the largest parcels, with an average of 112 acres per employer. However, there is evidence that these companies are holding land for future business expansion opportunities, as indicated by vacant taxlots and low coverage ratios where lots have been developed. Coverage ratios for a sample of developed lots range from 0.07 to 0.23 with an average of 0.13. Eight of these employers are located on a single taxlot while the rest are located on between two and 11 taxlots.

### Office large lot users

Because office uses are well-suited to denser development, office building types are rare on large parcels. Counter intuitively, in this sampling of large parcel users, the office building type has the lowest average employee density per acre. There are three Office employers located on lots larger than 25 acres. Their total land area ranges from 44 to 123 acres on 3 to 6 taxlots.

### Additional large lot users

There are some other examples of large lot users in the region that do not fit into our building type analysis. These include industrial users like sand and gravel mining as well as companies that are leasing large lots from the Port of Portland. The Port of Portland currently leases six large waterfront lots (or groups of taxlots) for warehouse and distribution use, one large lot for retail use and one for office use.

## Correlation between past preferences for large lots and future employment demand

This analysis was conducted to examine the relationships between jobs capacity and the types of firms that use large parcels. This analysis, as with the general employment analysis found in the UGR, is based on employment projections for the period 2010 to 2030. Two different growth scenarios, high growth and low growth were examined.<sup>6</sup> These employment projections, by NAICS sector, are shown in Tables 4 and 5.

---

<sup>5</sup> Nike's self-reported wholesale NAICS code places them in the warehouse and distribution building type. They more correctly would be placed in the office building type. Because it is beyond the scope of this analysis to double-check each building type, Nike has been kept in the WD building type for consistency. This does not affect projected demand for future large lot office or WD uses.

<sup>6</sup> The 2010 to 2030 range forecast is available as a separate document.

Table 4: High growth employment projections by sector in thousands of jobs

NAICS codes	Sector	2010	2015	2020	2025	2030
11, 21	Ag, Mining	1.9	1.8	1.7	1.6	1.5
23	Construction	77.9	85.0	93.6	104.0	117.1
334	Manufacturing - Hi tech	39.2	43.6	46.5	48.9	51.6
31,32,33 (except 334)	Manufacturing - non-hi tech	98.5	105.9	108.9	110.5	111.4
42	Wholesale	61.4	67.9	74.1	80.0	85.9
44,45	Retail	120.6	132.3	136.3	142.1	149.4
22, 48,49	Transp, Warehouse & Utilities	40.8	48.3	53.0	56.7	60.7
51	Information	26.9	31.5	36.6	41.7	47.1
52	Finance	48.1	56.6	62.3	67.6	72.5
53	Real Estate	28.5	31.5	34.7	37.6	40.6
54	Professional Services	60.8	71.8	81.9	90.9	100.3
55	Management	26.8	33.6	39.7	46.0	52.7
56	Admin, Waste	77.0	95.3	108.9	121.2	132.8
61	Education	25.9	29.0	33.2	37.4	41.7
62	Health & Social Services	119.8	143.6	170.6	194.5	219.9
71	Arts, Entertain, Rec	15.2	16.8	19.0	21.0	22.9
72	Accomm & Food Service	88.1	98.1	108.1	117.2	126.5
81	Other Services	41.9	51.2	60.2	68.2	76.1
92	Government	161.9	165.5	175.6	185.7	195.4
	Total	1,160.9	1,309.3	1,444.8	1,572.6	1,706.1

Table 5: Low growth employment projections by sector in thousands of jobs

NAICS codes	Sector	2010	2015	2020	2025	2030
11, 21	Ag, Mining	1.5	1.4	1.3	1.2	1.2
23	Construction	43.9	45.6	44.7	43.3	41.3
334	Manufacturing - Hi tech	24.9	26.3	27.5	28.3	29.1
31,32,33 (except 334)	Manufacturing - non-hi tech	71.4	72.7	71.9	70.7	69.5
42	Wholesale	55.8	61.8	67.6	72.9	78.3
44,45	Retail	101.3	107.9	108.1	110.4	114.7
22, 48,49	Transp, Warehouse & Utilities	36.2	43.1	47.3	50.4	53.9
51	Information	19.2	20.6	22.9	25.5	28.3
52	Finance	41.4	47.7	52.0	56.5	60.9
53	Real Estate	24.1	26.1	28.7	31.2	33.6
54	Professional Services	48.0	54.5	61.6	68.3	75.8
55	Management	17.6	19.4	21.3	23.6	26.7
56	Admin, Waste	44.9	49.1	51.7	54.4	57.1
61	Education	21.7	24.0	27.1	30.1	32.9
62	Health & Social Services	107.5	126.7	149.8	169.7	190.8
71	Arts, Entertain, Rec	12.2	13.4	15.2	16.8	18.3
72	Accomm & Food Service	82.7	92.1	101.4	109.9	118.5
81	Other Services	30.5	35.6	41.3	46.5	51.7
92	Government	149.0	151.2	160.0	168.9	177.3
	Total	933.6	1,019.1	1,101.4	1,178.5	1,260.0

Employment was distributed by real estate type using a set of density assumptions about the relationship between land area and employment for each building type.

Table 6 shows the sectors (by NAICS codes) that are expected to occupy each of the six building types. These assumptions are slightly different than the methods used to assign sectors to building types in the UGR. For simplicity, each sector has been assigned to one building type as opposed to the proportional assignment used in the UGR. Assumptions about the average square foot per employee (SFE) and average floor to area ratio (FAR) were made for each building type, also shown in Table 6. These numbers allow for a calculation of the average number of jobs per acre for each building type. These values are the same as the Outer Ring density assumptions used in the broader UGR analysis, as most large lot development is expected to take place in Outer Ring subareas. As shown in the UGR's buildable land inventory, most of the existing large lot supply is located near the outer edges of the current urban growth area.

Table 6: Building type and density assumptions

Building Type	NAICS codes	Average SFE	Average FAR	Average Jobs per Acre
Warehouse/Distribution (WD)	22, 42, 48, 49	1,850	0.32	7.5
General Industrial (GI)	23, 31, 32, 33 (except 334)	600	0.26	18.9
Tech/Flex (TF)	334	990	0.31	13.6
Office	51, 52, 53, 54, 55, 56	375	0.75	87.1
Retail	44, 45, 71, 72, 81	550	0.44	34.8
Medical	62	650	0.66	44.2

The next step is to determine how future job growth will be distributed among firm sizes. For this analysis, it is assumed that the proportional distribution of jobs by firm size will be the same as that observed in the 2006 employment data (for the Metro region). This distribution is shown in Table 7.

Table 7: Proportional distribution of employment by firm size for each building type

Firm size by jobs	WD	GI	TF	Office	Retail	Medical
<b>less than 10</b>	12%	15%	1%	17%	18%	13%
<b>10 to 49</b>	26%	30%	5%	26%	41%	24%
<b>50 to 99</b>	14%	17%	4%	14%	16%	13%
<b>100 to 149</b>	9%	9%	4%	7%	8%	6%
<b>150 to 199</b>	5%	6%	4%	5%	5%	4%
<b>200 to 499</b>	15%	14%	25%	14%	10%	9%
<b>500 to 999</b>	5%	5%	17%	9%	1%	5%
<b>1,000 to 1,999</b>	6%	5%	34%	5%	0%	7%
<b>2,000 to 2,999</b>	0%	0%	6%	2%	0%	6%
<b>3,000 or more</b>	7%	0%	0%	0%	0%	13%
<b>Total</b>	100%	100%	100%	100%	100%	100%

Finally, employment projections are run through this set of assumptions with the additional assumption of a 75% capture rate for the Metro UGB<sup>7</sup>. Tables 8 and 9 show the forecast of the number of new firms expected from 2010 to 2030 by firm size and building type. Note that in the low growth scenario, employment projections show a decline in employment in the General Industrial category, so the number of new firms and area of land for this building type have been set to zero.

Table 8: High growth forecast of new firms by firm size and building type, 2010 to 2030

Firm size by jobs	WD	GI	TF	Office	Retail	Medical	Total
less than 10	778	1,140	14	4,518	2,976	2,016	11,442
10 to 49	290	393	15	1,149	1,130	603	3,580
50 to 99	63	87	5	249	172	126	702
100 to 149	25	28	3	76	55	34	221
150 to 199	10	14	2	40	24	15	105
200 to 499	14	16	7	55	24	20	136
500 to 999	2	3	2	17	1	5	30
1,000 to 1,999	1	1	2	4	0	4	12
2,000 to 2,999	0	0	0	1	0	2	3
3,000 or more	1	0	0	0	0	3	4
<b>Total</b>	<b>1,184</b>	<b>1,682</b>	<b>50</b>	<b>6,109</b>	<b>4,382</b>	<b>2,828</b>	<b>16,235</b>

Table 9: Low growth forecast of new firms by firm size and building type, 2010 to 2030

Firm size by jobs	WD	GI	TF	Office	Retail	Medical	Total
less than 10	704	0	4	2,216	2,086	1,680	6,690
10 to 49	263	0	5	563	792	502	2,125
50 to 99	57	0	2	122	120	105	406
100 to 149	23	0	1	37	38	28	127
150 to 199	9	0	1	20	17	13	60
200 to 499	13	0	2	27	17	17	76
500 to 999	2	0	1	8	1	5	17
1,000 to 1,999	1	0	1	2	0	3	7
2,000 to 2,999	0	0	0	1	0	1	2
3,000 or more	1	0	0	0	0	2	3
<b>Total</b>	<b>1,073</b>	<b>0</b>	<b>17</b>	<b>2,996</b>	<b>3,071</b>	<b>2,356</b>	<b>9,513</b>

<sup>7</sup> The capture rate used in this UGR is applied to a larger 7-county area than past UGRs, which used a 4-county capture rate. This change is due to the U.S. Office of Management and Budget's changed definition of the primary metropolitan statistical area.

Using the assumptions about jobs per acre from Table 6, the forecast of firms is correlated to parcel size and building type, shown in Tables 10 and 11.

Table 101: High growth lot correlation by lot size and building type, 2010 to 2030

Lot size (acres)	WD	GI	TF	Office	Retail	Medical	Total
<b>25 to 50</b>	11	4	4	1	0	4	24
<b>50 to 100</b>	7	1	2	0	0	5	15
<b>100 plus</b>	3	0	1	0	0	0	4

Table 11: Low growth lot correlation by lot size and building type, 2010 to 2030

Lot size (acres)	WD	GI	TF	Office	Retail	Medical	Total
<b>25 to 50</b>	10	0	1	1	0	3	15
<b>50 to 100</b>	6	0	1	0	0	3	10
<b>100 plus</b>	3	0	1	0	0	0	4

Large lot demand for marine and rail terminal use is not included in this analysis. These types of facilities may have relatively few employees and little building square footage. Consequently, a job forecast may be an inadequate means of forecasting land demand for these uses. Furthermore, these uses are extremely location specific and cannot be accommodated through UGB expansions.

## Policy questions

1. Some of the region's existing large lot employers appear to hold vacant land for future local expansion opportunities. Should it be a regional policy to provide capacity for future business expansions that may exceed the twenty-year need? What are the risks of not doing so?
2. Given the inherent uncertainty of the range forecast, what are the risks and opportunities of providing too much or too little large-lot employment capacity?
3. This analysis identifies potential demand for one 25-to-50-acre lot for office uses. Office uses are well-suited to multi-story buildings. Should it be regional policy to expand the UGB to provide large lots for office uses? What are the risks of not doing so?
4. Should the cyclical UGR capacity analysis include large lot institutional uses (medical, education, government) or should they be handled on an as-needed basis?
5. Since they need to be located close to where people live, should we expect that future institutional uses will occur in smaller building formats that don't require large lot UGB expansions?
6. Should we assume that potential land assembly can help address large lot demand?
7. What strategies can be put in place to ensure that industrial land is used for job generating industrial purposes in order to protect public investments made to support industrial uses (such as transportation investments and planning efforts) and enhance regional competitiveness?

### Reconciliation of large lot supply and potential demand

It is likely that many future large parcel needs will need to be accommodated on vacant land rather than refill. Refill would appear to be a more likely source of capacity for smaller lot needs. The buildable land inventory for employment uses was amended by Metro's regional partners to incorporate local knowledge of available land. Details about the large lot buildable land inventory and a reconciliation of supply and potential demand are included in the urban growth report.

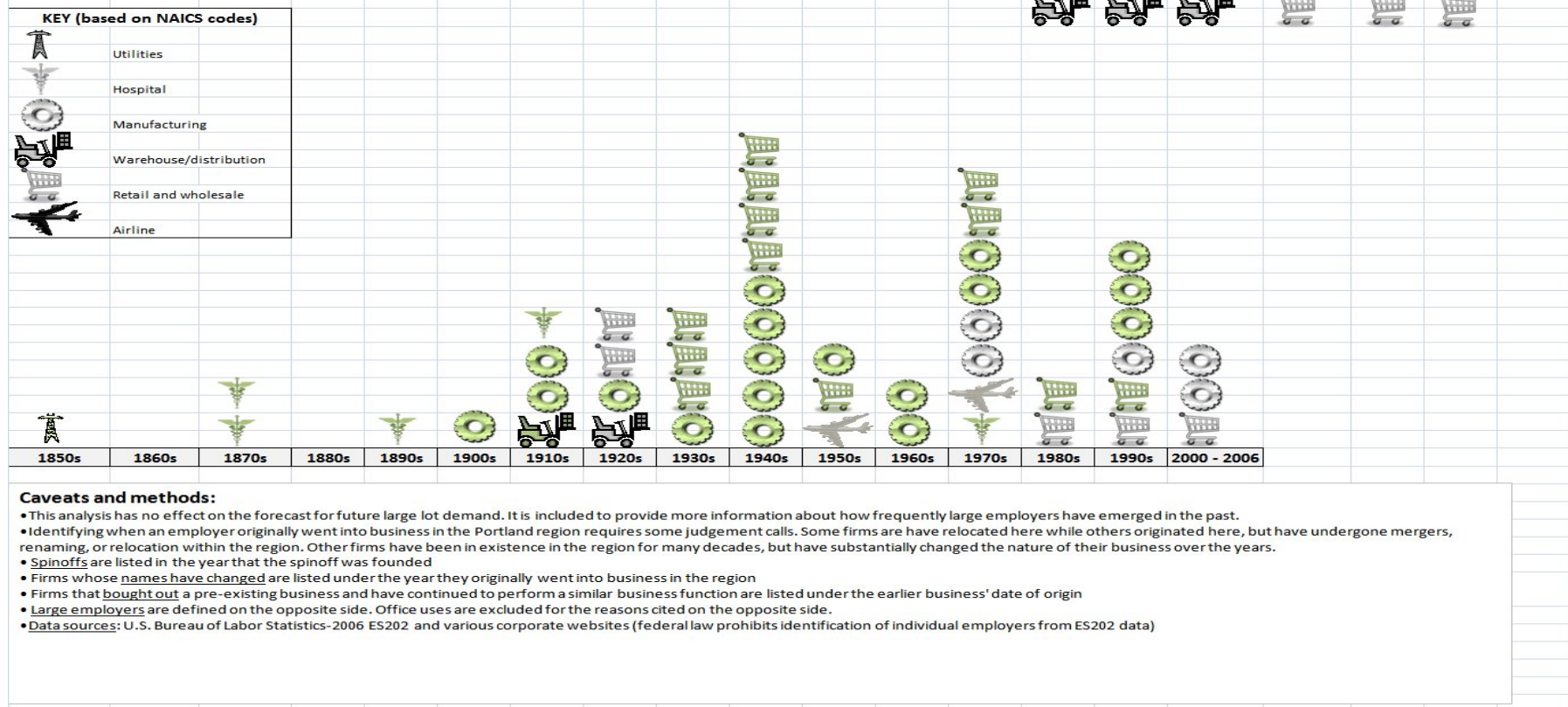


## Attachment 1: Existing large employers (2006)

### Origins of the Portland metropolitan region's large, private sector employers by sector and decade (through 2006)

Each icon represents one large private sector employer

Icons shaded green represent firms that originated in the Portland region





## Attachment 2: existing large lot employers

This section is included for information purposes only

### Existing large lot employers

This is a list of employers located on a taxlot or assemblage of taxlots of at least 25 acres. They were collected by looking at three different sources:

First, we looked at a set of "large employers" based on the 2006 ES-202 employment data to see if they were located on more than 25 acres of land. Different large employer criteria were established for each building type. We checked the area surrounding each employer to be sure to account for employers located on multiple taxlots. Next, we searched the current taxlot data for lots greater than 25 acres. Again, we checked the surrounding area for any additional taxlots being used by the employers associated with these large lots. We also checked the list of Industrial Cluster Employers from the City of Hillsboro (June 2009) for any additional large lot employers. Finally, this inventory includes additional large lot users on Port of Portland properties that were submitted by the Port.

\* Note: Coverage ratios were calculated for a sample of employers from each building type by measuring building footprints from aerial photographs by hand. These building areas were then compared to total land area for the employer, regardless of whether the individual taxlots were developed or not. There may be some error in the building footprint measurements, and the coverage ratios will be skewed downward for employers that own a lot of vacant land. This is particularly a problem with Flex employers, so FARs have been provided where available (see # below.)

# Note: Adjusted floor to area ratios (FARs) have been provided by the City of Hillsboro for selected employers. These data have been calculated based only on the developed parcels of land (excluding vacant parcels), so they should be more indicative of building density for these records than coverage ratios.

# Institutional

NAICS (3 digit)	NAICS Description	Name	Market area	Acres	Number of Taxlots	Coverage ratio *	Adjusted FAR #
623	General Medical and Surgical Hospitals	Providence Portland Medical Center	inner north and east	31	45	-	-
622	General Medical and Surgical Hospitals	PROVIDENCE ST VINCENT MEDICAL CTR	inner westside	40	15	0.33	-
622	General Medical and Surgical Hospitals	LEGACY EMANUEL HOSPITAL & HLTH CNTR	central city	41	60	-	-
622	General Medical and Surgical Hospitals	Legacy Meridian Park Hospital	outer I-5 / I-205	68	10	-	-
622	General Medical and Surgical Hospitals	SUNNYSIDE HOSPITAL	outer clackamas	71	6	0.20	-
622	General Medical and Surgical Hospitals	PORTLAND ADVENTIST MEDICAL CENTER	inner north and east	75	53	-	-
				Total	326	189	
				Average	54.3	31.5	0.27

### General industrial

NAICS (3 digit)	NAICS Description	Name	Market area	Acres	Number of Taxlots	Coverage ratio *	Adjusted FAR #
331	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	NORTHWEST PIPE COMPANY	inner north and east	25	1	-	-
331	Steel Investment Foundries	PCC STRUCTURALS, INC.	outer clackamas	28	2	0.16	-
311	Coffee and Tea Manufacturing	BOYD COFFEE COMPANY	east multnomah co	28	1	-	-
332	Fabricated Pipe and Pipe Fitting Manufacturing	TUBE SPECIALTIES CO INC	east multnomah co	28	1	-	-
324	Asphalt Shingle and Coating Materials Manufacturing	HERBERT MALARKEY ROOFING COMPANY	inner north and east	28	2	-	-
327	Lime Manufacturing	ASH GROVE CEMENT COMPANY	inner north and east	29	1	-	-
333	Optical Instrument and Lens Manufacturing	LEUPOLD & STEVENS INC	inner westside	29	5	0.25	-
331	Steel Investment Foundries	PCC STRUCTURALS, INC.	inner north and east	29	11	0.38	-
336	Heavy Duty Truck Manufacturing	FREIGHTLINER OF PORTLAND LLC	inner north and east	33	3	0.67	-
332	Saw Blade and Handsaw Manufacturing	OREGON CUTTING SYSTEMS	inner clackamas	35	4	0.23	-
322	Paper (except Newsprint) Mills	GEORGIA PACIFIC	east multnomah co	36	1	-	-
325	All Other Basic Inorganic Chemical Manufacturing	TOKYO OHKA KOGYO AMERICA INC	outer westside	39	1	-	-
335	Current-Carrying Wiring Device Manufacturing	JAE OREGON INC	outer I-5 / I-205	40	1	-	-
324	Asphalt Paving Mixture and Block Manufacturing	PARAMOUNT OF OREGON INC	inner north and east	42	3	-	-
327	Glass Container Manufacturing	OWENS BROCKWAY GLASS CONTAINER INC	inner north and east	48	6	-	-
336	Railroad Rolling Stock Manufacturing	GUNDERSON, INC.	inner north and east	55	6	0.39	-
331	Steel Foundries (except Investment)	COLUMBIA STEEL CASTING CO., INC.	inner north and east	80	5	-	-
336	Other Aircraft Parts and Auxiliary Equipment Manufacturing	THE BOEING COMPANY	east multnomah co	86	3	0.27	-
327	Other Structural Clay Product Manufacturing	MUTUAL MATERIALS CO. - PORTLAND OR	east multnomah co	88	2	-	-
331	Iron and Steel Mills	EVRAZ OREGON STEEL MILLS INC	inner north and east	147	1	0.17	-
327	Ready-Mix Concrete Manufacturing	ROSS ISLAND SAND & GRAVEL CO.	inner north and east	164	2	-	-
Total				1,118	62		
Average				53.2	3.0	0.31	

### Warehouse and distribution

NAICS (3 digit)	NAICS Description	Name	Market area	Acres	Number of Taxlots	Coverage ratio *	Adjusted FAR #
424	General Line Grocery Merchant Wholesalers	SYSCO FOOD SERVICE OF PORTLAND	outer I-5 / I-205	25	2	0.27	-
423	Metal Service Centers and Other Metal Merchant Wholesalers	LAMPROS STEEL	inner north and east	25	1	-	-
493	General Warehousing and Storage	G.I. JOES	outer I-5 / I-205	26	1	-	-
484	General Freight Trucking, Long-Distance, Less Than Truckload	USF REDDAWAY, INC.	outer clackamas	27	3	0.07	-
423	Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers	THE HALTON COMPANY	inner north and east	29	2	0.19	-
493	Other Warehousing and Storage	G-P CONSUMER PROD NW LP	inner north and east	30	1	-	-
424	Men's and Boys' Clothing and Furnishings Merchant Wholesalers	COLUMBIA SPORTSWEAR USA CORPORATION	inner north and east	32	3	0.58	-
423	Other Professional Equipment and Supplies Merchant Wholesalers	VWR CORPORATION	outer I-5 / I-205	33	1	-	-
425	Wholesale Trade Agents and Brokers	PORTLAND AUTO AUCTION	inner north and east	38	2	-	-
493	General Warehousing and Storage	ALBERTONS	east multnomah co	54	2	-	-
493	General Warehousing and Storage	SAFEWAY STORES, INC.	outer clackamas	70	7	0.37	-
424	General Line Grocery Merchant Wholesalers	KROGER INC	outer clackamas	75	1	0.49	-
424	Drugs and Druggists' Sundries Merchant Wholesalers	GENENTECH INC	outer westside	75	5	-	0.19
488	Marine Cargo Handling	Oregon Paper Fiber		77	5	-	-
488	Other Support Activities for Road Transportation	SCHNITZER STEEL PRODUCTS	inner north and east	112	5	-	-
424	Footwear Merchant Wholesalers	NIKE, INC.	inner westside	452	17	0.06	-
			Total	1,179	58		
			Average	73.7	3.6	0.29	

Flex

NAICS (3 digit)	NAICS Description	Name	Market area	Acres	Number of Taxlots	Coverage ratio *	Adjusted FAR #
334	Semiconductor and Related Device Manufacturing	Integrated Device Technology Inc (IDT)	outer westside	25	1	-	0.37
334	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals	FEI CO	outer westside	27	1	0.13	0.39
333	Semiconductor and Related Device Manufacturing	MAXIM INTEGRATED PRODUCTS	inner westside	33	1	0.23	0.22
334	Semiconductor and Related Device Manufacturing	Triquint	outer westside	47	4	0.08	0.15
334	Semiconductor and Related Device Manufacturing	INTEL CORPORATION (Hawthorn Farm)	outer westside	53	1	-	0.27
334	Semiconductor and Related Device Manufacturing	INTEL CORPORATION (Aloha)	outer westside	59	7	-	-
334	Printed Circuit Assembly (Electronic Assembly) Manufacturing	MERIX CORPORATION	outer westside	68	3	-	-
334	Semiconductor and Related Device Manufacturing	SILTRONIC CORPORATION	inner north and east	79	1	0.13	-
0		Solarworld	outer westside	94	1	-	0.32
334	Semiconductor and Related Device Manufacturing	INTEL CORPORATION (Jones Farm)	outer westside	116	1	-	0.18
334	Other Computer Peripheral Equipment Manufacturing	XEROX CORPORATION	outer I-5 / I-205	136	2	0.15	-
334	Semiconductor and Related Device Manufacturing	MICROCHIP TECHNOLOGY INC	east multnomah co	140	2	0.07	-
334	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals	TEKTRONIX, INC.	inner westside	166	7	0.13	-
334	Semiconductor and Related Device Manufacturing	INTEL CORPORATION (Ronler Acres & vacant)	outer westside	522	11	-	0.27
				Total	1,565	43	
				Average	111.8	3.1	0.13
							0.27

#### Office

NAICS (3 digit)	NAICS Description	Name	Market area	Acres	Number of Taxlots	Coverage ratio *	Adjusted FAR #
511	Software Publishers	Synopsys	outer westside	44	6	-	-
541		NMHG OREGON INC	east multnomah co	79	3	-	-
541	Computer Systems Design Services	MENTOR GRAPHICS CORP	outer I-5 / I-205	123	6	-	-
				Total	246	15	
				Average	82.2	5.0	

#### No building type

NAICS (3 digit)	NAICS Description	Name	Market area	Acres	Number of Taxlots	Coverage ratio *	Adjusted FAR #
212	Other Crushed and Broken Stone Mining and Quarrying	NORTHFORK EXCAVATING, INC	outer I-5 / I-206	67	1	-	-
212	Construction Sand and Gravel Mining	ROGERS NORTHWEST INC	outer I-5 / I-205	213	13	-	-



Large Hillsboro employers (from Industrial Cluster list) on smaller lots

NAICS (3dig)	NAICS Description	Employer (Notes)	MAname	Acres	Number of Taxlots	Btype	FAR
0		Should be Applied Materials?	outer westside	15	1	Flex	0.45
334	Other Computer Peripheral Equipment Manufacturing	Epson	outer westside	21	2	Flex	0.39
423	Industrial Supplies Merchant Wholesalers	Tokyo Electron America	outer westside	6	1	WD	0.31
334	Electronic Computer Manufacturing	Sun Microsystems	outer westside	12	2	Flex	0.29
334	Electronic Computer Manufacturing	Radisys	outer westside	11	2	Flex	0.43
334	Semiconductor and Related Device Manufacturing	Lattice Semiconductor Corporation	outer westside	16	5	Flex	0.41
333	Semiconductor Machinery Manufacturing	Novellus	outer westside	13	2	Flex	-

Port of Portland large lot users

493	Other Warehousing and Storage	G-P CONSUMER PROD NW LP	Port of Portland	55	2	WD	
494	Other Warehousing and Storage	GEORGIA-PACIFIC CONSUMER PRODUCT LLC	Port of Portland	54	2	WD	
424	Grain and Field Bean Merchant Wholesalers	COLUMBIA GRAIN	Port of Portland	38	1	WD	
		CASCADE STATION RETAIL	Port of Portland	27	1	Retail	
811	Car Washes	TOYOTA MOTOR SALES USA	Port of Portland	74	2		
493	Other Warehousing and Storage	AUTO WAREHOUSING INC	Port of Portland	120	1	WD	
425	Wholesale Trade Agents and Brokers	HUNDAI MOTOR AMERICA	Port of Portland	49	1	WD	
551	Corporate, Subsidiary, and Regional Managing Offices	FREIGHTLINER LLC	Port of Portland	27	2	Office	
		PORTLAND BULK TERMINALS	Port of Portland	83	4		
		BNSF/Portland Terminal		120			
		Willbridge/Lake Rail Yard		193			
		Union Pacific Albina Rail Yard		98			
		Union Pacific Brooklyn Rail Yard		37			
		Union Pacific Barnes Rail Yard		36			
		BNSF Ford lead		80			
		Portland Bulk Terminals/Canpotex @ Terminal 5					

Toyota @ Terminal 4	82
Freightliner Headquarters	27
Portland Shipyard on Swan Island	60
Shipyard Commerce Center on Swan Island	64
Knife River	48

## Appendix 5: Forecast-based multi-tenant (business park)/large lot analysis

---

### Introduction

Large lot business parks with multiple tenants can play an important role in the region's economy. In general, business parks of all sizes serve a land demand segment that caters to start-up firms that do not have the financial wherewithal or desire to purchase or lease standalone buildings. Business parks also provide flexibility for small or large companies that have less tolerance for risk by allowing them to expand and contract by leasing more or fewer adjacent units within the same building or complex.

Business parks may also provide some benefits from the standpoint of land use efficiency. Some multi-tenant facilities may provide employment space more efficiently than individually owned and occupied buildings because tenants can share facilities that are used on an irregular basis (Yap and Circ). For example, small companies that need warehouse space can collocate in a multi-tenant building and share loading docks, or office type employers that deal with occasional outside clients can share parking for their customers. In addition, there are a few examples in Canada and elsewhere in the world of a movement towards "Eco-Industrial Parks" that go beyond just "green" building and landscaping (Braziller). These new industrial parks strive to create synergies among their tenants so that, for example, the by-products of one company (materials or energy) might become inputs for another (Innovista, TaigaNova). This new type of business park could play a role as the region moves toward new environmental goals such as reducing greenhouse gas emissions.

However, it should be noted that these benefits are not necessarily limited to very large business parks (greater than 25 acres) and can often be achieved through smaller or higher density multi-tenant developments as well. Firms can lease employment space in a wide range of multi-tenant facilities, from small office buildings to sprawling industrial parks, depending on their needs and preferences. The demand for land for smaller business parks (less than 25 acres) is addressed through the broader employment UGR analysis.

This study forecasts future preferences for employment space in large business parks based on the assumption that preferences for this building format will be the same in the future as they are now. For this analysis, firms that are currently located in large business parks are compared to total employment throughout the region to obtain the proportion of current employment in large business parks. This analysis assumes that this same proportion of projected employment growth from 2010 to 2030 will prefer to locate in large business parks. These preferences may, however, change over time.

The starting point for this study is the "Top 25 business parks" list produced by the Portland Business Journal (PBJ) in December 2008. This list provides the names and locations of the 26 largest business

parks in the region, ranked by building square footage. After excluding business parks in Vancouver, WA, and those owned by the Port of Portland, there are 21 large business parks left for analysis. In addition to these, two more business parks close to or over 25 acres were found while researching the site plans for the parks on the PBJ list so these have been included as well.

## Mapping methods

These existing business parks were mapped by selecting the best matching taxlots using the following data:

- (1) Taxlots – boundaries and ownership information
- (2) Business park site maps and descriptions obtained from websites of owners, leasing agents and other sources

Employers located in these business parks were identified from geocoded 2006 ES202 data by first selecting points that fell inside any of the taxlots mapped as business parks in the previous step. Next, any employers that geocoded to the street near the business park that had an address that was similar to the business park taxlots or other employers located in the business park were also selected.

## Large lot business parks: summary statistics

Using the business park taxlot and employer data compiled in the mapping stage, some summary statistics have been calculated in order to characterize large business parks and the employers that tend to occupy them.

Table 1 includes the list of the business parks that were examined and some figures that describe their land and buildings. Total acreage was derived from current taxlot data and building square footage measurements are reproduced from the Portland Business Journal and business park websites. The adjusted floor area ratio (FAR) values are based only on developed parcels, so any taxlots that appeared completely vacant in aerial photographs were excluded from these calculations. Table 2 presents employment statistics by business park.

Table 1: Land and building area statistics by business park

Business Park	Area		
	Total Acres	Building Square Feet	Adjusted FAR
AmberGlen Business Center	72.5	572,685	0.21
AmberGlen East and West	44.4	536,000	0.31
Beaverton Creek Business Park	55.9	512,852	0.26
Columbia Commerce Park	31.4	562,888	0.41
Columbia Pacific Airport Way Industrial Park	46.6	768,279	0.38
Cornell Oaks Corporate Center	106.8	684,000	0.18
Creekside Corporate Park	50.4	615,113	0.28
Kruse Woods Corporate Center	76.4	1,652,105	0.56
Lincoln Center	22.4	728,770	0.75
Nimbus Corporate Center	47.5	688,632	0.33
Northwest Corporate Park	30.0	678,028	0.52
Oregon Business Park 1**	36.4	782,294*	0.49
Oregon Business Park 2**	5.3	71,511*	0.31
Oregon Business Park 3	35.2	501,029	0.33
PacTrust Business Center	40.2	570,539	0.33
Pacific Business Park (South)	25.57	340,864*	0.31
Pacific Corporate Center	55.8	601,542	0.25
Parkside Business Center	51.9	687,829	0.30
Piedmont	24.4	#	#
Southshore Corporate Park	311.7	1,630,000	0.22
Tualatin Business Center I & II	33.40	385,305*	0.26
Wilsonville Business Center	30.1	710,000	0.54
Woodside Corporate Park	37.4	579,845	0.36
Total	1271.5	14,860,110	0.33
# Building square footage data unavailable	* Building square footage data from PacTrust		
**Oregon Business Parks 1 & 2 are reported together in the PBJ list because they are adjacent			
Source: Building square footage data from Portland Business Journal unless otherwise noted			

Table 2 – Employment statistics by business park

Business Park	Employment (ES202 2006)			Sq Ft per Employee
	Employer Count	Average employees per firm	Total Employment	
AmberGlen Business Center	33	41.4	1,366	419
AmberGlen East and West	24	33.9	813	659
Beaverton Creek Business Park	32	51.1	1,634	314
Columbia Commerce Park	22	18.1	398	1,414
Columbia Pacific Airport Way Industrial Park	45	10.5	471	1,631
Cornell Oaks Corporate Center	77	42.2	3,250	210
Creekside Corporate Park	59	33.1	1,952	315
Kruse Woods Corporate Center	252	14.5	3,662	451
Lincoln Center	204	12.9	2,627	277
Nimbus Corporate Center	51	23.5	1,197	575
Northwest Corporate Park	38	13.7	521	1,301
Oregon Business Park 1	49	23.2	1,138	687
Oregon Business Park 2	22	5.9	130	550
Oregon Business Park 3	36	20.7	744	673
PacTrust Business Center	50	29.0	1,448	394
Pacific Business Park (South)	30	15.23	457	746
Pacific Corporate Center	78	18.6	1,451	415
Parkside Business Center	164	9.7	1,588	433
Piedmont	7	133.3	933	#
Southshore Corporate Park	32	39.7	1,270	1,283
Tualatin Business Center I & II	19	40.42	768	502
Wilsonville Business Center	39	13.5	525	1,352
Woodside Corporate Park	39	17.6	687	844
Total	1,353	20.55	29,030	

Table 3 reorganizes the data to look at 2006 business park employment by sector. These employers represent a small fraction, about 3.6% in 2006, of total employment in the three county region. However, the fraction of employment in large business parks varies by sector. The business parks in this study are home to more than 10% of employment in the Information, Finance and Wholesale sectors, but less than 1% of employment in Health and Social services and several other sectors.

Table 3 – ES202 2006 employment by sector (large business parks and 3-county area)

Sector	Business park employment (jobs)	Total sector employment (3 county)	Proportion of jobs in large business parks
11, 12 (Ag, Mining)	5	9,811	0.1%
23 (Construction)	1,477	46,701	3.2%
334 (Mfg - High Tech)	3,144	33,539	9.4%
31, 32, 33, except 334 (Mfg - Non High Tech)	1,682	69,056	2.4%
42 (Wholesale)	4,996	49,178	10.2%
44, 45 (Retail)	1,041	84,111	1.2%
22, 48, 49 (TWU)	583	40,422	1.4%
51 (Information)	2,650	20,019	13.2%
52 (Finance)	4,050	37,524	10.8%
53 (Real Estate)	576	15,818	3.6%
54 (Professional Services)	3,185	43,273	7.4%
55 (Management)	840	20,745	4.0%
56 (Admin & Waste)	2,945	52,938	5.6%
61 (Education)	15	61,468	0.0%
62 (Health & Social Services)	468	84,801	0.6%
71 (Arts, Entertainment & Recreation)	110	12,042	0.9%
72 (Accommodation & Food Service)	516	63,756	0.8%
81 (Other Services)	579	31,551	1.8%
92 (Government)	151	31,398	0.5%
None	17	238	7.1%
Total	29,030	808,389	3.6%

The employment shown in Table 3 was aggregated into six building types using the same assumptions as the large lot analysis (Appendix 4 to the urban growth report (UGR)), which are included in Table 9 in this report.

Table 4 indicates that nearly half of the employment in large business parks was in sectors associated with the office building type.

Table 4 – Distribution of employment by building type in 2006 (large business parks and 3 county)

Building Type	Business Park Employment	Proportion of Business Park Employment by Building Type	Total Employment (3 county)	Proportion of Total Employment by Building Type
Warehouse/dist	5,579	19.2%	89,600	11.1%
Gen industrial	3,159	10.9%	115,757	14.3%
Tech/flex	3,144	10.8%	33,539	4.1%
Office	14,246	49.1%	190,317	23.5%
Retail	2,246	7.7%	191,460	23.7%
Institution	634	2.2%	177,667	22.0%

### Distribution of existing (2006) business parks by firm size

In order to understand how smaller firms aggregate in business parks, the patterns of current (2006) employment in existing business parks were examined.

The firms located in these business parks are mostly small, in the range of 0 to 50 employees. As shown in Figure 1, almost 60% of employees located in large business parks work for firms with no more than 100 employees. Relatively small firm sizes provide some explanation of why these firms may prefer multi-tenant space. However, there is a wide range of firm sizes within each business park, with more than half of business parks in this study also home to at least one firm with more than 200 employees in 2006.

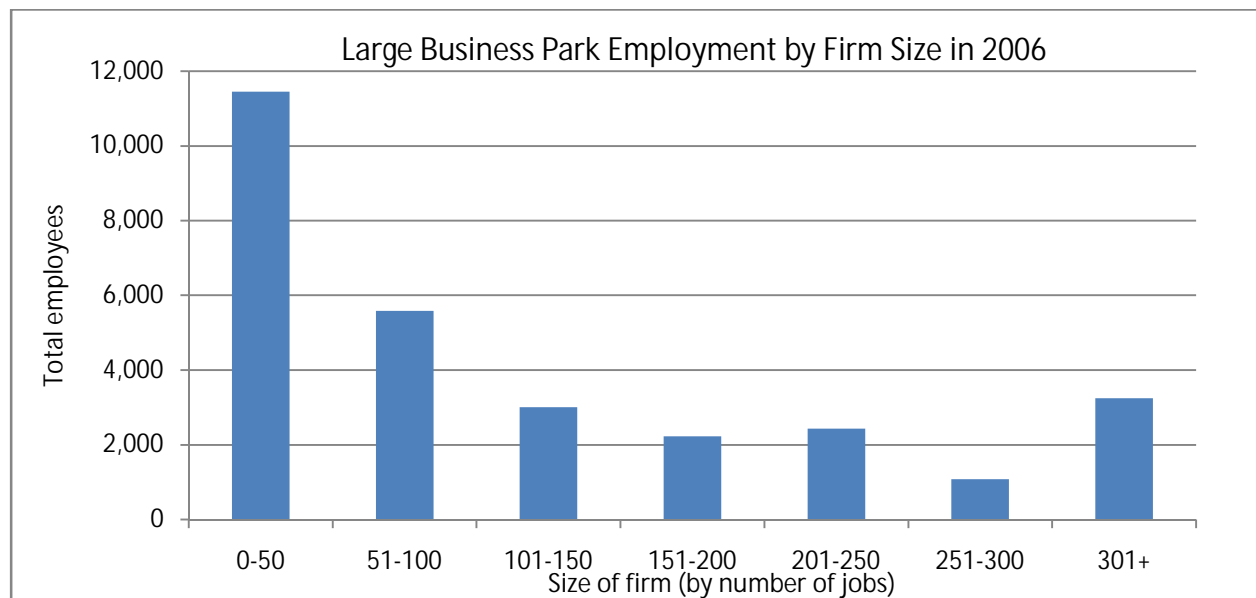


Figure 1 – Distribution of large business park employment by firm size in 2006



The distribution of business parks by employment is shown in Table 5. These data show, for example, that seven of the large business parks in this analysis housed between 500 and 1,000 employees.

Table 5 – Distribution of large business parks by employment (2006)

Business Park Size (employees)	Number of Business Parks	Proportion of Business Parks
< 500	4	17.4%
500 - 1000	7	30.4%
1000-2000	9	39.1%
2000-3000	1	4.3%
3000 +	2	8.7%
Total	23	100.0%

The 2006 distribution of business park employment by firm size and building type is shown in Table 6. For the purpose of forecasting potential business park preferences in the future, the proportions in Table 5 were used to convert the 2006 distribution of business park employment by firm size to an employment distribution by business park size (see Table 7). The overall total business park employment and employment by building type numbers have been maintained, however the firm sizes have been rearranged into business park-sized entities that would likely prefer larger parcels.

Table 6 – Distribution of business park employment by firm size (2006)

Firm size by jobs	W/D	Gen Ind	Tech/ Flex	Office	Retail	Inst	Total
less than 10	732	243	47	1,195	288	82	2,637
10 to 49	1,827	1,356	329	4,161	759	226	8,715
50 to 99	1,134	701	216	2,679	407	160	5,390
100 to 149	347	204	239	1,832	233	0	2,855
150 to 199	315	0	648	985	332	0	2,280
200 to 499	1,224	655	1,665	3,394	215	0	7,153
500 to 999	0	0	0	0	0	0	0
1,000 to 1,999	0	0	0	0	0	0	0
2,000 to 2,999	0	0	0	0	0	0	0
3,000 or more	0	0	0	0	0	0	0
Total	5,579	3,159	3,144	14,246	2,234	468	29,030
Columns will not add to Total since a small number of government and other jobs are not shown.							

Table 7 – Distribution of business park employment by business park size (2006)

Business park size by jobs	W/D	Gen Ind	Tech/ Flex	Office	Retail	Inst	Total
less than 10	0	0	0	0	0	0	0
10 to 49	0	0	0	0	0	0	0
50 to 99	0	0	0	0	0	0	0
100 to 149	0	0	0	0	0	0	0
150 to 199	0	0	0	0	0	0	0
200 to 499	970	549	547	2,478	389	81	5,049
500 to 999	1,698	961	957	4,336	680	142	8,835
1,000 to 1,999	2,183	1,236	1,230	5,575	874	183	11,360
2,000 to 2,999	243	137	137	619	97	20	1,262
3,000 or more	485	275	273	1,239	194	41	2,524
Total	5,579	3,159	3,144	14,246	2,234	468	29,030
Columns will not add to Total since a small number of government and other jobs are not shown.							

## Forecasted preference for large business parks

The next step is to forecast future employment in large business parks. The forecast assumes that fixed proportions of employment, by sector, will locate in large business parks in the future. The proportions observed for 2006, shown in Table 3, were used to scale the full employment forecast from 2010 to 2030 to large business park employment. Whether or not those preferences are “needs” remains for policy discussion. It also remains for debate whether these preferences will change over time.

The methodology used to forecast potential preferences for large business parks generally follows the steps of the large lot analysis for large individual employers (see Appendix 4). However, a few changes are made to account for the smaller employers involved in this analysis as well as the mixture of building types in a single business park.

Projected employment was aggregated from sector to building type, based on the relationships shown in Table 9 and then the forecasts were adjusted for infill and redevelopment using the refill rates also shown in Table 9. The Outer Ring market area average refill rates were chosen from the broader UGR analysis for this purpose, as most new business parks are likely to locate in the Outer Ring subareas. The use of a refill rate is a different approach than the large lot analysis, which did not assume any refill rate because the types of employers considered in the large lot analysis are assumed to have an inherent preference for large, vacant lots. Refill capacity is, however, assumed for this business park analysis because many of these types of employers do not necessarily need to locate on a large lot. Many are expected to locate on infill or redevelopment sites.

Projected changes in large business park employment from 2010 to 2030 under two different growth scenarios are shown in Table 8.

Table 8 – Projected employment changes in large business parks from 2010 to 2030, adjusted for refill

Growth Scenario	Change in Business Park Employment by Building Type, 2010 to 2030						Total Change
	W/D	Gen Ind	Tech/Flex	Office	Retail	Inst	
High	2,250	1,220	970	8,510	990	460	14,300
Low	2,060	-100	330	4,600	660	380	7,840

A second departure from the individual employer large lot analysis comes in the FAR assumptions that are used. Large business parks tend to have a mix of building types within the same property. Rather than use individual building type FAR assumptions to convert the employment forecast into land area, the weighted average FAR for the existing business parks examined in this study has been used across all building types. As previously shown in Table 1, this value is 0.33, so 0.33 has been used as the FAR for all building types. This may seem too high or too low for a particular building type, but it represents the mixture of building types typically found in large business parks.

The square foot per employee assumptions remain differentiated by building type, shown in Table 9. These SFE assumptions are the same as those used for the Outer Ring subareas in the broader employment UGR, again because most new business parks are expected to locate in the Outer Ring subareas.

Table 9 – Building type and density assumptions

Building Type	NAICS codes	Outer Ring SFE	Business Park FAR	Outer Ring Refill Rate
Warehouse/Distribution	22, 42, 48, 49	1,850	0.33	18%
General Industrial	23, 31, 32, 33 (except 334)	600	0.33	14%
Flex	334	990	0.33	16%
Office	51, 52, 53, 54, 55, 56	375	0.33	30%
Retail	44, 45, 71, 72, 81	550	0.33	25%
Institution	61, 62, 92	650	0.33	36%

With these changes, the projected employment growth in large business parks was then run through the same set of calculations as the individual employer large lot analysis to determine the possible future preference for large business park land. The business park employment distribution (Table 7) was used for the current (and projected) employment distribution in place of the individual firm size distribution in order to forecast the land demand of aggregated business park-sized groups of employers. For a step-

by-step description, please see the large lot analysis. The resulting correlation of the forecast with historic preferences for large business parks is shown in Table 10. More details about the buildable land inventory and large lot inventory can be found in the UGR and in Appendix 4.

Table 10 – Correlation of forecast with historic preference for large business park lots (2010 to 2030, high and low growth)

High Growth							
Lot size (acres)	WD	GI	TF	Office	Retail	Institution	Total Lots
25 to 50	1	0	0	2	0	0	3
50 to 100	1	0	0	0	0	0	1
100 plus	1	0	0	0	0	0	1
Total Large Lots	3	0	0	2	0	0	5
Low Growth							
Lot size (acres)	WD	GI	TF	Office	Retail	Institution	Total Lots
25 to 50	1	0	0	1	0	0	2
50 to 100	1	0	0	0	0	0	1
100 plus	1	0	0	0	0	0	1
Total Large Lots	3	0	0	1	0	0	4

Assuming a continuation of historic preferences for large business parks, this analysis shows a forecasted preference for four to five large business parks (taxlots of at least 25 acres), depending on the amount of growth that is realized. Information about the region's large lot supply is included in the urban growth report.

## Bibliography

Braziller, Clay. "Industrial Park Makeover." Sustainable Land Development Today 11 August 2009: <<http://www.sldtonline.com>>.

Innovista. Innovista website. 20 August 2009 <<http://www.eip.hinton.ca/>>.

TaigaNova. TaigaNova Eco-Industrial Park website. 20 August 2009 <<http://www.taiganova.com/default.asp>>.

Yap, Johansson L. and Rene M. Circ. Guide to Classifying Industrial Property (Second Edition). Washington, D.C.: ULI - the Urban Land Institute, 2003.

## Appendix 6: Residential capacity methodology

---

### 2009-2030 Urban Growth Report

The Metro Council is expected to complete any capacity adjustments by the end of 2010 through regulations that bolster the amount of capacity in the existing UGB using urban investments and/or policy changes that increase densities or with possible Urban Growth Boundary (UGB) expansions. Dating forward 20 years yields a forecast horizon in year 2030. As interpreted from ORS 197.296 (20-year land supply statute), a 23 year time span is needed to synchronize limitations in lagged supply data from RLIS (i.e. housing capacity estimates are based on a July 2007 vacant land inventory) and state regulations that require a sufficient supply to meet a 20 year residential demand forecast.

This appendix includes a line by line annotation of the residential capacity methodology as well as additional information collected on parks SDCs and school district growth plans.

2009 to 2030 Urban Growth Report (UGR)						
Residential Dwelling Capacity Range Assessment						
December 2009						
Line No.				Residential DEMAND Assumption		
				Low	Baseline	High
	Residential Demand Estimates (in Dwelling Units)					
1a/	7-County Population Forecast (2007 to 2030)			728,200	875,000	1,024,400
1b/	7-County Household Forecast (2007 to 2030)			348,600	408,300	469,100
2/	Capture 61.8% of 7-County Forecast in Metro UGB			215,400	252,300	289,900
3/	plus: 4% vacancy rate (source: 2000 Census)			8,600	10,100	11,600
4/	Dwelling Unit Demand in the Metro UGB:			224,000	262,400	301,500
				Residential SUPPLY Assumptions		
	July 2007 Vacant Land Inventory (Metro UGB):				BASELINE	
5/	Gross Vacant Land in current Metro UGB				44,800	
6/	less: Local Water Quality, floodways and Habitat Protection areas (ENV)				8,600	
7/	Gross Vacant Buildable Acres in Metro UGB (GVBA)				36,200	
8/	less: Fed., State, Municipal exempt land (actual count)				3,200	
9/	less: Acres of Platted Single Family Lots (actual count)				1,300	
10/	less: Acres for Future Places of Worship and Social Org. (actual = 600 acres)				700	
11/	less: Major Easements (Natural Gas, Electric & Petroleum) (actual count)				1,000	
12/	less: Acres for Future Streets (0%, 10%, 18.5%)				4,900	
13/	less: Acres for New Schools (H=45, M=55, E=70; actual = 1,000 acres)				1,000	
14/	less: Acres for New Parks (based on SDC fees)				1,300	
15/	less: New Urban Areas (actual net of ENV, future streeets and dev. land)				7,900	
16/	Net Vacant Buildable Acres (NVBA) - total				14,800	
	Net Vacant Buildable Acres (NVBA) by Type (less-New Urban Areas):				Metro UGB	
17a/	Net Vacant Buildable Acres - Mixed Use Residential (MUR)				1,000	
17b/	Net Vacant Buildable Acres - Residential				6,300	
				Residential CAPACITY Assumption		
	Residential Housing Supply Assessment - Metro UGB			Low	Baseline	High
18/	Dwelling Unit Capacity of Vacant Land at Local Zoning (or Plan) - 2008 Q3			62,500	62,500	62,500
18a/	less: High-density MFR products not market feasible within next 20 years			(18,400)	(18,400)	
19/	add: Res. Development in vac. Mixed Use Districts (MUR)			28,600	28,600	28,600
20/	less: Capacity Lost to SFR Underbuild @ 5%			(2,200)	(2,200)	(2,200)
21a/	add: Res. Development Capacity on ENV land (no. taxlots wholly in Title 3)			100	100	100
21b/	add: Res. Development Capacity on Title 13 areas (80% of zoned capacity)			19,300	19,300	19,300
22/	add: Units from Platted Single Family Lots under 3/8 acre (actual count)			8,800	8,800	8,800
23/	add: Units from Residential Refill @ 33%			73,900	86,600	99,500
23a/	add: Units from Residential Refill @ 40% (addition of 7% more)					21,100
23b/	add: Potential Units from Subsidized Residential Refill					71,100
24/	add: Estimated Capacity from New Urban Areas			48,000	48,000	48,000
25/	less: New Urban Development not yet market feasible			(24,000)	(24,000)	
26/	Subtotal: Dwelling Unit Capacity Supply Range			196,600	209,300	356,800
				Low Supply - High Demand		Low Demand - High Supply
27/	Full range of difference between capacity and demand (dwelling units):			(104,900)	(53,100)	132,800
				Low Supply- Low Demand		Low Supply- High Demand
28/	UGR assessment of difference between capacity and supply (dwelling units)			(27,400)		(104,900)

## Housing Demand Calculations:

Line 1a) 7-county PMSA Population Forecast: The regional population forecast is derived from Metro's Regional macro-economic forecast model. This model forecasts population growth 30 years into the future. The regional geography for the Portland-Beaverton-Vancouver, OR-WA Primary Metropolitan

Statistical Area (PMSA) now comprises a total of 7-counties (i.e., Clackamas, Columbia, Multnomah, Washington and Yamhill counties in Oregon and Clark and Skamania counties in the State of Washington) – consistent with changes to federal data reporting standards. This is a change in geographic scope from an earlier 4-county SMSA (Standard Metropolitan Statistical Area) delineation to the present 7-county PMSA. The delineation is defined in the Federal Register by the Office of Management and Budget (OMB). “Re-drawing” PMSA delineations are required to be revised in order to reflect actual changes in the economic structure of regions as they grow and expand.

Line 1b) 7-county PMSA Household Forecast: The population forecast in line 1a is converted to a forecast of number of households using age-adjusted headship rates derived from Census information and Metro’s regional macro-economic model. [source: Metro 2008-2040 Regional Forecast]

From Census estimates, the average household size for the PMSA is 2.57 persons per household in year 2000. The formation of future households and their composition is expected to change over time as family sizes decrease and the average age of the population increases making single-person households more prevalent in the future. By 2030, the average household size in the PMSA declines to 2.46 persons per household.

The assumption that future household sizes will decline has been vetted a number of times over the course of external peer review panels convened to analyze and review the veracity of the regional forecast and forecasting models and methods. Each time, demographers and professional forecasters have affirmed the assumption that the average household in the future will be smaller than today’s household.

Line 2) Metro UGB Capture Rate (from a 7-county share): Capture rate is defined as the marginal share of future households expected to locate within the Metro UGB (with the remainder then locating elsewhere within the 7-county PMSA). The initial capture rate assumption (61.8%) is based on historical time series data obtained for 1979 to present. [source: Metro Research Center and Census data]

Table 1. Historical Capture Rate Series for the Metro UGB – 20-year Capture Rates

	2000	2001	2002	2003	2004	2005	2006	2007	Average
Rate:	62.2%	62.2%	62.2%	63.1%	62.2%	61.8%	60.4%	60.0%	61.8%

Source: Metro Data Research Center

Note: a forecast of Metro UGB capture rate can be derived from a discrete MetroScope scenario. This scenario would have the advantage of employing a capture rate that is economically consistent with a number of future policy implementations including the Regional Transportation Plan (RTP), urban renewal, other urban investment subsidy assumptions, zoning and comp plan changes, etc. Assuming an historical rate may be wrong if future policies diverge from current conditions.

However, starting with an initial UGR that assumes an historical average rate makes sense as policy makers can start from a common point and seek to redirect and bolster existing trends to align with future transportation and land use goals. As new policies emerge, they can be tested and new capture rates can be forecasted for future UGR assumptions.

Line 3) Vacancy Rate: Housing unit estimates are converted from households using a vacancy rate. Housing units are not the same as the number of households. [source: 2000 U.S. Census, Demographic Profile for the Portland-Vancouver, OR-WA PMSA]

The definition of housing units introduces differences in housing types, i.e., single family, multifamily, and manufactured housing as dwelling types that should be considered under existing housing need statutes – ORS 197.296. Goal 10 also speaks to housing types which on a consistent basis will be addressed in the Housing Needs Analysis Report.

The initial assumption for the preliminary draft residential UGR assumes 4 percent, which is in keeping with the 2002 Residential UGR assumption.

Line 4) Dwelling Unit Demand Forecast: The resulting regional housing unit demand forecast is derived from Metro's Regional Forecast and vacancy rate assumption in line 3. [source: UGR calculation]

### **Housing Supply Calculations:**

Line 5) Gross Vacant Land: Vacant land inside the current (as Jan 2009) Metro UGB is calculated based on exacting manual measurements of vacant land using photogrametric techniques and supplementary GIS data (including building permits and assessor tax lot information). [source: Actual RLIS measurement]

Line 6) ENV: Environmental constraints: Undeveloped land that should be protected from future development are subtracted from gross vacant land. The land that is deducted includes Metro's Title 3 (which includes floodplains) Title 13 (riparian areas), and floodways – as implemented by local jurisdictions. To the extent that areas with steep slopes intersect with the environmental constraints, they too are excluded from the 2007 buildable land inventory. Elsewhere, steep slopes are included in the buildable land inventory. For example, in jurisdictions located in Washington county, the deduction for environmental constraints is equal to the area delineated in maps provided by Clean Water Services. The map coverage from Clean Water Services are included in RLIS map/data layers. For further detailed explanations, please refer to the buildable land inventory GIS meta data description. [source: Actual RLIS measurement]

Line 7) GVBA: Gross Vacant Buildable Acres (GVBA) in the Metro UGB is defined as gross vacant land minus environmental constraints. [source: Actual RLIS measurement]

### **Gross-to-Net Calculations:**

Line 8) Fed., State, Municipal Vacant Land: For purposes of measuring residential capacity per ORS 197.296, Federal, State and local municipal owned vacant land is removed from gross vacant buildable acres. [source: Actual RLIS measurement]

For calculating nonresidential land capacity, Federal, State and municipally owned land is added back into the estimation of employment land capacity.



Line 9) Platted SFR tax lots: An assumption that already platted tax lots under 3/8 of an acre in size will not subdivide into higher density housing products. [source: Actual GIS measurement] The capacity of existing SFR (single family residential) platted lots are not lost; they are returned to the calculation of residential capacity in line 22.

Line 10) Future Churches: (Only an additional 100 acres is set aside.) This is an assumption that sets aside future land supply in order to accommodate the development of future churches and social organizations. [source: Actual RLIS measurement and per capita forecast estimate]

The per capita estimate of future land need for this category is based on 1.4 acres per 1,000 future residents. [source: 1997 UGR church per capita rate assumption]

In the current baseline UGR, a total of 700 acres are needed to accommodate expected increase in church and social organization land needs. According to RLIS vacant land data, churches and social organizations already own 600 acres. The net amount that is deducted from other (i.e., residential or employment) future uses is thus calculated to be 100 acres for the 20-year forecast horizon. Per capita growth in population is derived from the 2008-2040 Regional Forecast.

Line 11) Major Utility Easements: Easements have been mapped for major utilities; this includes natural gas pipelines, petroleum pipelines and major electric lines (e.g., BPA powerlines). Pursuant to ORS 197.296, a consideration of easements is estimated to remove vacant land that is coincident with major easement lines identified in the Metro UGB as it has been deemed unsafe for future residential development in these areas. [source: Actual RLIS measurement]

Line 12) Future Streets (“skinny streets”): An assumption which sets aside a portion of the vacant land supply in order to accommodate future streets for undeveloped land inside the current Metro UGB. 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

The basis for these net street deduction ratios derive from previous research completed by the Data Resource Center and local jurisdictions during the 2002 UGR. The current street set aside rates are based on “skinny street” assumptions for a total of 4,900 acres.

Line 13) Future Schools: (No additional lands are set aside.) This is the assumption that sets aside a portion of the future vacant land supply in order to accommodate a growth projection for land needed to build future schools in the Metro UGB. The school land demand forecast is based on a student per capita basis:

- High school – 45 students per acre
- Middle school – 55 students per acre
- Elementary school – 70 students per acre

The basis for these net school deduction ratios are compared with national school building standards and interviews with building officials at Tigard-Tualatin School District, Beaverton School District and Portland Public School District. The sets of assumptions student-acre ratios were vetted and finalized through MTAC. [source: for further details on national school standards, please refer to DLCD safe-harbor subcommittee reports].

According to the 2007 RLIS vacant land supply inventory database, school districts in the Metro UGB already own 1,000 acres of vacant land. The regional forecast includes a projection of student population and enrollment for residents inside the Metro UGB. [source: A land need forecast for future schools is calculated from the regional forecast and student-acre ratios. This forecast identified no additional land need other than what schools presently own; thus no additional set aside is assumed except for the 1,000 acres that schools have already land banked.] Review of the 16 school districts' plans shows that some anticipate growth, others see declining enrollment, and none look out over the 20-year timeframe that this capacity analysis considers. School districts are able to take advantage of special provisions under the Major UGB Amendment process to petition the Metro Council to bring land into the UGB to meet school needs that are not anticipated in five-year UGB review cycle. The Major Amendment Process may be a more appropriate means of addressing specific school district needs than can be accommodated through UGB expansions.

The present UGR approach does not analyze need by individual school district or regional subareas, so there may be some school districts that have a future surplus and others having a future gap. The table on the following pages describes what was learned by reviewing school district plans.

Table 2. Review of school district growth plans

School district	Information source	Time horizon	Overall growth	Plan to accommodate growth
Beaverton	Report of the long range facilities planning committee, September 2005 <sup>1</sup>	2004-2020 for the facilities plan, 2009-2010 to 2025-2026 for the PSU enrollment forecasts	Growth expected at roughly 2.0% per year	Use portable classrooms, consider adjusting attendance boundaries as appropriate, consider expanding existing schools where possible to meet capacity, consider building new schools when neighboring schools can't accommodate the need. Annual increases in student enrollment equate to the need for at least one elementary school or middle school each year. The District also needs to plan for a new comprehensive high school within the next few years. In the meantime, as growth exceeds available space at some schools, the District continues to use a combination of attendance boundary adjustments and portable classrooms to address overcrowding.
Centennial	Centennial Long range planning committee final report, May 2005	2005-2015	Growth is expected over this time period	Two primary schools and one middle school will be required. A new alternative school should be built to accommodate 200 students and provide appropriate space and equipment for secondary level classes. Within the next 10-20 years the district will need: <ul style="list-style-type: none"> <li>• Two elementary schools in Pleasant Valley area</li> <li>• One elementary in the Damascus/Boring area</li> <li>• One high school in the Damascus/Boring area</li> </ul>
David Douglas	Facilities master plan from 2007-2012 and a report from the facilities and enrollment study committee, March 2009	2007-2012	The district will serve an additional 1200 students by 2012, currently averaging 3 % per year	Identify land for future school sites, move classrooms to different school facilities, consider the use of modular classrooms, add capacity to existing schools, purchase or lease adjacent buildings to existing schools, cooperative agreements with other school districts to share facilities.
Forest Grove	Facilities task force report, April 2009, Enrollment projections	2008-2009 to 2012-2013	Yes	Replace existing elementary school, add additional classrooms to elementary schools.

<sup>1</sup> information on the website, <http://www.beaverton.k12.or.us/home/departments/facilities/long-range-planning-and-development/>, PSU population projections, November 2008

School district	Information source	Time horizon	Overall growth	Plan to accommodate growth
Gladstone	Average Daily Membership projections, 2009	through 2011-2012	The district is not experiencing growth-it is stagnant or losing kids	The district just completed upgrading and adding space where necessary to all school buildings. These facilities should be adequate for the next 15 to 20 years.
Hillsboro	Portland State University Enrollment forecasts, April 2006	2006-2015	Enrollment is projected to increase by: Elementary – 16%, Middle – 24%, High – 18%	The district has already done things to accommodate growth in the last two-three years including changing boundaries to accommodate the biggest school's areas. In recent years the school district has added four elementary schools and renovated an existing middle school to add extra capacity.
Lake Oswego	There is no formal facilities/growth plan		The district is experiencing flat or slightly declining enrollment	
North Clackamas				District is purchasing two tracts of land for new schools
Oregon City	Facilities Task Force Report, March 2008, PSU population forecasts, June 2009	Population projections look at 2009-2014 and Task Force Report looks out 10-20 years	While continued growth in the Oregon City area is expected, the timing of this growth is difficult to predict. According to PSU projection, from 2009-2014, K-12 enrollment is projected to decline by 1.5 %	The Task Force looked at different possibilities for future growth in enrollment through additional increments of 500 students. If this growth occurs, the task force recommends the following: adjust elementary school boundaries as needed, renovate old Main and use it for classrooms, alert community to the need for a new elementary school and second high school, renovate Jackson campus and use it to house students.
Parkrose		The district is not experiencing growth-it is stagnant or losing kids		

School district	Information source	Time horizon	Overall growth	Plan to accommodate growth
Portland Public Schools	The school district is working on a long range facilities plan called, 21st century schools, but it is not completed year	2005-2020	Enrollment is projected to level off from 2007 through 2011, but then is projected to start increasing again. In the long term, over the next 50 years, 30,000 additional students will be added to the district.	The school district is trying to figure this out as part of its current effort to develop its long range facilities plan.
Reynolds	Bond Measure Proposal, April 2008, Reynolds had planned to go out for a Bond measure June 2008, but didn't. The District needs far outweighed what the Board thought the public could or would pass.	2008-2013	Enrollment is expected to increase by: 7% (elementary), 4% (middle) and ½% (high).	Acquire new land for schools; replace Wilkes to add extra capacity for elementary school, construct east elementary, remodel Fairview; remodel middle school; remodel and expand Reynolds High School.
Riverdale	Website		Enrollment is currently growing	Renovate elementary school. The Grade School's capacity is 350 students with a current enrollment of 320 students. The High School, still a relatively new school, has grown its student body to the 200's, with a maximum of 300 students.
Sherwood	Sherwood District School Facilities Plan, 2008	From 2008 until 2015/2016, enrollment projections are from 2009-2020	Projected growth at 3% per year for the next fifteen years	In addition to building a new elementary and middle school and expanding the high school, the District purchased a number of portable classrooms now located at three elementary schools and at Sherwood Middle School. These portables have a capacity of 28 classrooms for future use. The district is also looking at ways to accommodate students with non-traditional classrooms like business locations or virtual settings.

School district	Information source	Time horizon	Overall growth	Plan to accommodate growth
Tigard-Tualatin	Tigard Tualatin School District Demographics Report, December 2008, Long Range Facilities Plan, December 2007	2009-2019	Enrollment is expected to increase by: 12% (elementary), 13% (middle) and 8% (high).	Pursue additional district owned facilities like Tigard-Tualatin school district admin center, Tigard-Tualatin school district bus yard, former elementary school-either use or sell these sites. Portable buildings, school expansions, boundary adjustments. Open a magnet school (Durham Center alternative school).
West-Linn/ Wilsonville	Long Range Facilities Plan, amended in 2005	20-year time horizon, 1996-2016	Total enrollment projected to increase by 27% over the 20-year time period	As enrollment exceeds capacity, the District constructs one or more facilities to increase capacity. Two new elementary schools and one new middle school are projected to be needed over the 20-year planning timeframe.

Line 14) Future Parks: (Based on SDC fees.) This is an assumption which sets aside a portion of vacant land supply in order to accommodate a growth projection for future neighborhood and community parks in the Metro UGB. The future park land demand forecast is based on an estimate of existing system development charges (SDC) which local jurisdictions levy on local residents. The land estimate for future parks is based on how much land SDC fees are likely able to purchase in the next 20 year period. This assumption is based on information provided by MTAC members and review of local SDC regulations to forecast future park acquisitions. MPAC endorsed this assumption for the 2002 UGR. [source: 2002 UGR assumption for new park acquisitions]

To inform the analysis in this report, current park SDC rates were inventoried for each city in the region. (Information may be found in Appendix 6.) Most of the local governments that levied parks SDCs in 2002 have increased their rates. In addition, two cities, King City and Rivergrove, have started levying parks SDCs since 2002. Also, a few local governments are currently employing a system whereby different fees are levied in different locations.

The 2002 urban growth report estimated that 1,100 acres of vacant land inside the UGB would be demanded for future parks. Like other possible approaches to estimating future park acreage inside the UGB, this SDC approach has its limitations and should be taken as a reasonable estimate rather than a precise accounting. Due to these limitations (summarized below), the updated inventory of park SDC rates does not provide a compelling reason to substantially alter this assumption:

Table 3. 2009 Park System Development Charges in the Portland metropolitan region

Jurisdiction	Single Family Residential	Multi-family Residential	Manufactured	Accessory dwelling unit	Single room occupancy	Average Multi-family and other
Beaverton	\$6,888	\$5,510	\$2,521			\$4,973
Cornelius	\$2,143	\$2,143	\$2,143			
Durham	\$1,320	\$990				
Fairview	\$1,252					
Forest Grove	\$3,000	\$3,000				
Gladstone	\$-	\$-				
Gresham:						
Gresham City	\$3,837	\$3,837				
Pleasant valley	\$8,137	\$8,137				
Springwater	\$9,039	\$9,039				
Happy Valley:						
zone 2	\$6,760	\$5,842				
zone 3	\$6,075	\$5,842				
Sunnyside village	\$4,779	\$4,425				
Hillsboro	\$4,083	\$4,083				
Johnson City	\$-	\$-				
King City	\$1,664	\$1,664				
Lake Oswego	\$10,715	\$5,959				

Jurisdiction	Single Family Residential	Multi-family Residential	Manufactured	Accessory dwelling unit	Single room occupancy	Average Multi-family and other
Maywood Park	\$-	\$-				
Milwaukie	\$3,985	\$3,608				
Oregon City	\$3,422	\$2,707	\$2763			\$2,964
Portland (central city)	\$4,076	\$2,621	\$3,967	\$2,297	\$2,344	\$3,061
Portland (non-central city)	\$3,986	\$2,616	\$3,712	\$2,172	\$1,801	\$2,857
Rivergrove	\$500	\$500				
Sherwood	\$7,205	\$5,407	\$7,717			
Tigard	\$5,370	\$4,316	\$4,257			\$4,287
Troutdale	\$7,137	\$7,137				
Tualatin	\$4,530	\$4,530				
West Linn	\$8,376	\$5,923				
Wood Village	\$-	\$-				
Wilsonville	\$4,602	\$3,535	\$2,962	\$1,726		\$3,206
Clackamas Co						
zone 2	\$6,760	\$5,842				
zone 3	\$6,075	\$5,290				
zone 3a	\$4,779	\$4,425				
Multnomah Co	\$-	\$-				
Washington Co	\$6,888	\$5,510				

To maintain an approach that is consistent with the one recommended by MPAC in 2002, an implied parks level of service was calculated as follows. The 2002 Urban Growth Report forecasted growth of 220,700 dwelling units over the 20 year period and identified that 1,100 acres should be deducted from the vacant land supply for future parks for the same time period. The implied level of service was 1,100 park acres for 220,700 new dwelling units. The current Urban Growth Report forecasts 262,400 new dwelling units in the UGB over the next 20 years (baseline assumption). Applying the same implied level of service standard as used in 2002 ( $1,100 / 220,700 * 262,400$ ) results in a deduction of 1,300 acres from the region's vacant land supply to address future park demand.

Line 15) New Urban Areas: This is a new line added to the 2009 Residential Urban Growth Report. The purpose of this line item is to recognize that new urban areas which were amended to the Metro UGB have yet to receive urban zoning densities – zoning still retains rural residential zoning densities or other rural designation. Including new urban areas through the conventional land density calculation and assuming rural densities would provide an inaccurate assessment of future residential capacity of new urban areas. A more accurate means of forecasting residential capacity for the new urban areas is to rely on the initial concept plan density assumptions.



The future capacity of new urban areas is not lost, but is added back in line 24. Please see line 24a thru line 24o for individual capacity assumptions for the new urban areas.

Related: see explanation for line 25.

Line 16) Gross-to-Net total (Net Vacant Buildable Acres - NVBA): An internal UGR calculation step which is a subtotal amount that is the net vacant buildable acres inside the Metro UGB (less new urban areas) after subtracting for line items 8 thru 15.

Line 17 a-d) Detailed NVBA by Type: Line 17 verifies the subtotal shown on line 16. Lines 17 a-d show details of line 16 categorized by general zoning class in the amount of vacant buildable acres. The buildable acres in line 17b and 17c (part) will carry over to the Employment UGR. Lines 17a (part), 17c (part) and 17d (all) carry into line 18 and line 19 for calculation of residential capacity (see below for additional details).

Also carrying over the employment UGR is the capacity found implicit in government owned land. The acreage amount totals up to an additional 3,200 gross buildable acres.

Line 18) Maximum Housing Capacity from SFR and MFR Zones: Maximum residential dwelling unit capacity is calculated from local zoning and comp plan designations (i.e., comp plans applied only to Portland and Wilsonville) and based on the net vacant buildable acres shown on line 17a (part), 17b (all), and 17c (part).

Dwelling unit density assumptions from various forms of net vacant buildable acres by type:

Capacity from Line 17a) Only half (50%) of the vacant acreage zoned for mixed use residential development (i.e., MUR) is assumed available for residential capacity. The remaining half is assumed not to be used for residential development owing to horizontal mixed use development in designated mixed use districts. Maximum densities vary from 8.9 DU/net acre up to 350 DU/net acre. Amounts vary based on vacant land in each mixed use zoning class. The residential capacity in mixed use residential districts is reported separately on line 19 and amounts to estimated capacity of 29,100 dwelling units.

Capacity from Line 17b) All 6,400 acres of residential land in line 17b are calculated into residential capacity and shown in total on line 18. This residential capacity is based on maximum zoning (or comp plan) density per local zoning ordinances as of the 3<sup>rd</sup> quarter 2008 RLIS database. Zoning capacity and densities vary for SFR1 (1 unit per acre) thru SFR16 (16 units per acre) and MFR1 (13.3 units per acre) thru MFR 7 (53.5 units per acre). [source: Metro Standardized Regional Zone Classification System (RLIS: zoneclass)]

Capacity from Line 17c) Farm and Forest designated land in UGB (not in new urban areas) = 10 units per net acre [source: 2002 UGR]. 65% of RRFU designated land is assumed to go towards future residential capacity. The rest will go towards employment uses. This assumption is based on a cross tabulation of vacant RRFU land and 2040 design types. 65% of RRFU vacant land is designated in

design types that accommodate residential development. This residential capacity is reported in line 18 and the capacity amounts to approximately 17,300 dwelling unit.

Capacity from Line 17d) No residential capacity assumed on industrial, commercial, and mixed use employment (MUE) areas / zoning. (MUE zoning is defined as mix of commercial and industrial; not to be confused with MUR zoning that is a mix of commercial and residential – typically office/retail and multifamily development)

Based on the RLIS vacant land inventory, UGR gross to net reductions and zoning density assumptions, the maximum residential dwelling unit capacity derived from residential vacant land produces about 46,300 dwelling units. Average DU density from line 18 is about 7 units per net acre, which averages in RRFU, SFR and MFR vacant land and zoning assumptions.

Table 4. Summary Dwelling Unit Capacity from environmentally unconstrained vacant land:

RRFU	17,300 units	10 units per net acre
Single Family (SFR)	28,200 units	5 units per net acre
<u>Multifamily (MFR)</u>	<u>18,100 units</u>	26.5 units per net acre
SUBTOTAL (line 18)	63,600 units	7.9 units per net acre
Mixed Use Res. (line 19)	29,100 units	28.5 units per acre
TOTAL	92,700 units	10.8 units per net acre

Line 18a) High-Density MFR feasibility factor: Market feasibility is derived from a discrete MetroScope scenario. This factor is a capacity discount for high density multifamily (MFR7, MUR8 to MUR10) product that is forecasted not likely to fully develop in the course of the next 20 year growth horizon. This housing product is a non-performing capacity asset that cannot be utilized by the market because its zoning is far ahead of projected market demand. [source: MetroScope]

In the “high” supply capacity scenario assumption, the supply deduction of high density multifamily (and mixed use residential) housing units from the supply is removed. In order to achieve this assumption, it is assumed that policy actions implemented today will help close the gap between the demand for living in high rise apartments and the construction costs of high density development. In order for this outcome to materialize, MetroScope scenarios indicate that achievable rents necessarily must significantly rise in order to help close the gap between the supply and demand for this segment of housing product.

Line 19) MUR Zoned Capacity: Mixed use residential density and capacity are calculated from zoning (or comp plans) and reported on this line. Mixed use districts recognize vertical and horizontal forms of mixed use. There is evidence that mixed development to date include both forms of mixed use development. There is very little regionally representative data to base how much horizontal mixed use is actually occurring. Nevertheless, in order to recognize that horizontal mixed use does and will occur in the future, we assume a 50% ratio of the two forms of mixed use development. The result for purposes of calculating capacity in line 19 is to halve the vacant land capacity for future residential development. [source: UGR 2009 assumption]

The estimated residential unit capacity from 500 (derived from 1,000 acres X 50% MUR ratio = 500 acres) acres of MUR zoned vacant land represents 29,100 dwelling units. The average DU per acre is approximately 28.5 units per net acre.

The total dwelling unit capacity and density from unconstrained vacant land totals a maximum yield of 92,700 units for a DU/acre of approximately 10.8 units per net acre.

Line 20) Underbuild (physical development constraints): The underbuild is based on physical constraints that make practical development up to 100 percent of maximum zoned density to be impractical. Capacity lost to single family residential underbuild assumes a 5 percent loss from maximum capacity as calculated from the single family DU capacity embedded in the calculation of line 18. The 5 percent rate is an assumption synthesized from oral communication provided by MTAC members. [source: oral statements from MTAC members]

Line 21a) Title 3 Capacity “add back”: Title 3 protects the water quality of the region by delineating development setback rules that prohibit development along streams, rivers, floodways and flood prone areas. This setback varies depending upon conditions along the waterway, such as steep slopes. The Title 3 “no build buffers” are defined by maps maintained by the Data Resource Center RLIS database.

Capacity for 1 dwelling unit is assumed for each tax lot wholly inside the Title 3 buffer and zoned for future residential development. This line adds back minimal capacity resulting from subtracting environmental (ENV) land from line 6.

Precedent from prior UGR studies determines this allowance on the assumption that land owners have the ability to exercise the right to build 1 dwelling unit on land that governments have designated for protection of an environmental resource. [source: 2002 UGR assumptions]

Line 21b) Title 13 Capacity “add back”: Implementation of Title 13 differs significantly from Title 3 in that Title 13 is implemented as a voluntary set back requirement. Land owners may comply with Title 13 by mitigating the impact future development may have on the environment.

Delineation of exact Title 13 environmental areas for this UGR is based on individual analysis and tabulation of local ordinance and implementation of Metro’s Title 13 code. Local jurisdictions that have adopted Title 13 code language have been precisely mapped into the tabulation. For local jurisdictions that have not yet adopted Title 13 code language into city ordinances, the environmental delineation is based on Metro’s modeling of Title 13 implementation.

This line adds back 80% of the residential capacity from Title 13 that was deducted in line 6. Please note that line 6 combines Title 3 and 13 ENV as one deduction, but the more detailed GIS data distinguishes which tax lots are in (or intersect) Title 3 and which ones are in (or intersect) Title 13. For purposes of calculating the capacity added back for Title 13 delineated vacant land, the residential capacity is based on local zoning less 20% capacity to account for mitigation efforts. [source: local jurisdiction ordinances and information]

Line 22) Platted SFR “add back”: The count of tax lots under 3/8 of an acre are tabulated and recorded on line 23. This line corresponds to the “add back” in dwelling units associated with the net acre deduction in line 9. [source: Actual RLIS measurement]

Line 23) Residential Refill Demand: Residential refill is the combination of expected amount of future redevelopment and infill (it is not the available capacity). It is a “demand” estimate. It is predicted estimate of what we anticipate will be the number of future dwelling units that will be accommodated on land that the RLIS database considers as developed land in the year 2007. A refill rate is derived from a discrete MetroScope scenario. This rate is then multiplied against future housing unit demand to arrive at a projection of residential refill. This refill is a forecast.

The amount of refill fluctuates between a low and high demand housing forecast. In this preliminary draft residential UGR, the refill rate may vary depending upon demand assumptions. Forecasting a future refill rate is part art and part science. Taking into consideration past refill rates, shifts in housing preferences, scenario results and the stated objectives of the region’s citizens, it is estimated that current policy direction and investment trends will produce an average refill rate of approximately 33 percent through the year 2030 (shown in line 4).

Line 23a) Upper range of possible refill: This is redevelopment and infill that could materialize above what the refill rate based on current investment policies and trends would assume as possible refill capacity. Scenario tests with alternative land use capacity and growth forecast assumptions indicate the future refill rate could top 40%. We assume that this may be a realistic top-end of the refill rate range. This is a “high” capacity residential supply assumption. [source: MetroScope Scenarios (2008)] This tranche represents uncertainty in the supply capacity for dwelling units inside the existing UGB. In fact, it is more likely that the size and steepness of this tranche will be less. The table and chart represent what it is estimated to be the likely high-end of the refill range supply.

Line 23b) Potential Units from Subsidized Residential Refill: This represents potential redevelopment and infill IF local governments take additional actions today to bolster residential demand and supply in designated 2040 centers and corridors. This is a “high” capacity residential supply assumption that requires policy action in order to realize any capacity towards the UGR. At this point, the estimate of this subsidized refill amount is highly speculative and should not be counted as actual supply that the region can count on in order to meet future housing demands. The assumptions involved include investments in all of the regional and town centers in the region.

Line 24) Estimated Capacity from New Urban Areas: This is a subtotal of lines 24a to 24o.

Line 24 a-o) New Urban Area Capacity Assumptions: These group of line items detail the theoretical buildout capacity assumed for individual new urban area addition to the Metro UGB during previous periodic reviews. [source: Various Concept Plans]

Line 25) New Urban Area market feasibility factor: New urban areas are not expected to yield full development in the next 20 years due to infeasible market conditions, lack of infrastructure and/or

financing ability to render urban development densities to occur. Market feasibility is derived from a discrete MetroScope scenario.

Line 26) Dwelling Capacity / Supply: Total Dwelling Unit Capacity tallied from lines 18 to 24

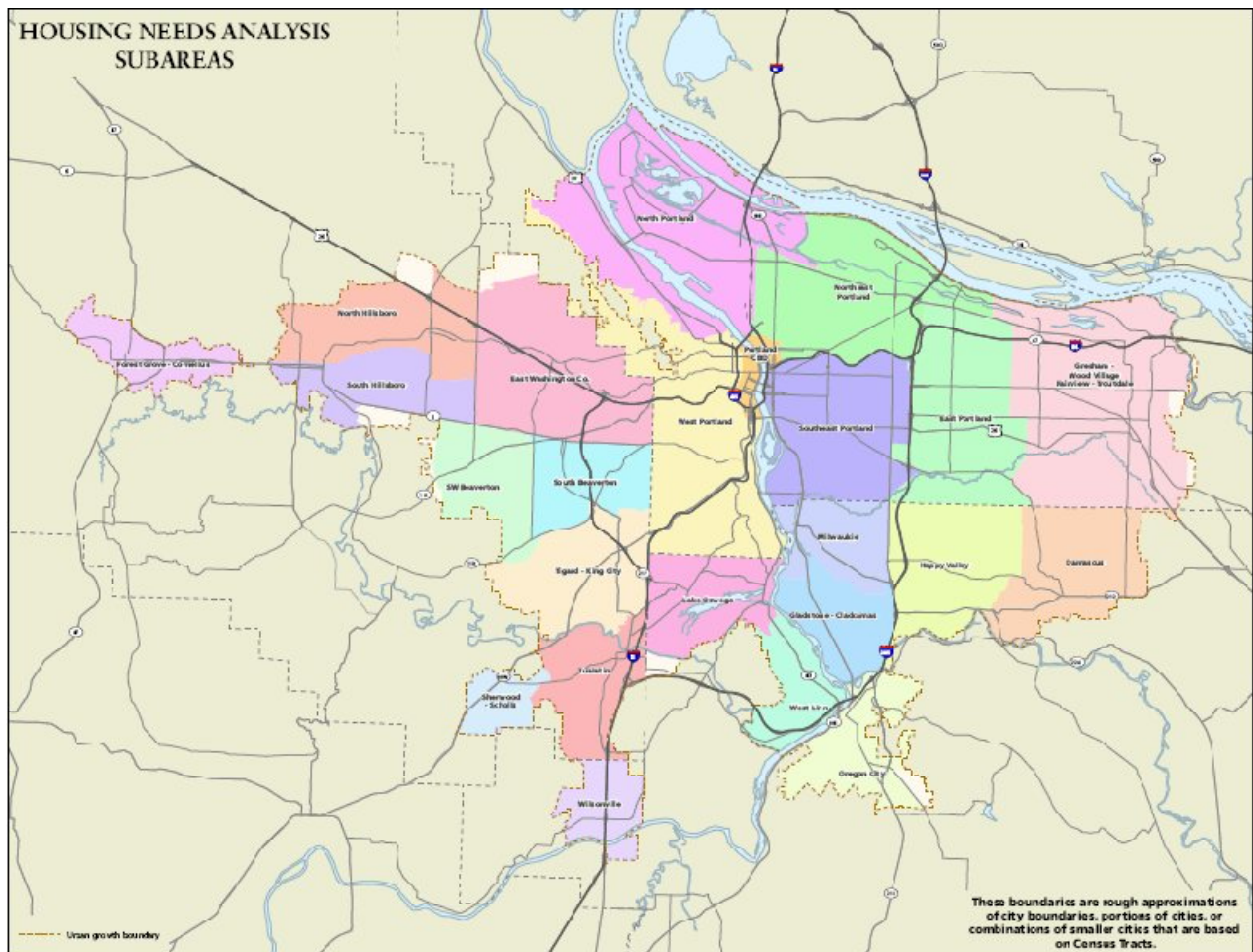
Line 27) Residential Gap Assessment: Deficit (or surplus) housing supply

## Appendix 7: Portland metropolitan area housing choice forecasts; subarea profiles

### Purpose

Historically, most residents of this region have been able to choose from a variety of housing types that match their preferences and budgets. However, there is work to be done to ensure that future generations have the same range of choices and that those choices support the region's vision of creating vibrant and walkable communities, protecting air and water quality, and reducing greenhouse gas emissions.

The following profiles describe forecasted housing dynamics for the 24 subareas pictured in the map below. 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.



region (within the Metro urban growth boundary (UGB)). Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends, but assume two different amounts of population growth for the 7-county area by the year 2030 (low and high growth).

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.

## Relationship of this analysis to the urban growth report

The scenario assumptions and results described in this analysis inform the urban growth report, but do not constitute the urban growth report. The urban growth report is an analysis of residential demand and capacity, while scenarios provide information about the possible performance of the region's residential capacity in light of forecasted demand. Performance is measured as housing mix, density, cost and affordability. If residential development of a particular type and tenure (rent/own) is reported as a scenario forecast, capacity for that household type is implicitly available. In this sense, scenarios do not identify a capacity gap. That determination is left to the urban growth report.

Three additional reasons that the results of these scenarios will differ somewhat from numbers reported in the urban growth report are:

Capture rate: The urban growth report assumes that 61.8 percent of future residential growth in the 7-county area will occur in the Metro UGB. This 61.8 percent capture rate is based on historic data. This UGR capture rate helps to establish the amount of residential demand (through the year 2030) that must be accommodated in the Metro UGB. Scenarios, on the other hand, produce a capture rate as an output of the scenario (i.e. it is not an assumption fed into the model). Consequently, the household numbers reported as scenario results, while similar, are not the same as the household demand numbers used in the urban growth report.

Refill rate: As with the capture rate, the urban growth report assumes a future refill rate. Scenarios, on the other hand, produce a refill rate as an output. Consequently scenario results will again differ somewhat from numbers used in the urban growth report's capacity analysis.

Timeframe: Scenario results are reported for the 2005 to 2030 timeframe. The UGR analysis covers the 2010 to 2030 timeframe. As a consequence, the results are somewhat different.

## Household types

The MetroScope scenario model uses 400 types of households<sup>1</sup> 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.

Table 1: Descriptions of the eight household types

Household type	Median household size (residents)	Median annual income	Median householder age	Percent with children in household	Characteristics
1	1.34	\$13,800	55	1%	These are some of the lowest-income households. Among renters, these are exclusively single-person households—primarily the elderly. Owners have a more even age and household size distribution.
2	1.87	\$25,000	50	21%	These households can be of any age, but their income is among the lowest. These households are primarily childless.
3	2.14	\$35,800	48	28%	With a bit more income than household type two, these households are primarily in the 25 to 44 age bracket, mostly without children, although about a third of homeowners have children.
4	2.45	\$46,700	49	31%	With a broad age distribution and approaching middle income, these households are usually childless, especially among renters.
5	2.90	\$57,000	47	47%	These households are larger and wealthier. The majority of homeowners have children.
6	2.95	\$69,200	46	45%	With more income than household type five. Almost half of these households are between 25 to 44 years of age. Although the majority do not have children, two- and three-person households are most common.
7	2.81	\$100,100	50	30%	Mostly without children, these households include very high-income couples, especially among owners.
8	3.99	\$113,300	42	83%	Most of the homeowners in this household type have children. They are high wage earners.

<sup>1</sup> Household refers to the residents, not the residence

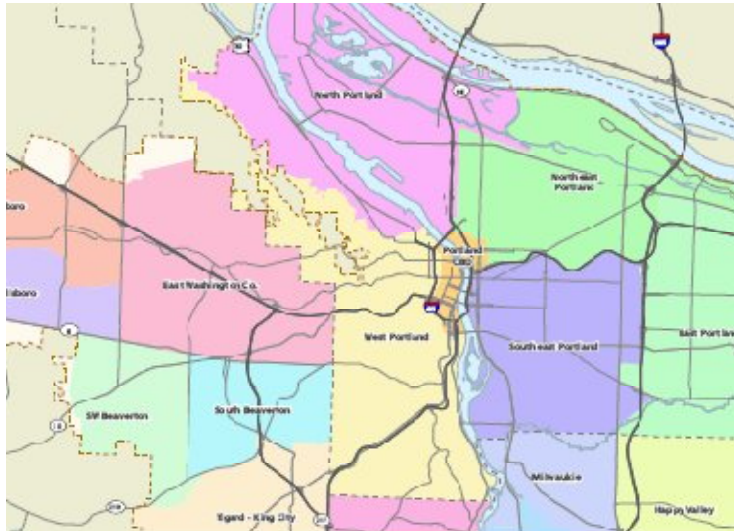


## Housing and transportation costs

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.

## Portland central business district, map reference number 11

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

The Portland central business district subarea includes areas such as downtown Portland, the Pearl District, the university district, old town/Chinatown, the Lloyd district, and Goose Hollow. A substantial share of the metro region's commercial core and jobs are centered in this area (around 15 percent) and fewer residential developments. The 2005 average income for households in this subarea is lower than the average income for the region, but it is projected to increase slightly by 2030. This subarea is characterized by high rates of owner occupied and rental multi-family households (16 and 77 percent, respectively), which are much higher than the average regional shares of multi-family households. This distinction is expected to increase in both growth scenarios for 2030.

While the average household spends a smaller share of its annual household income on transportation costs compared to households in other subareas, the share of annual income projected to be spent on housing in this subarea is much higher than other subareas, ranging from 66 to 84 percent in the 2030 growth scenarios. This is because this is a location that is likely to remain in high demand. Though the number of cost-burdened households is forecasted to increase, the share of households that is cost-burdened is forecasted to decrease from 53 percent in 2005 to 29 to 33 percent in 2030. This is higher than the forecasted regional average for cost-burdened households (projected to be between 17 to 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

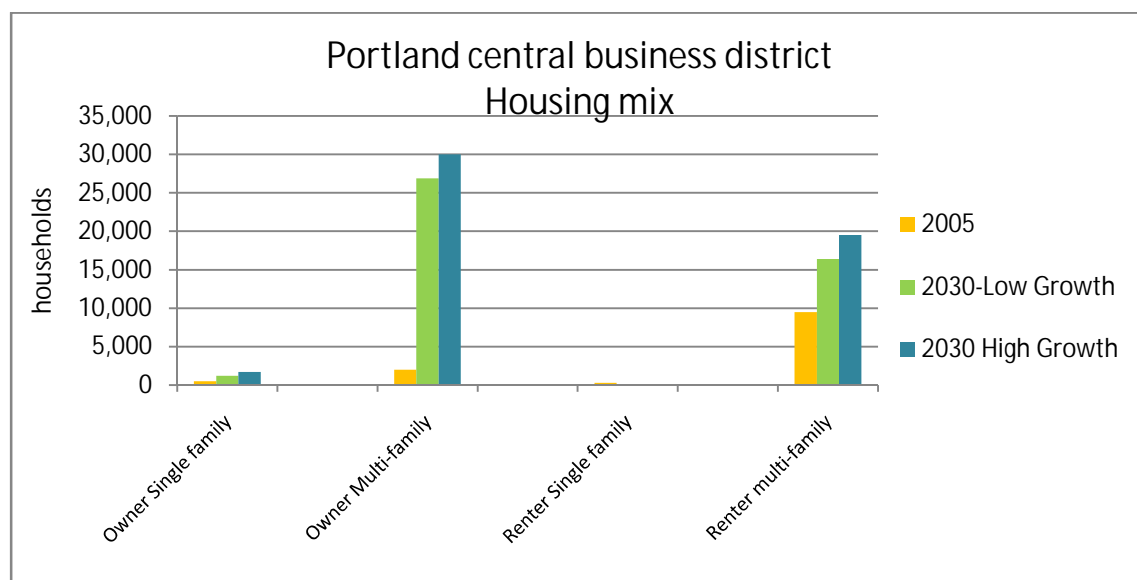
Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Portland central business district	2005	2030 (low-growth)	2030 (high growth)
Total households	12,300	44,500	51,100
Subarea share of region's households	2%	6%	6%
Total jobs	123,900	174,400	208,800
Subarea share of region's jobs	15%	17%	15%
Percent of all households by household type			
Household type 1 (median income \$13,800)	30%	20%	21%
Household type 2 (median income \$25,000)	11%	9%	9%
Household type 3 (median income \$35,800)	12%	12%	13%
Household type 4 (median income \$46,700)	5%	11%	11%
Household type 5 (median income \$57,000)	11%	16%	16%
Household type 6 (median income \$69,200)	11%	18%	12%
Household type 7 (median income \$100,100)	9%	10%	25%
Household type 8 (median income \$113,300)	11%	3%	3%
Average annual cost information for all households			
Transportation costs	\$2,300	\$2,400	\$2,400
Housing costs	\$16,000	\$33,300	\$43,600
income	\$38,000	\$50,800	\$51,900
% Income spent on transportation	6%	5%	5%
% Income spent on housing	42%	66%	84%
% Income spent on housing and transportation	48%	70%	89%
Average annual cost information for all renters			
Transportation costs	\$1,900	\$1,700	\$1,800
Housing costs	\$10,300	\$11,900	\$14,400
Income	\$26,100	\$24,000	\$24,300
% Income spent on transportation	7%	7%	7%
% Income spent on housing	40%	50%	59%
% Income spent on housing and transportation	47%	57%	66%
Number of cost burdened households	6,400	12,900	16,800
Share of households that are cost burdened	53%	29%	33%



## Northeast Portland, Map Reference Number 12

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes the Northeast sections of Portland, roughly bounded by I-84, I-205, I-5 and the Columbia River. The average household income for this subarea is slightly lower than the average income level for the region. The shares of single family owner occupied households (62 percent) and rental multi-family households (21 percent) are fairly comparable to the regional average rate for these household types (60 and 29 percent respectively). The shares of these household types are projected to remain consistent with the regional average rates in 2030. The share of annual income spent on transportation is relatively low in 2005 and 2030 and is projected to decrease over time, but the share of annual income spent of housing is projected to increase slightly. Both the number and share of households that are cost-burdened are projected to increase by the year 2030, but the shares of households that are cost-burdened are forecasted to be similar to the average regional rates.

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.

### Definitions:

#### Cost-burdened household:

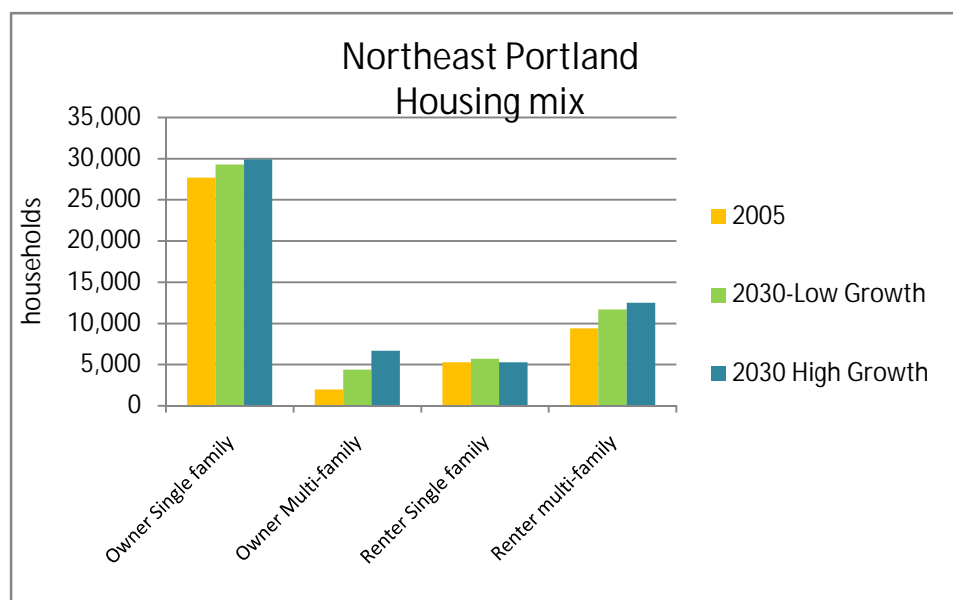
Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

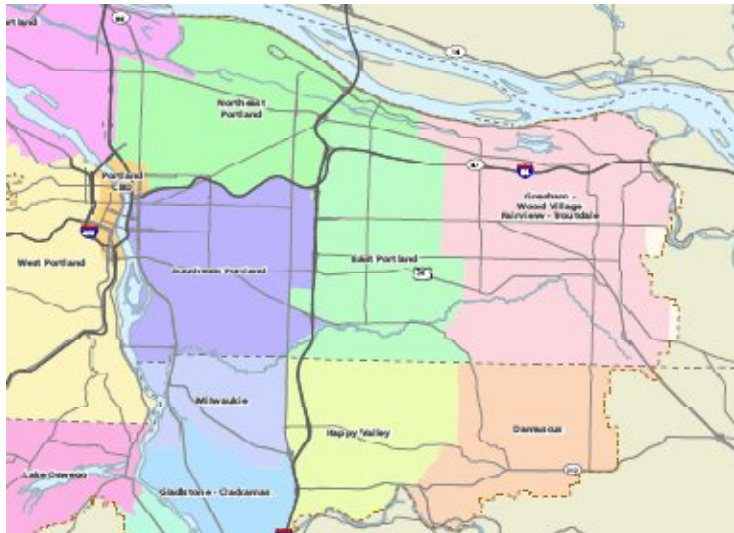
Northeast Portland	2005	2030 (low-growth)	2030 (high growth)
Total households	44,400	51,100	54,300
Subarea share of region's households	8%	6%	6%
Total jobs	66,000	68,300	88,800
Subarea share of region's jobs	8%	7%	6%
Percent of all households by household type			
Household type 1 (median income \$13,800)	18%	19%	20%
Household type 2 (median income \$25,000)	16%	15%	15%
Household type 3 (median income \$35,800)	13%	13%	14%
Household type 4 (median income \$46,700)	12%	12%	12%
Household type 5 (median income \$57,000)	10%	9%	9%
Household type 6 (median income \$69,200)	10%	10%	8%
Household type 7 (median income \$100,100)	12%	13%	15%
Household type 8 (median income \$113,300)	9%	8%	8%
Average annual cost information for all households			
Transportation costs	\$3,800	\$3,700	\$3,600
Housing costs	\$21,600	\$23,000	\$28,100
Income	\$50,000	\$50,000	\$49,900
% Income spent on transportation	8%	7%	7%
% Income spent on Housing	43%	46%	56%
% income spent on housing and transportation	51%	53%	63%
Average annual cost information for all renters			
Transportation costs	\$2,500	\$2,500	\$2,500
Housing costs	\$8,800	\$9,900	\$11,600
Income	\$28,200	\$28,200	\$28,500
% Income spent on transportation	9%	9%	9%
% Income spent on Housing	31%	35%	40%
% Income spent on housing and transportation	40%	44%	49%
Number of cost burdened households	7,400	9,300	13,100
Share of households that are cost burdened	17%	18%	24%





## Subarea: Gresham-Wood Village-Fairview-Troutdale, Map Reference Number: 13

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes Gresham, Wood Village, Troutdale and Fairview. The average income for this area is lower than the regional average for both 2005 and 2030. In 2005, the shares of single family owner occupied (61 percent) and multi-family rental houses (31 percent), which make up the majority of households in this subarea, are fairly comparable to regional average shares for these household types (60 percent and 29 percent respectively). While the shares of these household types remain consistent with the regional average rates in the two growth scenarios for 2030, the rate of owner occupied multi-family households is projected to increase from one percent in 2005 to five to ten percent in 2030. The share of annual income spent on transportation and housing remains consistent with the average for the region.

While the number and share of households that are cost-burdened remains relatively constant from 2005 to the low-growth 2030 scenario, the high-growth 2030 scenario projects increases in both these categories. These increases would make the share of households that is cost-burdened in this subarea higher than the forecasted regional rate (regional average rate is projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

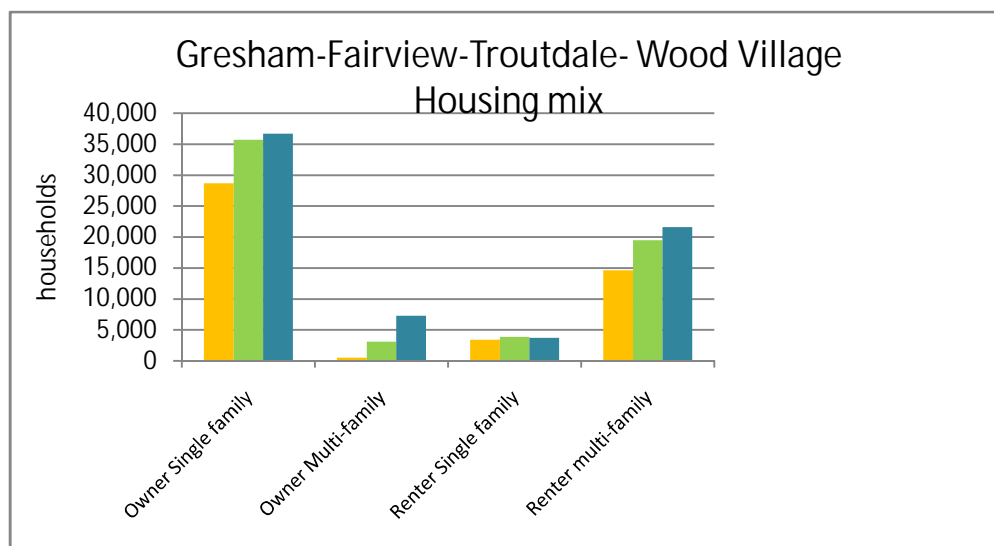
Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

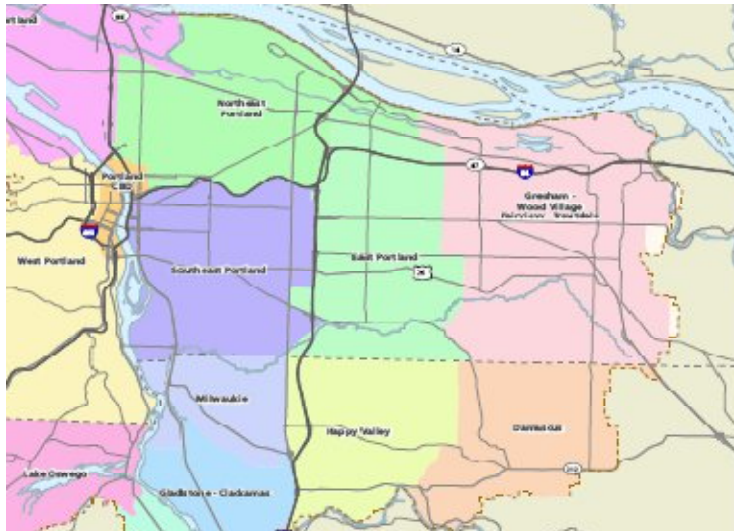
Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Gresham-Wood Village-Fairview-Troutdale	2005	2030 (low-growth)	2030 (high growth)
Total households	47,300	62,300	69,300
Subarea share of region's households	8%	8%	8%
Total jobs	47,700	58,000	92,100
Subarea share of region's jobs	6%	6%	7%
Percent of all households by household type			
Household type 1 (median income \$13,800)	9.3%	10%	11%
Household type 2 (median income \$25,000)	14%	13%	14%
Household type 3 (median income \$35,800)	16%	15%	16%
Household type 4 (median income \$46,700)	17%	17%	16%
Household type 5 (median income \$57,000)	17%	16%	16%
Household type 6 (median income \$69,200)	12%	13%	12%
Household type 7 (median income \$100,100)	10%	8%	9%
Household type 8 (median income \$113,300)	6%	8%	7%
Average annual cost information for all households			
Transportation costs	\$6,200	\$6,200	\$6,100
Housing costs	\$15,800	\$19,700	\$23,200
Income	\$49,500	\$49,700	\$49,100
% Income spent on transportation	13%	13%	12%
% Income spent on housing	32%	40%	47%
% Income spent on housing and transportation	45%	43%	59%
Average annual cost information for all renters			
Transportation costs	\$4,400	\$4,500	\$4,500
Housing costs	\$8,000	\$9,200	\$10,700
Income	\$30,900	\$32,100	\$32,800
% Income spent on transportation	14%	14%	14%
% Income spent on housing	26%	29%	33%
% Income spent on housing and transportation	40%	43%	47%
Number of cost burdened households	7,400	9,800	17,900
Share of households that are cost burdened	16%	16%	26%



## Subarea: East Portland, Map Reference Number: 14

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes Portland neighborhoods between I-205 and the border of Gresham. The average income for this subarea is lower than the regional average and is projected to decrease slightly relative to the regional average by 2030. The shares of owner occupied single family (62 percent) and rental multi-family rental households (26 percent) in 2005 are very comparable to regional average rates for these housing types (60 percent and 29 percent respectively). While the shares of these household types remain consistent with the regional average rates in 2030, the rate of owner occupied multi-family households is projected to increase from two percent in 2005 to seven to thirteen percent in 2030. The share of annual income spent on transportation and housing remains consistent with the average for the region. The number and share of households that are cost-burdened are projected to increase only slightly between 2005 and 2030 and remain similar to the forecasted regional rate (regional average is projected to be between 17 to 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

Renters that spend more than half of their household income on transportation and housing.

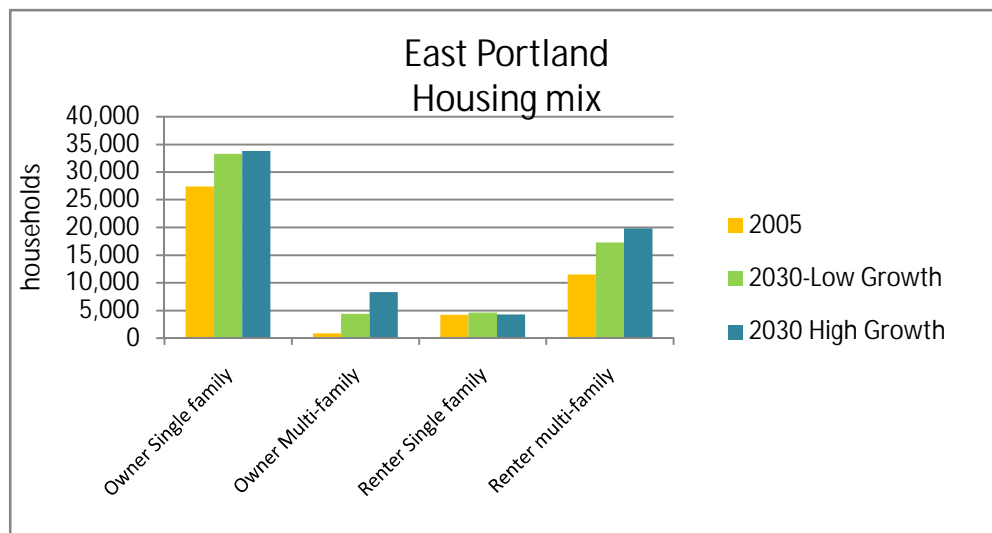
Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

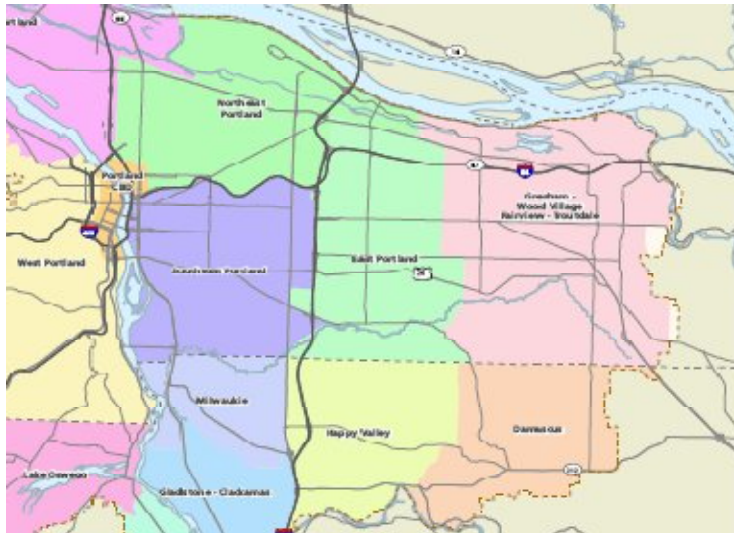


East Portland	2005	2030 (low-growth)	2030 (high growth)
Total households	44,000	59,700	66,200
Subarea share of region's households	8%	8%	8%
Total jobs	23,000	29,600	42,200
Subarea share of region's jobs	3%	3%	3%
Percent of all households by household type			
Household type 1 (median income \$13,800)	15.2%	18%	19%
Household type 2 (median income \$25,000)	20%	20%	20%
Household type 3 (median income \$35,800)	18%	17%	18%
Household type 4 (median income \$46,700)	15%	16%	15%
Household type 5 (median income \$57,000)	12%	11%	11%
Household type 6 (median income \$69,200)	9%	8%	7%
Household type 7 (median income \$100,100)	7%	7%	7%
Household type 8 (median income \$113,300)	5%	4%	4%
Average annual cost information for all households			
Transportation costs	\$4,500	\$4,300	\$4,200
Housing costs	\$14,500	\$16,700	\$19,200
Income	\$42,400	\$40,100	\$39,400
% Income spent on transportation	11%	11%	11%
% Income spent on housing	34%	42%	49%
% Income spent on housing and transportation	45%	53%	60%
Average annual cost information for all renters			
Transportation costs	\$3,400	\$3,400	\$3,400
Housing costs	\$7,900	\$8,900	\$10,200
Income	\$29,100	\$29,200	\$29,600
% Income spent on transportation	12%	12%	11%
% Income spent on housing	27%	30%	34%
% Income spent on housing and transportation	39%	42%	45%
Number of cost burdened households	7,800	11,000	12,400
Share of households that are cost burdened	18%	18%	19%



## Subarea: Southeast Portland, Map Reference Number: 15

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes Portland neighborhoods south of I-84, east of the Willamette River, and west of I-205. The Southeast Portland subarea, home to the highest share of the region's households (12 percent) relative to other subareas in the region, is projected to see a slight decrease in its share of the region's households from 2005 to 2030. The average income for this subarea, lower than the regional average, is projected to remain constant through 2030. Southeast Portland's share of owner occupied single family households in 2005 (53 percent) is slightly lower than the regional average rate for that housing type (60 percent) and is projected to remain constant by 2030. In 2005, the shares of rental single family and rental multi-family households (13 and 30 percent respectively) were higher than the regional averages for these housing types (9 percent and 29 percent respectively) and are projected to decrease slightly by 2030.

While the share of annual income spent on transportation costs relative is fairly low relative to other subareas (eight percent of income), the number and share households that are cost-burdened are projected to increase slightly from 2005 to 2030. The share of households that are considered cost-burdened, at roughly 25 percent in 2005 and upwards of 30 percent in 2030, is higher than the forecasted average range for the region (the regional average rate is projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

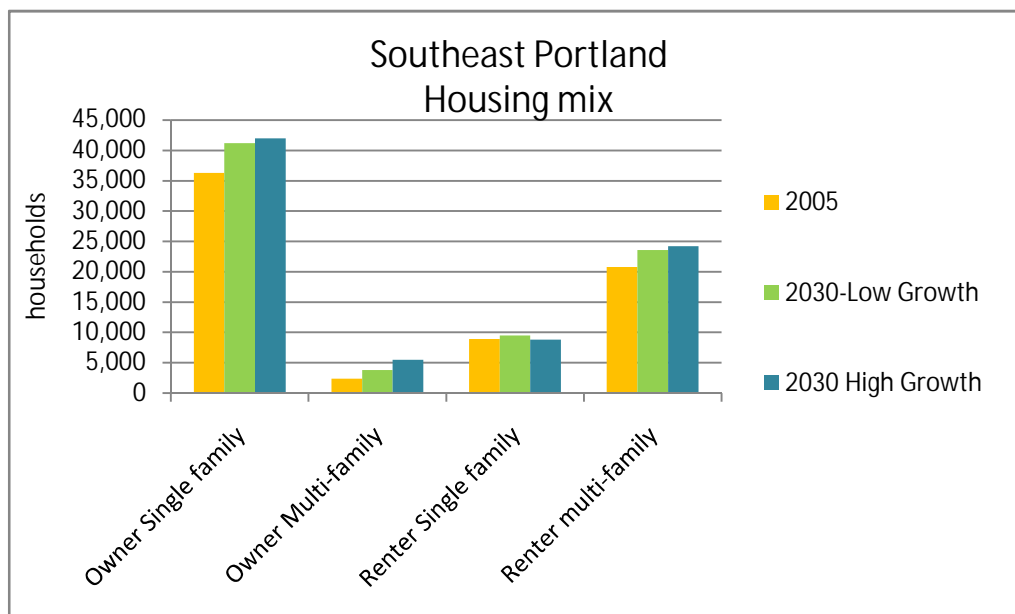
Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

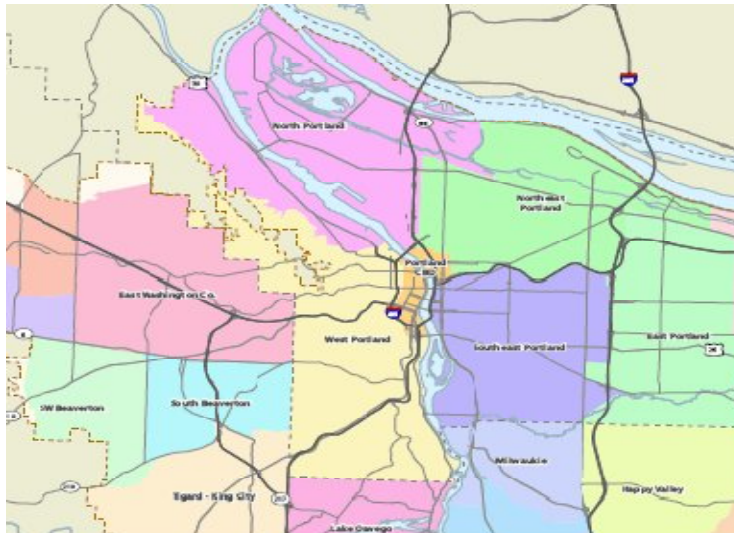
Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Southeast Portland	2005	2030 (low-growth)	2030 (high growth)
Total households	68,300	78,100	80,500
Subarea share of region's households	12%	10%	9%
Total jobs	70,400	87,300	105,900
Subarea share of region's jobs	8%	8%	8%
Percent of all households by household type			
Household type 1 (median income \$13,800)	17%	18%	18%
Household type 2 (median income \$25,000)	19%	17%	17%
Household type 3 (median income \$35,800)	15%	16%	16%
Household type 4 (median income \$46,700)	13%	14%	14%
Household type 5 (median income \$57,000)	11%	10%	10%
Household type 6 (median income \$69,200)	9%	9%	8%
Household type 7 (median income \$100,100)	10%	11%	12%
Household type 8 (median income \$113,300)	7%	6%	6%
Average annual cost information for all households			
Transportation costs	\$3,500	\$3,500	\$3,500
Housing costs	\$18,400	\$20,500	\$25,100
Income	\$43,900	\$43,900	44,000
% Income spent on transportation	8%	8%	8%
% Income spent on housing	42%	47%	57%
% Income spent on housing and transportation	50%	55%	65%
Average annual cost information for all renters			
Transportation costs	\$2,400	\$2,400	\$2,400
Housing costs	\$8,400	\$9,500	\$11,100
Income	\$26,400	\$26,000	\$26,400
% Income spent on transportation	9%	9%	9%
% Income spent on housing	32%	37%	42%
% Income spent on housing and transportation	41%	46%	51%
Number of cost burdened households	16,200	18,500	26,100
Share of households that are cost burdened	24%	24%	32%



## Subarea: West Portland, Map Reference Number: 16

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes Portland neighborhoods west of the Willamette River (excluding Forest Park and the central business district). The average income for this subarea is higher than the regional average income level. In 2005, the share of owner occupied single family households (51 percent) was lower than the regional average rate (60 percent), while the share of rental multi-family households (36 percent) was higher than the regional average rate for that household type (29 percent). The share of owner occupied single family households is projected to decrease to 41 percent in 2030 and the share of owner occupied multi-family households is projected to increase from six percent in 2005 to 25 percent in 2030.

While the share of annual income spent on transportation is low compared to other subareas in the region, the share of income spent on housing in this subarea is projected to increase to a range of 57 to 74 percent by 2030. This is because this is a location that is likely to remain in high demand. In addition, the share of households considered cost-burdened, projected to increase from 24 percent in 2005 to 26 to 29 percent in 2030, is slightly higher than the forecasted regional average for cost-burdened households (projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

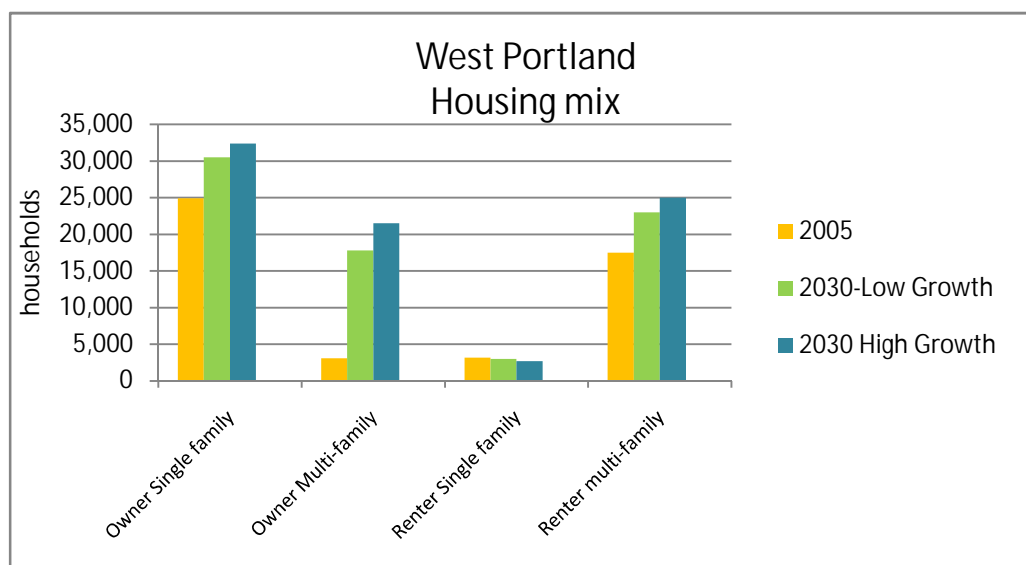
Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

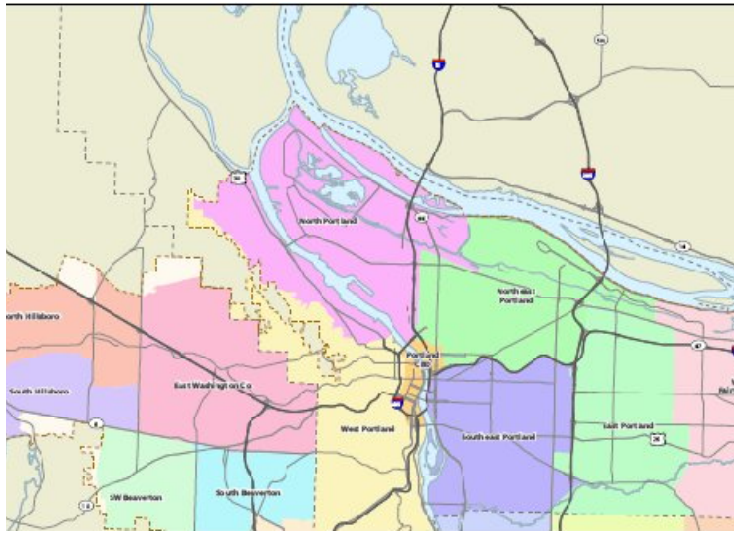
West Portland	2005	2030 (low-growth)	2030 (high growth)
Total households	48,800	74,200	81,500
Subarea share of region's households	9%	9%	9%
Total jobs	69,100	90,200	106,900
Subarea share of region's jobs	8%	9%	8%
Percent of all households by household type			
Household type 1 (median income \$13,800)	9%	10%	9%
Household type 2 (median income \$25,000)	11%	10%	9%
Household type 3 (median income \$35,800)	10%	11%	11%
Household type 4 (median income \$46,700)	9%	11%	10%
Household type 5 (median income \$57,000)	9%	8%	8%
Household type 6 (median income \$69,200)	11%	11%	8%
Household type 7 (median income \$100,100)	16%	17%	21%
Household type 8 (median income \$113,300)	26%	23%	23%
Average annual cost information for all households			
Transportation costs	\$4,300	\$4,100	\$4,100
Housing costs	\$31,900	\$38,500	\$52,100
income	\$67,000	\$67,800	\$70,300
% Income spent on transportation	6%	6%	6%
% Income spent on housing	48%	57%	74%
% Income spent on housing and transportation	54%	63%	80%
Average annual cost information for all renters			
Transportation costs	\$2,300	\$2,200	\$2,300
Housing costs	\$10,600	\$12,300	\$14,900
Income	\$27,900	\$27,900	\$28,100
% Income spent on transportation	8%	8%	8%
% Income spent on housing	38%	44%	53%
% Income spent on housing and transportation	46%	52%	61%
Number of cost burdened households	11,700	19,100	23,800
Share of households that are cost burdened	24%	26%	29%





## Subarea: North Portland, Map Reference Number: 17

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes Forest Park, neighborhoods in north Portland, and employment and industrial areas along the Willamette River and is home to a high share of the region's jobs. These scenarios indicate that the total number of jobs in this subarea is projected to increase by the year 2030. The average household income for residents of this subarea is significantly lower than the regional average income level. The shares of owner occupied and rental single family households in 2005 (63 percent and 15 percent respectively) are slightly higher than regional average rates for these housing types (60 percent and 9 percent respectively), but the share of owner occupied single family housing is projected to decrease to 53 to 49 percent in 2030. However, the shares of owner occupied and rental multi-family households are both projected to increase by 2030.

The share of annual income spent on housing and transportation is fairly consistent with the regional average. The number and share of households that are cost-burdened are projected to increase slightly by 2030 and remain fairly comparable to the forecasted regional average (projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

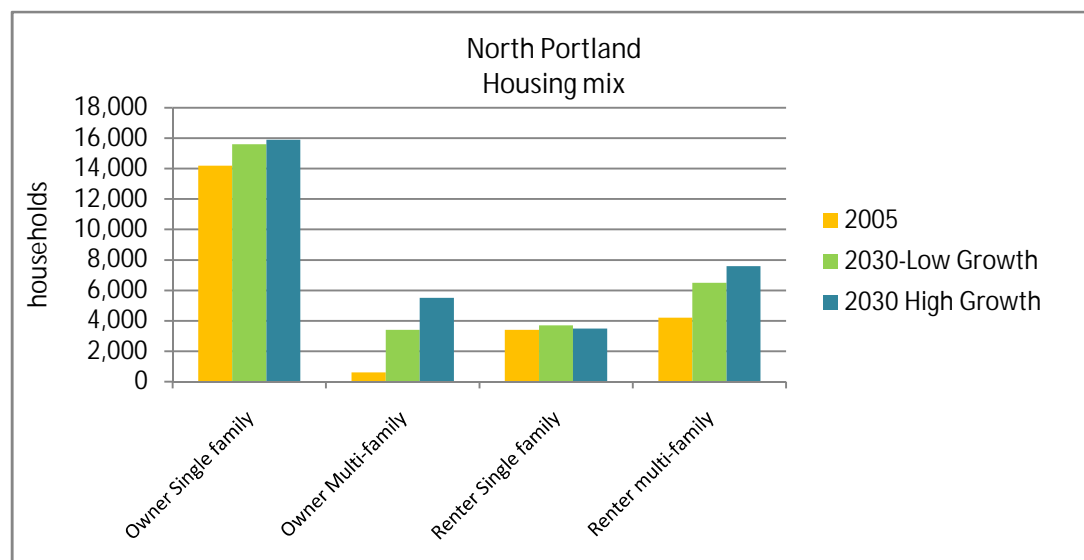
Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

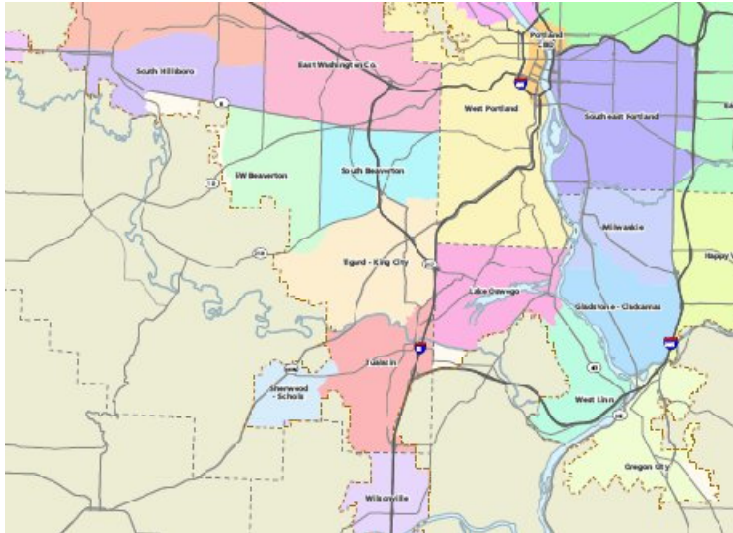
Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

North Portland	2005	2030 (low-growth)	2030 (high growth)
Total households	22,400	29,200	32,500
Subarea share of region's households	4%	4%	4%
Total jobs	71,900	80,600	102,100
Subarea share of region's jobs	9%	8%	7%
Percent of all households by household type			
Household type 1 (median income \$13,800)	29%	32%	37%
Household type 2 (median income \$25,000)	22%	21%	21%
Household type 3 (median income \$35,800)	14%	13%	14%
Household type 4 (median income \$46,700)	9%	9%	9%
Household type 5 (median income \$57,000)	7%	6%	6%
Household type 6 (median income \$69,200)	7%	6%	6%
Household type 7 (median income \$100,100)	7%	7%	7%
Household type 8 (median income \$113,300)	6%	5%	5%
Average annual cost information for all households			
Transportation costs	\$3,800	\$3,600	\$3,500
Housing costs	\$14,000	\$15,500	\$17,800
Income	\$37,100	\$35,400	\$34,800
% Income spent on transportation	10%	10%	10%
% Income spent on housing	38%	44%	51%
% Income spent on housing and transportation	48%	54%	61%
Average annual cost information for all renters			
Transportation costs	\$3,000	\$3,000	\$3,000
Housing costs	\$7,700	\$8,700	\$10,100
Income	\$27,500	\$28,200	\$29,000
% Income spent on transportation	11%	10%	10%
% Income spent on housing	28%	31%	35%
% Income spent on housing and transportation	39%	41%	45%
Number of cost burdened households	4,000	5,700	6,600
Share of households that are cost burdened	18%	19%	20%



## Subarea: Lake Oswego, Map Reference Number: 21

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea roughly approximates the boundaries of the City of Lake Oswego. The average income for residents of this subarea is much higher than the regional average, with only five percent of all households identified as cost burdened in 2005. The primary housing types in Lake Oswego are owner occupied single family and rental multi-family households. While the share of owner occupied single family households in Lake Oswego (68 percent) is higher than the regional average rate for this household type (60 percent), the share of rental multi-family households (20 percent) is slightly lower than the regional average rate (29 percent). There is relatively little household growth projected by the year 2030.

The share of annual income spent on transportation is slightly lower than rates for other subareas in the region, while the share of annual income that is spent on housing is comparable to other subareas in the region. While the share of households that are cost-burdened is projected to increase to 11 to 13 percent by 2030, the share of cost-burdened households is lower than the forecasted regional average rate (projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

#### Housing costs:

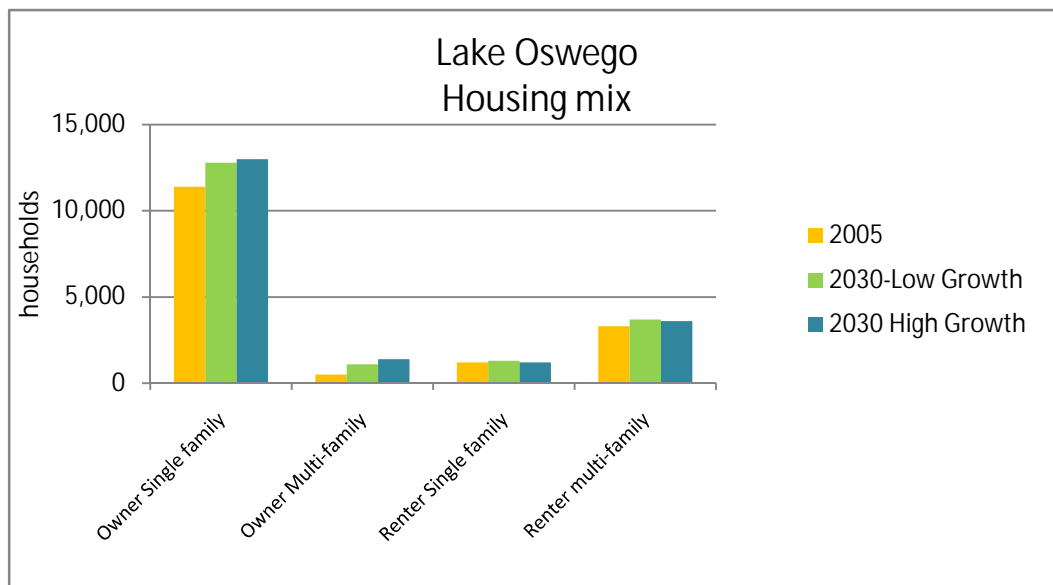
A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

#### Transportation costs:

A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.



Lake Oswego	2005	2030 (low-growth)	2030 (high growth)
Total households	16,400	18,900	19,200
Subarea share of region's households	3%	2%	2%
Total jobs	15,600	22,000	26,300
Subarea share of region's jobs	2%	2%	2%
Percent of all households by household type			
Household type 1 (median income \$13,800)	2%	2%	2%
Household type 2 (median income \$25,000)	3%	3%	3%
Household type 3 (median income \$35,800)	3%	3%	3%
Household type 4 (median income \$46,700)	6%	6%	6%
Household type 5 (median income \$57,000)	9%	9%	9%
Household type 6 (median income \$69,200)	14%	16%	13%
Household type 7 (median income \$100,100)	23%	22%	26%
Household type 8 (median income \$113,300)	41%	40%	38%
Average annual cost information for all households			
Transportation costs	\$7,200	\$7,200	\$7,100
Housing costs	\$35,100	\$37,600	\$47,900
Income	\$89,000	\$89,200	\$90,000
% Income spent on transportation	8%	8%	8%
% Income spent on housing	39%	42%	53%
% Income spent on housing and transportation	47%	50%	61%
Average annual cost information for all renters			
Transportation costs	\$4,900	\$5,000	\$5,000
Housing costs	\$11,500	\$13,500	\$15,800
Income	\$47,900	\$48,600	\$48,700
% Income spent on transportation	10%	10%	10%
% Income spent on housing	24%	28%	32%
% Income spent on housing and transportation	34%	38%	43%
Number of cost burdened households	900	2,000	2,500
Share of households that are cost burdened	5%	11%	13%



## Subarea: Gladstone-Clackamas, Map Reference Number: 22

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes the City of Gladstone and surrounding unincorporated areas of Clackamas County. In 2005, the average income level for residents of this subarea was less than the regional average, but is projected to increase slightly relative to the regional average by 2030. In 2005, the share of owner occupied single family households (71 percent), was higher than the average regional rate for this housing type (60 percent), but is projected to decrease slightly by the year 2030. The share of rental multi-family housing (20 percent in the year 2005), is slightly lower than the regional average rate for this housing type (29 percent), and is forecasted to remain fairly constant by 2030.

The shares of annual income spent on housing and transportation costs are fairly consistent with regional averages. The share of households that are cost-burdened is projected to increase from 13 percent in 2005 to 15 to 21 percent in 2030. Though this would represent an increase for this subarea, this rate is on the low end of the forecasted regional average (projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

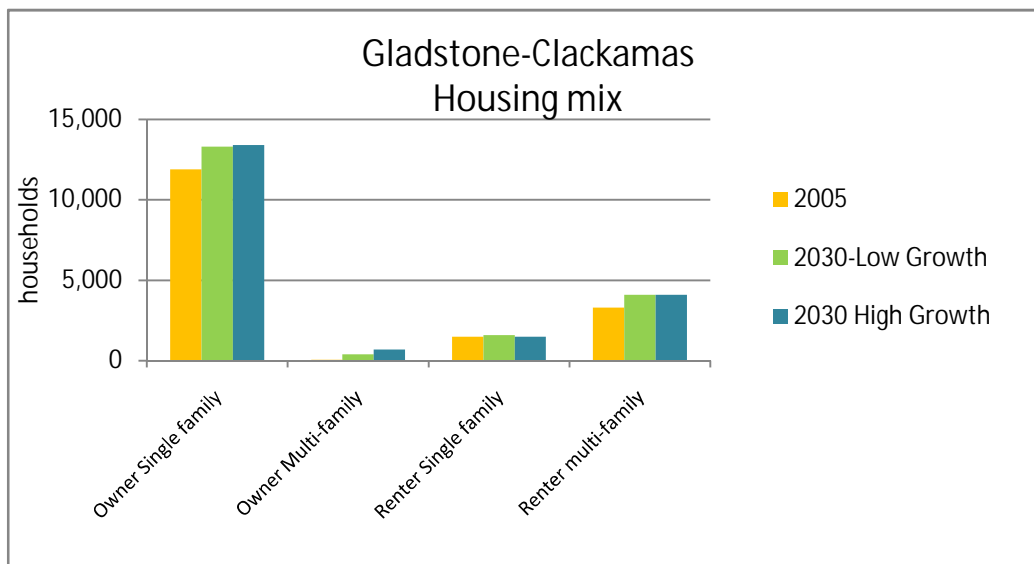
#### Housing costs: A

comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

#### Transportation costs: A

comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Gladstone-Clackamas	2005	2030 (low-growth)	2030 (high growth)
Total households	16,800	19,400	19,700
Subarea share of region's households	3%	2%	2%
Total jobs	10,300	12,500	14,900
Subarea share of region's jobs	1%	1%	1%
Percent of all households by household type			
Household type 1 (median income \$13,800)	8%	11%	11%
Household type 2 (median income \$25,000)	13%	14%	14%
Household type 3 (median income \$35,800)	14%	16%	16%
Household type 4 (median income \$46,700)	17%	18%	18%
Household type 5 (median income \$57,000)	18%	16%	17%
Household type 6 (median income \$69,200)	14%	12%	10%
Household type 7 (median income \$100,100)	10%	8%	9%
Household type 8 (median income \$113,300)	7%	5%	5%
Average annual cost information for all households			
Transportation costs	\$6,200	\$6,000	\$5,900
Housing costs	\$17,100	\$20,100	\$24,100
Income	\$54,400	\$49,700	\$49,400
% Income spent on transportation	11%	12%	12%
% Income spent on housing	31%	40%	49%
% Income spent on housing and transportation	43%	52%	61%
Average annual cost information for all renters			
Transportation costs	\$4,400	\$4,300	\$4,400
Housing costs	\$8,000	\$8,900	\$10,200
Income	\$32,100	\$30,600	\$31,100
% Income spent on transportation	14%	14%	14%
% Income spent on housing	25%	29%	33%
% income spent on housing and transportation	39%	43%	47%
Number of cost burdened households	2,100	2,800	4,200
Share of households that are cost burdened	13%	15%	21%



## Subarea: Milwaukie, Map Reference Number: 23

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes the City of Milwaukie as well as unincorporated areas of Clackamas County. In 2005, the average income for residents of this subarea was lower than the regional average, but it is projected to increase by the year 2030 to be slightly higher than the regional average. In 2005, the shares of single family owner occupied (58 percent) and multi-family rental households (31 percent), the two primary housing types in this subarea, were fairly consistent with regional average rates for these housing types (60 percent and 29 percent respectively). The shares of single family owner occupied and multi-family rental households are forecasted to remain constant from 2005 to 2030.

The shares of annual income spent on housing and transportation are relatively consistent with regional averages. The share of cost-burdened households is projected to increase slightly from 18 percent 2005 to 19 percent 2030, but remains fairly comparable to the forecasted regional average rate (projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

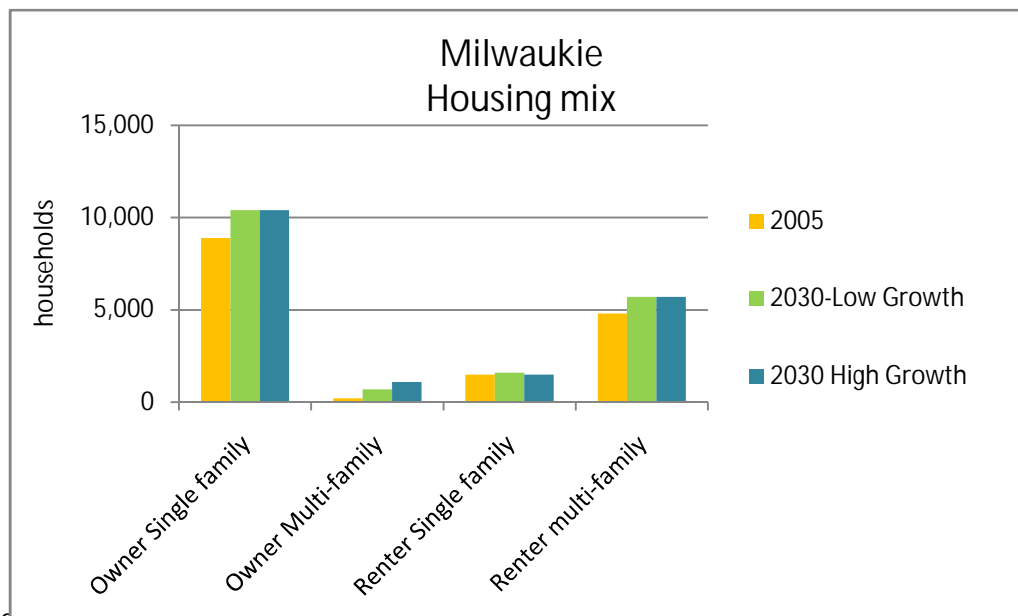
Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

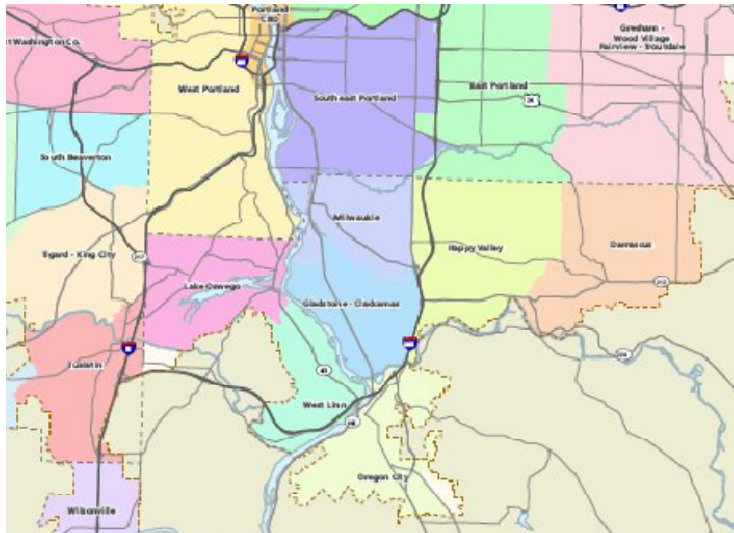
Milwaukie	2005	2030 (low-growth)	2030 (high growth)
Total households	15,400	18,400	18,700
Subarea share of region's households	3%	2%	2%
Total jobs	22,200	24,100	29,700
Subarea share of region's jobs	3%	2%	2%
Percent of all households by household type			
Household type 1 (median income \$13,800)	13%	16%	16%
Household type 2 (median income \$25,000)	17%	17%	17%
Household type 3 (median income \$35,800)	17%	17%	18%
Household type 4 (median income \$46,700)	18%	19%	18%
Household type 5 (median income \$57,000)	14%	13%	13%
Household type 6 (median income \$69,200)	9%	8%	7%
Household type 7 (median income \$100,100)	7%	6%	7%
Household type 8 (median income \$113,300)	6%	4%	4%
Average annual cost information for all households			
Transportation costs	\$4,700	\$4,500	\$4,500
Housing costs	\$14,100	\$16,500	\$19,500
Income	\$43,600	\$40,500	\$40,300
% Income spent on transportation	11%	11%	11%
% Income spent on housing	32%	41%	48%
% Income spent on housing and transportation	43%	52%	59%
Average annual cost information for all renters			
Transportation costs	\$3,700	\$3,600	\$3,600
Housing costs	\$7,900	\$8,900	\$10,100
Income	\$30,700	\$29,500	\$29,700
% Income spent on transportation	12%	12%	12%
% Income spent on housing	26%	30%	34%
% Income spent on housing and transportation	38%	42%	46%
Number of cost burdened households	2,700	3,400	3,500
Share of households that are cost burdened	18%	19%	19%





## Subarea: Happy Valley, Map Reference Number: 24

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes Happy Valley as well as unincorporated areas of Clackamas County. In 2005, the average income for residents of this subarea was higher than the regional average and is projected to increase slightly by the year 2030. The share of owner occupied single family households in Happy Valley (67 percent) is higher than the regional average rate for this housing type (60 percent), but is projected to decrease slightly by the year 2030. The shares of owner occupied multi-family and rental multi-family households are both projected to increase slightly by 2030, but are forecasted to remain consistent with or lower than the regional average rates for these housing types.

The share of annual income spent on housing and transportation is fairly consistent with other subareas across the region. The share of cost-burdened households is projected to increase slightly from 10 percent 2005 to 11 to 20 percent in 2030, but remains low compared to the forecasted regional rate (projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

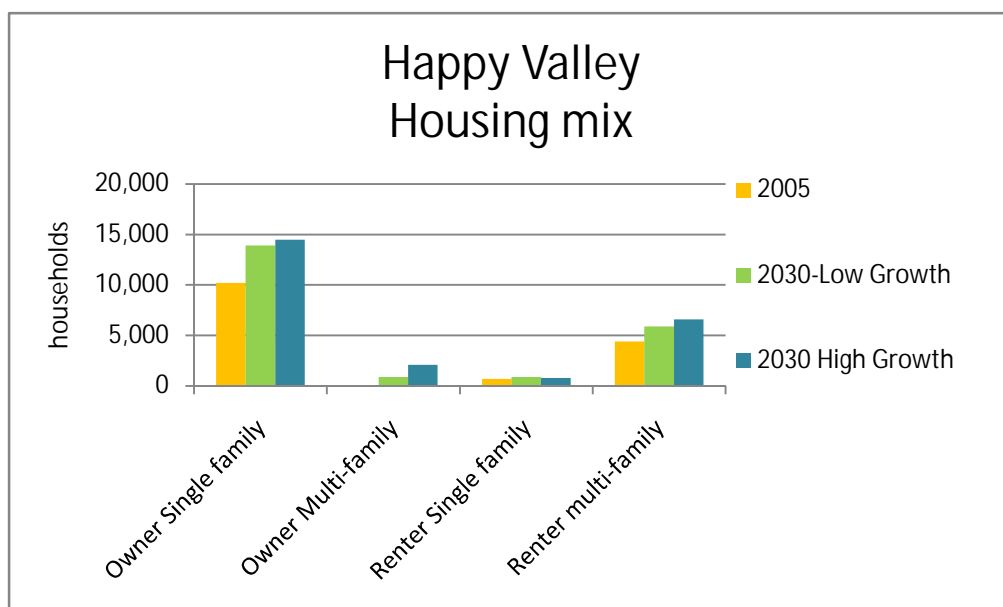
Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

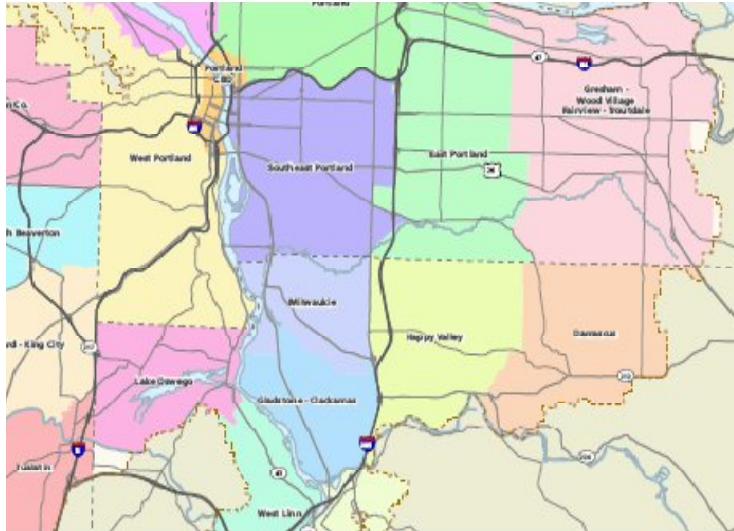
Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Happy Valley	2005	2030 (low-growth)	2030 (high growth)
Total households	15,300	21,600	24,000
Subarea share of region's households	3%	3%	3%
Total jobs	32,300	36,100	50,400
Subarea share of region's jobs	4%	3%	4%
Percent of all households by household type			
Household type 1 (median income \$13,800)	4%	5%	6%
Household type 2 (median income \$25,000)	5%	5%	5%
Household type 3 (median income \$35,800)	8%	8%	9%
Household type 4 (median income \$46,700)	12%	13%	13%
Household type 5 (median income \$57,000)	16%	15%	15%
Household type 6 (median income \$69,200)	18%	19%	16%
Household type 7 (median income \$100,100)	17%	15%	17%
Household type 8 (median income \$113,300)	19%	20%	19%
Average annual cost information for all households			
Transportation costs	\$7,100	\$7,100	\$6,900
Housing costs	\$21,000	\$26,900	\$32,400
Income	\$71,000	\$70,100	\$69,500
% Income spent on transportation	10%	10%	10%
% Income spent on housing	30%	38%	47%
% Income spent on housing and transportation	40%	48%	55%
Average annual cost information for all renters			
Transportation costs	\$4,500	\$4,600	\$4,700
Housing costs	\$8,500	\$9,700	\$11,200
Income	\$33,500	\$34,000	\$35,300
% Income spent on transportation	14%	13%	13%
% Income spent on housing	25%	29%	32%
% Income spent on housing and transportation	39%	42%	45%
Number of cost burdened households	1,600	2,400	4,800
Share of households that are cost burdened	10%	11%	20%



## Subarea: Damascus, Map Reference Number: 25

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes the City of Damascus as well as scattered unincorporated areas of Clackamas County. As this area is newly developing, the subarea's share of the region's households and jobs is relatively low compared to other subareas, but is projected to grow by 2030. In 2005, the average income for residents of this subarea was higher than the regional average and is projected to increase proportionally relative to the regional average by the year 2030. With 92 percent of all households categorized as owner occupied single family in 2005, Damascus has a much higher rate of owner occupied single family households than the regional average rate for that housing type (60 percent). This share is projected to remain fairly constant from 2005 to 2030 as are the shares of other housing types. In 2005, the share of annual income spent on housing was 26 percent, lower than the regional average, but is projected to increase by the year 2030.

While the number and share of households that are cost-burdened are projected to increase in 2030, the share of households that are cost-burdened is still very small at 4 to 6 percent and is much lower than the forecasted regional average (projected to be between 17 and 23 percent of all the households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

Renters that spend more than half of their household income on transportation and housing.

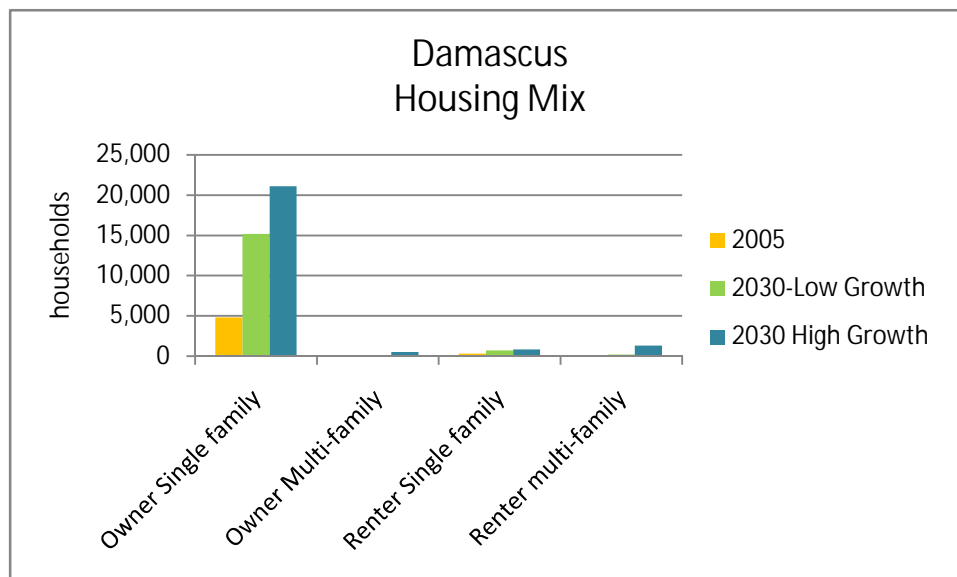
Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.



Damascus	2005	2030 (low-growth)	2030 (high growth)
Total households	5,200	16,200	23,800
Subarea share of region's households	1%	2%	3%
Total jobs	3,300	4,100	10,600
Subarea share of region's jobs	0%	0%	1%
Percent of all households by household type			
Household type 1 (median income \$13,800)	4%	5%	6%
Household type 2 (median income \$25,000)	5%	4%	5%
Household type 3 (median income \$35,800)	3%	4%	4%
Household type 4 (median income \$46,700)	6%	6%	6%
Household type 5 (median income \$57,000)	12%	12%	13%
Household type 6 (median income \$69,200)	20%	23%	18%
Household type 7 (median income \$100,100)	26%	23%	27%
Household type 8 (median income \$113,300)	24%	24%	21%
Average annual cost information for all households			
Transportation costs	\$10,800	\$10,900	\$10,600
Housing costs	\$23,600	\$34,900	\$40,600
Income	\$89,300	\$88,000	\$85,100
% Income spent on transportation	12%	12%	12%
% Income spent on housing	26%	40%	48%
% Income spent on housing and transportation	38%	52%	60%
Average annual cost information for all renters			
Transportation costs	\$6,700	\$7,000	\$7,000
Housing costs	\$8,200	\$9,500	\$9,900
Income	\$36,400	\$43,000	\$41,400
% Income spent on transportation	18%	16%	17%
% Income spent on housing	23%	22%	24%
% Income spent on housing and transportation	41%	38%	41%
Number of cost burdened households	200	600	1,400
Share of households that are cost burdened	3%	4%	6%



## Subarea: Oregon City, Map Reference Number: 26

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes the City of Oregon City as well as surrounding unincorporated areas of Clackamas County. In 2005, the average income for residents of this subarea was fairly consistent with the regional average in 2005, but is projected to slightly decrease from 2005 to 2030. While the share of single family owner occupied households in 2005 (71 percent) is higher than the regional average rate for that housing type (60 percent), it is projected to decrease slightly to 66 to 61 percent by the year 2030. The share of rental multi-family households in 2005 (21 percent), the other primary housing type in the subarea, was lower than the regional average rate (29 percent), but is projected to increase to 25 to 27 percent by 2030, which would make it consistent with the regional average rate.

The share of annual income spent on transportation costs (15 percent) is slightly higher than the regional average, while the share of annual income spent on housing is relatively similar to the regional average. The share of households that are considered cost-burdened is projected to nearly double from 11 percent in 2005 to 21 to 22 percent in 2030. However, this rate would be similar to the forecasted regional average rate for cost-burdened households (projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

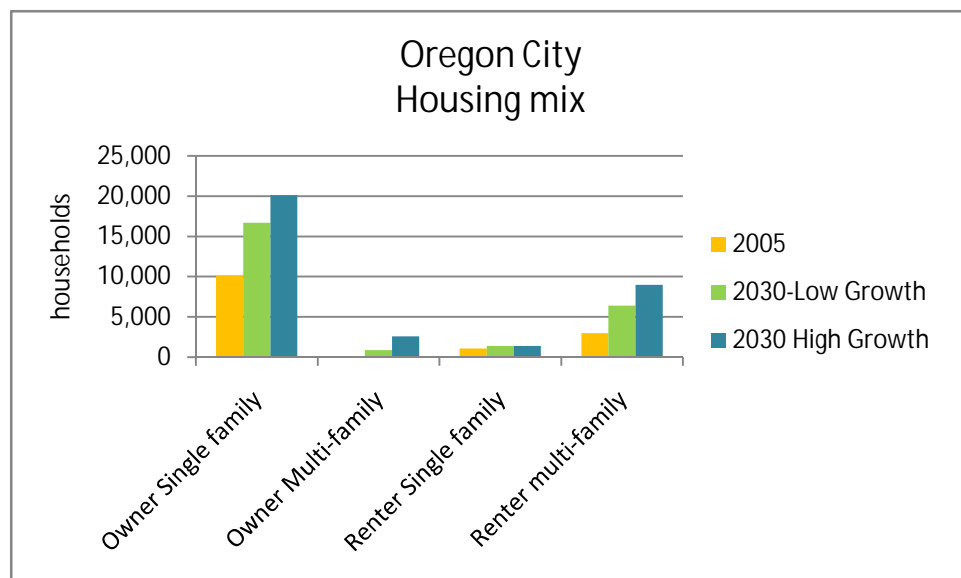
Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

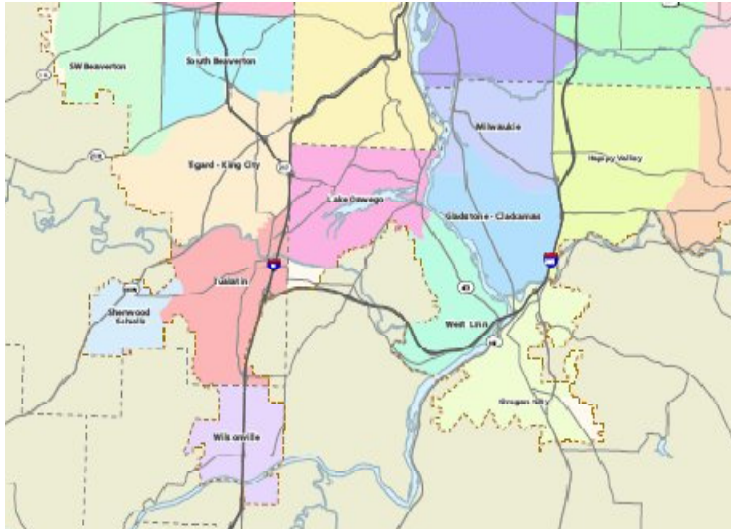
Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Oregon City	2005	2030 (low-growth)	2030 (high growth)
Total households	14,300	25,300	33,100
Subarea share of region's households	3%	3%	4%
Total jobs	14,100	20,500	29,400
Subarea share of region's jobs	2%	2%	2%
Percent of all households by household type			
Household type 1 (median income \$13,800)	9%	11%	13%
Household type 2 (median income \$25,000)	11%	11%	12%
Household type 3 (median income \$35,800)	11%	11%	12%
Household type 4 (median income \$46,700)	15%	16%	15%
Household type 5 (median income \$57,000)	16%	15%	15%
Household type 6 (median income \$69,200)	16%	16%	13%
Household type 7 (median income \$100,100)	14%	13%	13%
Household type 8 (median income \$113,300)	9%	8%	7%
Average annual cost information for all households			
Transportation costs	\$8,500	\$8,300	\$8,000
Housing costs	\$17,200	\$22,800	\$26,400
Income	\$58,700	\$56,200	\$54,500
% Income spent on transportation	15%	15%	15%
% Income spent on housing	29%	40%	48%
% Income spent on housing and transportation	44%	55%	63%
Average annual cost information for all renters			
Transportation costs	\$6,200	\$5,900	\$5,700
Housing costs	\$7,900	\$9,200	\$10,200
Income	\$33,700	\$32,500	\$31,500
% Income spent on transportation	18%	18%	18%
% Income spent on housing	26%	28%	32%
% Income spent on housing and transportation	42%	46%	50%
Number of cost burdened households	1,600	5,300	7,100
Share of households that are cost burdened	11%	21%	22%



## Subarea: West Linn, Map Reference Number: 27

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes the City of West Linn. It should also be noted that these scenarios assume future UGB expansions to the south of this subarea (based on the current state land hierarchy) and that some of the resulting new households and jobs are reported for this subarea. Those UGB expansions will not necessarily occur. In 2005, the average income for residents of this subarea was substantially higher than the regional average and is projected to increase by the year 2030. In 2005, the share of owner occupied single family households (80 percent) was much higher than the regional average (60 percent) and is projected to increase to 86 to 89 percent by 2030. There is little projected increase in the shares of other household types from 2005 to 2030.

The share of annual income spent on housing and transportation is fairly comparable to the regional average. However, the share of households that are cost-burdened in this area (five percent in 2005) is projected to remain relatively constant in 2030, much lower than the forecasted regional average rate (regional average is projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

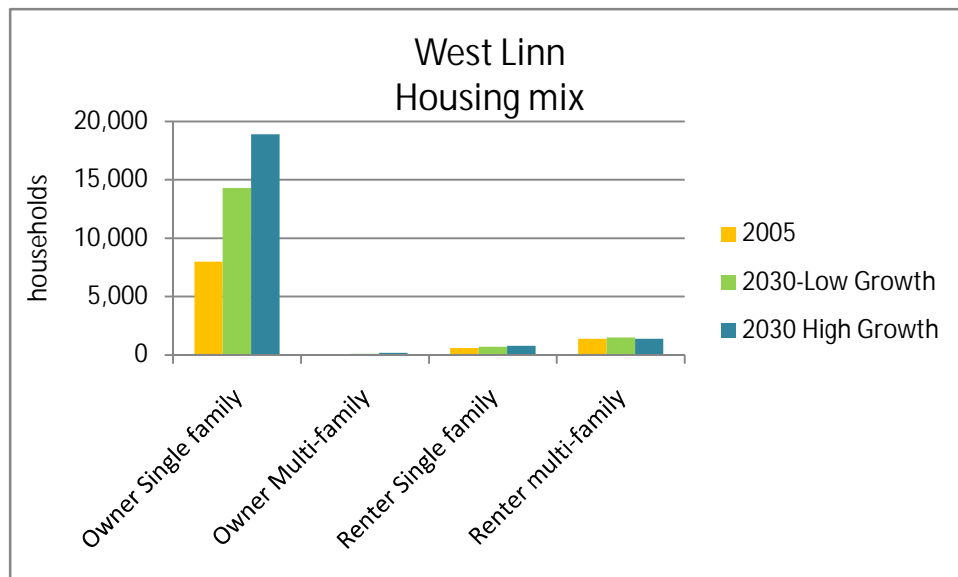
#### Housing costs: A

comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

#### Transportation costs: A

comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

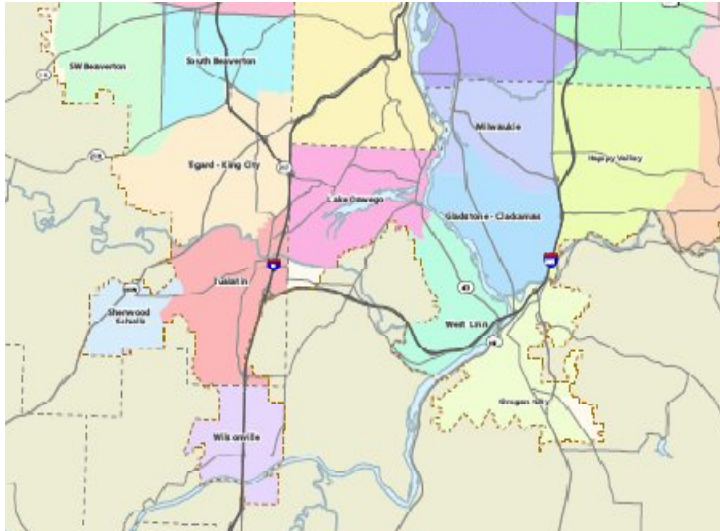
West Linn	2005	2030 (low-growth)	2030 (high growth)
Total households	10,000	16,600	21,200
Subarea share of region's households	2%	2%	2%
Total jobs	5,400	6,200	9,400
Subarea share of the region's jobs	1%	1%	1%
Percent of all households by household type			
Household type 1 (median income \$13,800)	2%	1%	1%
Household type 2 (median income \$25,000)	4%	2%	2%
Household type 3 (median income \$35,800)	4%	3%	3%
Household type 4 (median income \$46,700)	8%	6%	5%
Household type 5 (median income \$57,000)	8%	7%	7%
Household type 6 (median income \$69,200)	13%	15%	12%
Household type 7 (median income \$100,100)	20%	19%	25%
Household type 8 (median income \$113,300)	40%	47%	48%
Average cost information for all households			
Transportation costs	\$8,900	\$9,400	\$9,400
Housing costs	\$29,500	\$38,200	\$49,100
Income	\$90,300	\$97,900	\$100,800
% Income spent on transportation	10%	10%	9%
% Income spent on housing	33%	39%	49%
% Income spent on housing and transportation	43%	49%	58%
Average cost information for all renters			
Transportation costs	\$6,300	\$6,700	\$6,700
Housing costs	\$10,700	\$13,200	\$15,300
Income	\$51,000	\$55,400	\$55,600
% Income spent on transportation	12%	12%	12%
% Income spent on housing	21%	24%	28%
% Income spent on housing and transportation	33%	36%	40%
Number of cost burdened households	517	908	875
Share of households that are cost burdened	5%	6%	4%





## Subarea: Wilsonville, Map Reference Number: 28

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes the City of Wilsonville as well as scattered unincorporated areas of Clackamas County. For the years 2005 and 2030, average incomes for residents of this subarea are slightly higher than the regional averages. In 2005, the share of single family owner occupied households (58 percent) was slightly lower than the regional average rate for this housing type (60 percent), but is projected to increase by 2030. In 2005, the share of rental multi-family households (34 percent), the other significant housing type in Wilsonville, was higher than the regional average rate for this housing type (29 percent).

The share of annual income spent on transportation costs (14 percent) is slightly high relative to the regional average, while the share of annual income spent on housing is fairly consistent with the regional average. The share of households that are cost-burdened is projected to increase from 17 percent in 2005 to 20 to 24 percent in 2030, which is consistent with the regional rate for households that are cost-burdened (the regional average is projected to be between 17 and 23 percent of all households by the year 2030).

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.

### Definitions:

#### Cost-burdened household:

Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

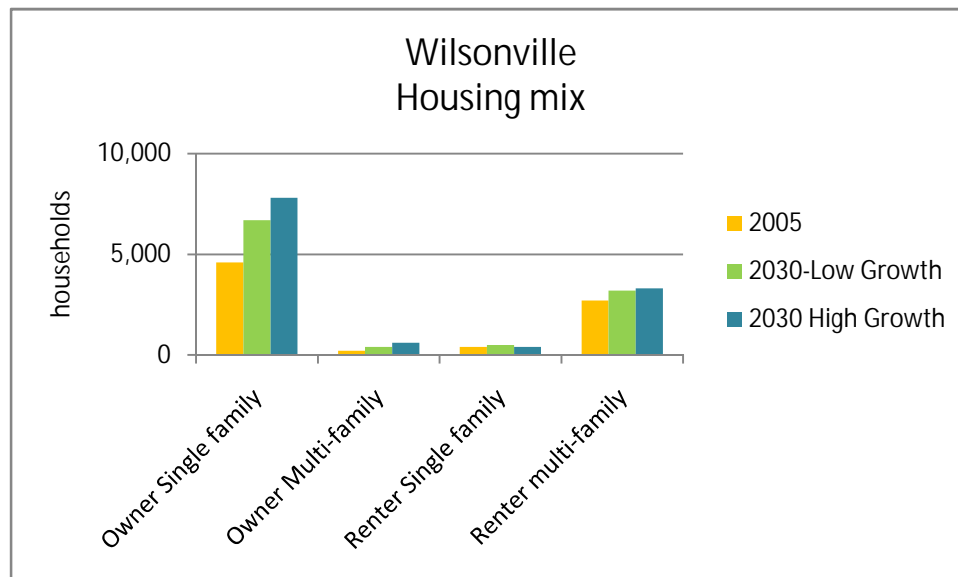
#### Housing costs:

A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

#### Transportation costs:

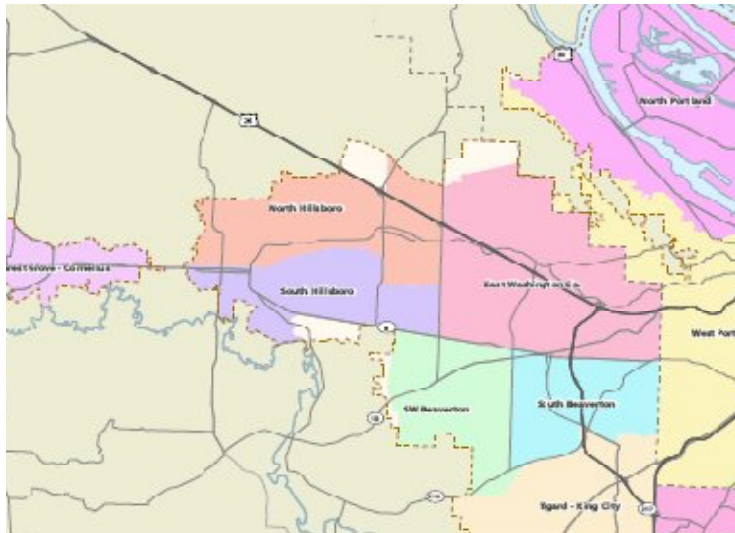
A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Wilsonville	2005	2030 (low-growth)	2030 (high growth)
Total dwelling units	7,900	10,900	12,200
Subarea share of region's households	1%	1%	1%
Total jobs	15,200	19,400	28,400
Subarea share of region's jobs	2%	2%	2%
Percent of all households by household type			
Household type 1 (median income \$13,800)	4%	5%	5%
Household type 2 (median income \$25,000)	4%	5%	5%
Household type 3 (median income \$35,800)	7%	7%	8%
Household type 4 (median income \$46,700)	9%	10%	10%
Household type 5 (median income \$57,000)	12%	11%	12%
Household type 6 (median income \$69,200)	20%	21%	17%
Household type 7 (median income \$100,100)	23%	24%	27%
Household type 8 (median income \$113,300)	21%	16%	16%
Average annual cost information for all households			
Transportation costs	\$10,100	\$10,100	\$10,100
Housing costs	\$22,200	\$27,800	\$35,100
Income	\$72,300	\$72,200	\$73,900
% Income spent on transportation	14%	14%	14%
% Income spent on housing	31%	38%	47%
% Income spent on housing and transportation	45%	52%	61%
Average annual cost information for all renters			
Transportation costs	\$7,100	\$6,900	\$6,900
Housing costs	\$9,400	\$10,600	\$12,100
Income	\$39,300	\$36,700	\$36,300
% Income spent on transportation	18%	19%	19%
% Income spent on housing	24%	29%	33%
% Income spent on housing and transportation	42%	48%	52%
Number of cost burdened households	1,300	2,100	2,900
Share of households that are cost burdened	17%	20%	24%



## Subarea: North Hillsboro, Map Reference Number: 31

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes sections of Hillsboro as well as some unincorporated areas of Washington County. The average historic and forecasted incomes for residents of this subarea are slightly lower than the regional average. The subarea's share of the region's housing remains constant from 2005 to 2030. This subarea is forecasted to see job growth by the year 2030. In 2005, the housing mix is almost split evenly between owner occupied single family and rental multi-family households (50 and 40 percent respectively). In 2005, the share of multi-family rental households was higher than the regional average for this housing type (regional average 29 percent). This rate is projected to increase slightly by 2030. However, the share of owner occupied single family households, slightly lower than the regional average rate in 2005 (regional average 60 percent), is projected to decrease by the year 2030.

While the share of annual income spent on transportation is higher than the regional average, the share of annual income spent on housing costs is slightly lower than the regional average. By the year 2030, the share of households that are cost-burdened is projected to increase from nine percent to 13 to 27 percent, a range that exceeds the forecasted regional rate for cost-burdened households (regional average is projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

Renters that spend more than half of their household income on transportation and housing.

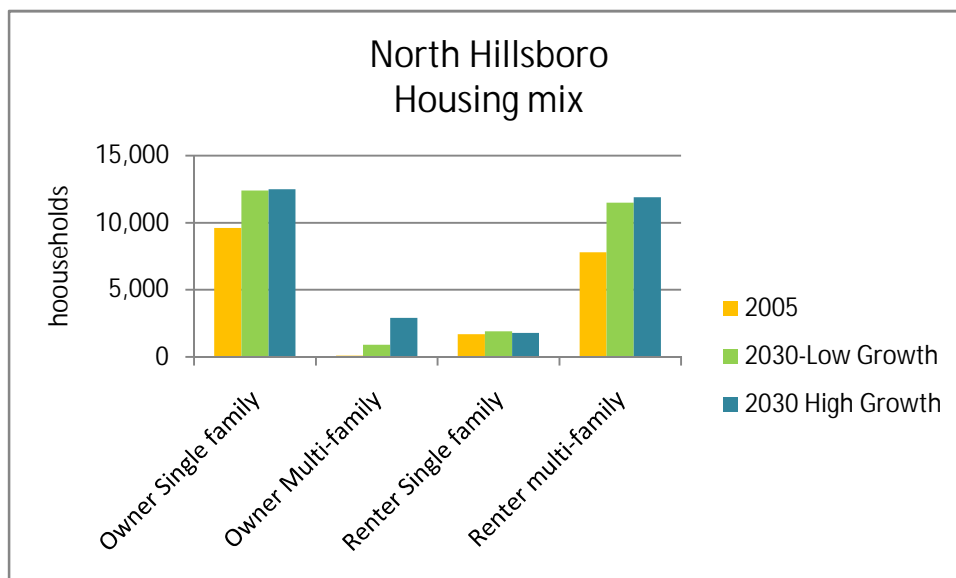
Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

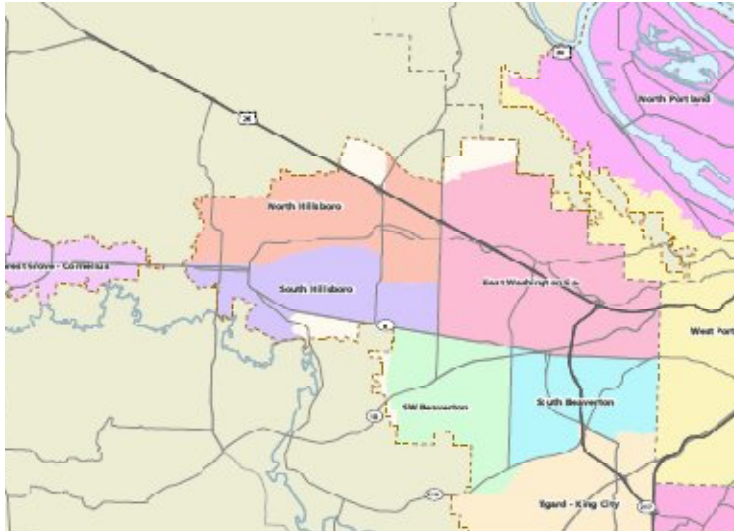


North Hillsboro	2005	2030 (low-growth)	2030 (high growth)
Total dwelling units	19,300	26,700	29,200
Subarea share of region's households	3%	3%	3%
Total jobs	19,300	29,900	56,300
Subarea share of region's jobs	2%	3%	4%
Percent of all households by household type			
Household type 1 (median income \$13,800)	5%	7%	9%
Household type 2 (median income \$25,000)	8%	10%	10%
Household type 3 (median income \$35,800)	9%	11%	12%
Household type 4 (median income \$46,700)	13%	15%	15%
Household type 5 (median income \$57,000)	16%	16%	16%
Household type 6 (median income \$69,200)	19%	19%	16%
Household type 7 (median income \$100,100)	20%	15%	15%
Household type 8 (median income \$113,300)	10%	8%	7%
Average annual cost information for all households			
Transportation costs	\$7,100	\$6,700	\$6,400
Housing costs	\$16,200	\$19,000	\$22,400
Income	\$56,400	\$51,100	\$50,000
% Income spent on transportation	13%	13%	13%
% Income spent on housing	29%	37%	45%
% Income spent on housing and transportation	41%	50%	58%
Average annual cost information for all renters			
Transportation costs	\$5,700	\$5,200	\$5,200
Housing costs	\$9,300	\$10,200	\$11,800
Income	\$42,500	\$37,300	\$37,200
% Income spent on transportation	14%	14%	14%
% Income spent on housing	22%	27%	32%
% Income spent on housing and transportation	36%	42%	46%
Number of cost burdened households	1,800	3,500	7,800
Share of households that are cost burdened	9%	13%	27%



## Subarea: East Washington County, Map Reference Number: 32

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes sections of the City of Beaverton as well as unincorporated areas of Washington County. The average household income, while slightly higher than the regional average, is projected to decrease slightly from 2005 to 2030. In 2005, the share of owner occupied single family households (51 percent) was slightly lower than the regional average rate for this housing type (60 percent) and is projected to decrease by 2030. The share of multi-family households in 2005 (30 percent) is fairly consistent with the regional average rate for that housing type (29 percent) and remains fairly constant through 2030. Finally, the share of owner occupied multi-family households, consistent with the regional average rate in 2005 (regional average of two percent), is projected to increase by the year 2030.

The share of income spent on transportation and housing is fairly consistent with the regional average. While the number of cost-burdened households in this subarea is projected to increase from 2005 to 2030, the share of households that are cost-burdened could, depending on the growth scenario, remain constant at 12 percent or increase to 21 percent by the year 2030. The higher rate would be comparable to the forecasted regional rate for cost-burdened households (projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

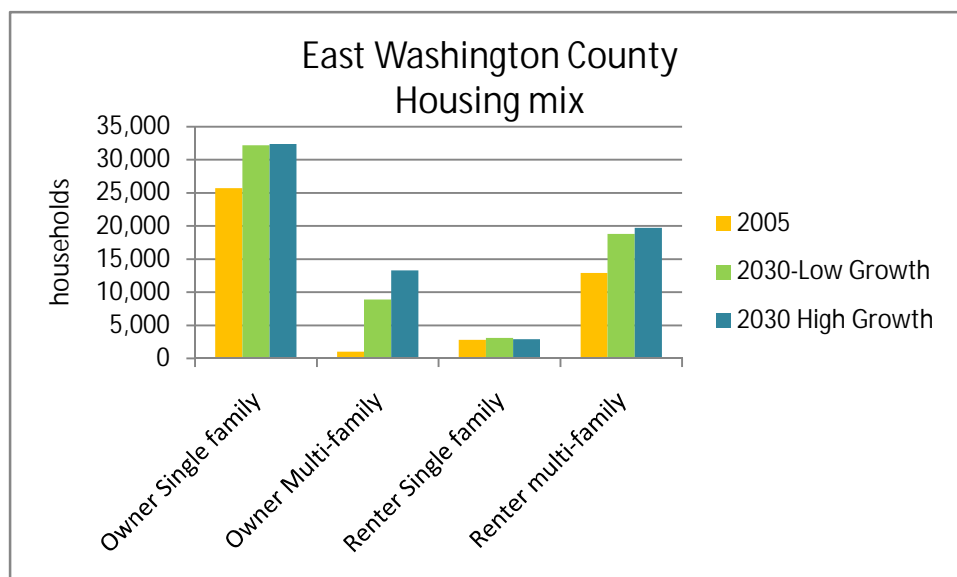
#### Housing costs:

A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

#### Transportation costs:

A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

East Washington County	2005	2030 (low-growth)	2030 (high growth)
Total dwelling units	42,400	63,000	68,300
Subarea share of region's households	7%	8%	8%
Total jobs	65,600	87,000	122,800
Subarea share of region's jobs	8%	8%	9%
Percent of all households by household type			
Household type 1 (median income \$13,800)	4%	7%	7%
Household type 2 (median income \$25,000)	7%	9%	10%
Household type 3 (median income \$35,800)	10%	10%	11%
Household type 4 (median income \$46,700)	13%	13%	12%
Household type 5 (median income \$57,000)	14%	12%	13%
Household type 6 (median income \$69,200)	16%	16%	13%
Household type 7 (median income \$100,100)	19%	17%	19%
Household type 8 (median income \$113,300)	19%	16%	14%
Average annual cost information for all households			
Transportation costs	\$5,900	\$5,500	\$5,300
Housing costs	\$22,400	\$25,600	\$30,900
Income	\$67,800	\$64,100	\$63,400
% Income spent on transportation	9%	9%	8%
% Income spent on housing	33%	40%	49%
% Income spent on housing and transportation	42%	49%	57%
Average annual cost information for all renters			
Transportation costs	\$3,900	\$3,900	\$3,900
Housing costs	\$9,200	\$10,600	\$12,400
Income	\$35,400	\$35,900	\$36,100
% Income spent on transportation	11%	11%	11%
% Income spent on housing	26%	30%	34%
% Income spent on housing and transportation	37%	41%	53%
Number of cost burdened households	5,100	7,300	14,300
Share of households that are cost burdened	12%	12%	21%



## Subarea: South Beaverton, Map Reference Number: 33

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes parts of Beaverton as well as unincorporated areas of Washington County. The average income for residents of this subarea in 2005 and 2030 is slightly lower than the regional average. While the share of owner occupied single family (51 percent) is lower than the regional average rate for this housing type in 2005 (60 percent), the share of rental multi-family households in 2005 (38 percent) is higher than the regional average rate (29 percent). This housing mix is not projected to experience much change by the year 2030.

The share of income spent on housing and transportation in 2005 and 2030 is comparable to the regional average, but, for renters, the share of income spent on housing and transportation costs is slightly higher than the regional average. In addition, the share of households that are cost-burdened is higher than the regional average and is projected to increase to 19 percent to a third of all households in 2030. This is higher than the forecasted regional rate for cost-burdened households (projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

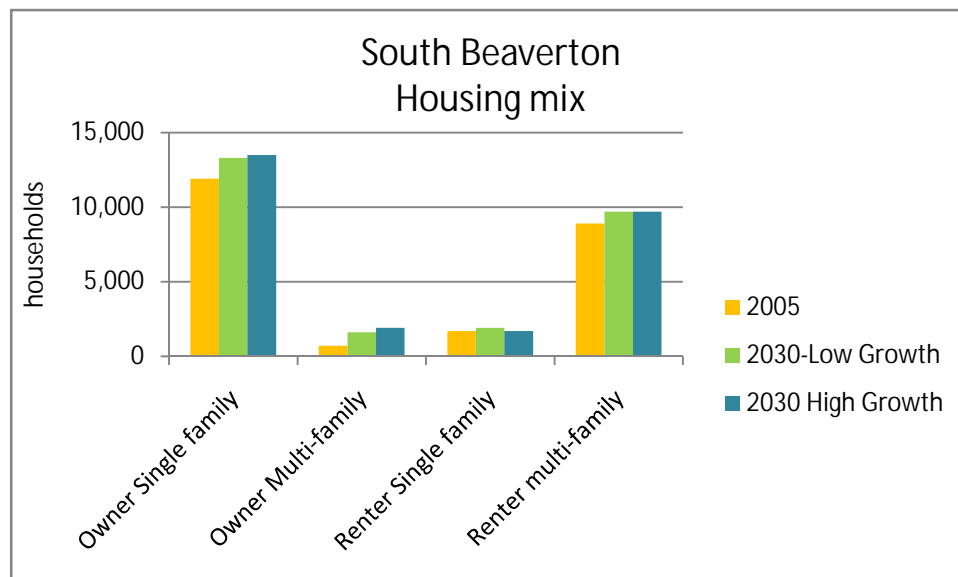
Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

South Beaverton	2005	2030 (low-growth)	2030 (high growth)
Total dwelling units	23,200	26,600	26,800
Subarea share of region's households	4%	3%	3%
Total jobs	36,000	39,100	48,600
Subarea share of region's jobs	4%	4%	4%
Percent of all households by household type			
Household type 1 (median income \$13,800)	7%	9%	9%
Household type 2 (median income \$25,000)	12%	13%	13%
Household type 3 (median income \$35,800)	13%	13%	14%
Household type 4 (median income \$46,700)	17%	17%	17%
Household type 5 (median income \$57,000)	16%	15%	16%
Household type 6 (median income \$69,200)	14%	14%	12%
Household type 7 (median income \$100,100)	12%	12%	13%
Household type 8 (median income \$113,300)	9%	7%	7%
Average annual cost information for all households			
Transportation costs	\$4,900	\$4,700	\$4,700
Housing costs	\$17,300	\$20,600	\$25,300
Income	\$52,300	\$50,600	\$50,700
% Income spent on transportation	9%	9%	9%
% Income spent on housing	33%	41%	50%
% Income spent on housing and transportation	42%	50%	59%
Average annual cost information for all renters			
Transportation costs	\$3,600	\$3,500	\$3,500
Housing costs	\$8,700	\$9,800	\$11,300
Income	\$33,200	\$32,500	\$32,300
% Income spent on transportation	11%	12%	11%
% Income spent on housing	26%	30%	35%
% Income spent on housing and transportation	37%	42%	46%
Number of cost burdened households	4,200	\$5,000	8,000
Share of households that are cost burdened	18%	19%	30%





## Subarea: Tigard-King City, Map Reference Number: 34

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes Tigard, King City, and some unincorporated areas of Washington County. The average income for residents of this subarea is consistent with the regional average for both 2005 and 2030. While the share of owner occupied single family (64 percent) is lower than the regional average rate for this housing type in 2005 (60 percent), the share of rental multi-family households in 2005 (27 percent) is higher than the regional average rate (29 percent).

The share of annual income spent on transportation and housing is fairly comparable to the regional average. While the number of cost-burdened households in this subarea is projected to increase from the years 2005 to 2030, the share of households that are cost-burdened could either remain constant at 12 percent or increase to 21 percent, depending on the growth scenario. These rates would be lower than or comparable to the forecasted regional rate for cost-burdened households (projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

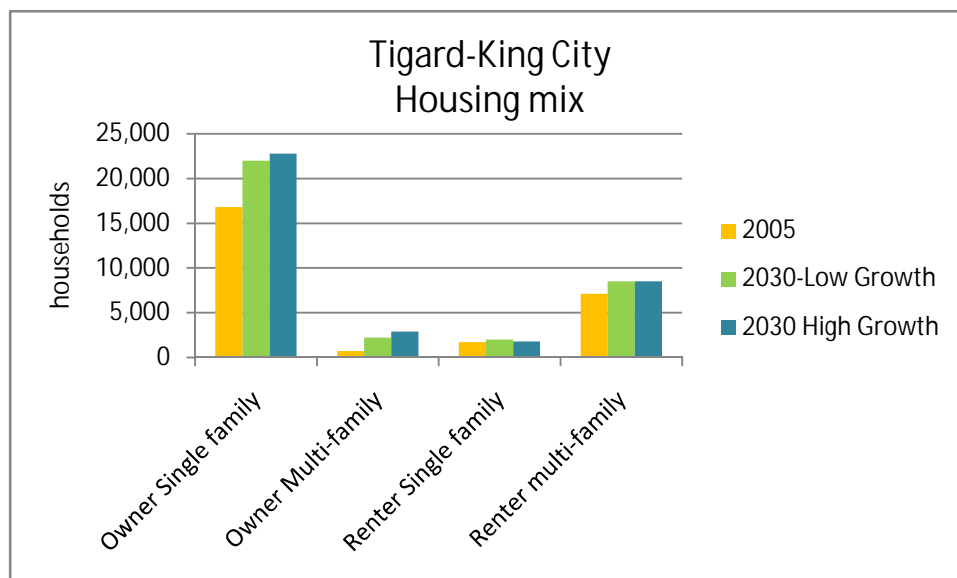
Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Tigard, King City	2005	2030 (low-growth)	2030 (high growth)
Total dwelling units	26,400	34,600	36,100
Subarea share of region's households	5%	4%	4%
Total jobs	37,900	46,500	60,600
Subarea share of region's jobs	5%	4%	4%
Percent of all households by household type			
Household type 1 (median income \$13,800)	5%	7%	8%
Household type 2 (median income \$25,000)	9%	11%	12%
Household type 3 (median income \$35,800)	12%	14%	15%
Household type 4 (median income \$46,700)	15%	16%	16%
Household type 5 (median income \$57,000)	16%	15%	15%
Household type 6 (median income \$69,200)	15%	14%	11%
Household type 7 (median income \$100,100)	14%	13%	15%
Household type 8 (median income \$113,300)	13%	10%	9%
Average annual cost information for all households			
Transportation costs	\$6,200	\$5,900	\$5,900
Housing costs	\$20,100	\$24,000	\$29,300
Income	\$61,900	\$58,500	\$58,100
% Income spent on transportation	10%	10%	10%
% Income spent on housing	32%	41%	50%
% Income spent on housing and transportation	42%	51%	60%
Average annual cost information for all renters			
Transportation costs	\$4,100	\$3,900	\$3,500
Housing costs	\$8,800	\$9,800	\$11,400
Income	\$34,000	\$32,500	\$32,600
% Income spent on transportation	12%	12%	12%
% Income spent on housing	26%	30%	35%
% Income spent on housing and transportation	38%	42%	47%
Number of cost burdened households	3,300	4,300	7,500
Share of households that are cost burdened	12%	12%	21%



## Subarea: Tualatin, Map Reference Number: 35

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes the City of Tualatin as well as unincorporated areas of Washington County. In 2005, the average income for residents of this subarea was slightly higher than the regional average and is projected to increase by 2030. In 2005, the share of owner occupied single family households (56 percent) was lower than the regional average rate for this housing type (60 percent) and the share of rental multi-family households (36 percent) was higher than the regional average rate (29 percent). However, the share of owner occupied single family households is projected to increase from 66 to 72 percent in the year 2030 and the share of rental multi-family households is projected to decrease to 21 to 26 percent in 2030.

The share of annual income spent on transportation and housing is comparable to the regional average rate. While the number of cost-burdened households in this subarea is projected to increase by the year 2030, the share of households that are cost burdened is projected either to decrease slightly or increase to 17 percent, depending on the growth scenario. This rate would be on the low end of the forecasted regional average range (projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

Renters that spend more than half of their household income on transportation and housing.

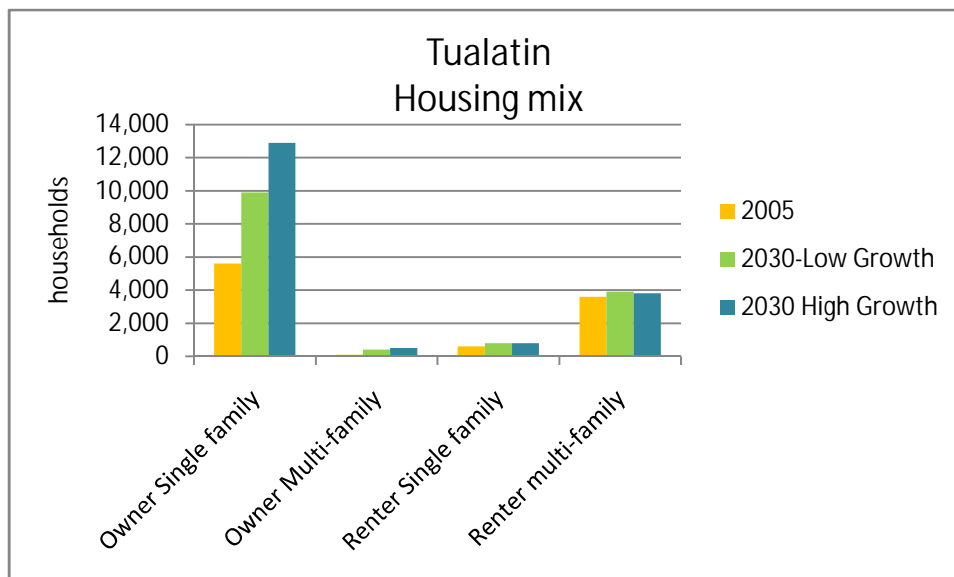
Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.



Tualatin	2005	2030 (low-growth)	2030 (high growth)
Total dwelling units	9,900	15,000	18,000
Subarea share of region's households	2%	2%	2%
Total jobs	32,200	39,900	51,200
Subarea share of region's jobs	4%	4%	4%
Percent of all households by household type			
Household type 1 (median income \$13,800)	4%	4%	3%
Household type 2 (median income \$25,000)	8%	6%	5%
Household type 3 (median income \$35,800)	9%	8%	7%
Household type 4 (median income \$46,700)	13%	13%	12%
Household type 5 (median income \$57,000)	16%	15%	15%
Household type 6 (median income \$69,200)	17%	16%	14%
Household type 7 (median income \$100,100)	16%	11%	12%
Household type 8 (median income \$113,300)	19%	29%	32%
Average annual cost information for all households			
Transportation costs	\$7,200	\$8,300	\$8,800
Housing costs	\$19,300	\$28,000	\$37,000
Income	\$64,100	\$73,000	\$77,800
% Income spent on transportation	11%	11%	11%
% Income spent on housing	30%	38%	48%
% Income spent on housing and transportation	41%	49%	59%
Average annual cost information for all renters			
Transportation costs	\$4,600	\$4,500	\$4,600
Housing costs	\$8,800	\$10,100	\$11,600
Income	\$36,000	\$35,300	\$35,700
% Income spent on transportation	13%	13%	13%
% Income spent on housing	25%	29%	33%
% Income spent on housing and transportation	38%	42%	45%
Number of cost burdened households	1,300	1,700	3,000
Share of households that are cost burdened	13%	12%	17%



## Subarea: Sherwood-Scholls, Map Reference Number: 36

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes the city of Sherwood and unincorporated areas of Washington County. In 2005, the average income for residents of this subarea was higher than the regional average. Average incomes are projected to decrease slightly by 2030. In 2005, the share of owner occupied single family owner households, the primary housing type in the Sherwood-Scholls area, is much higher (82 percent) than the regional average rate for this housing type (60 percent). While this share is projected to decrease by 2030, it will still be high compared to the regional average rate.

The share of income spent on transportation is slightly high relative the regional average, while the share of income spent on housing is fairly consistent with the regional average. The share of households that are cost-burdened, relatively low at five percent in 2005, is projected to increase to 10 to 14 percent by the year 2030. This would be a lower share than the regional average (projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

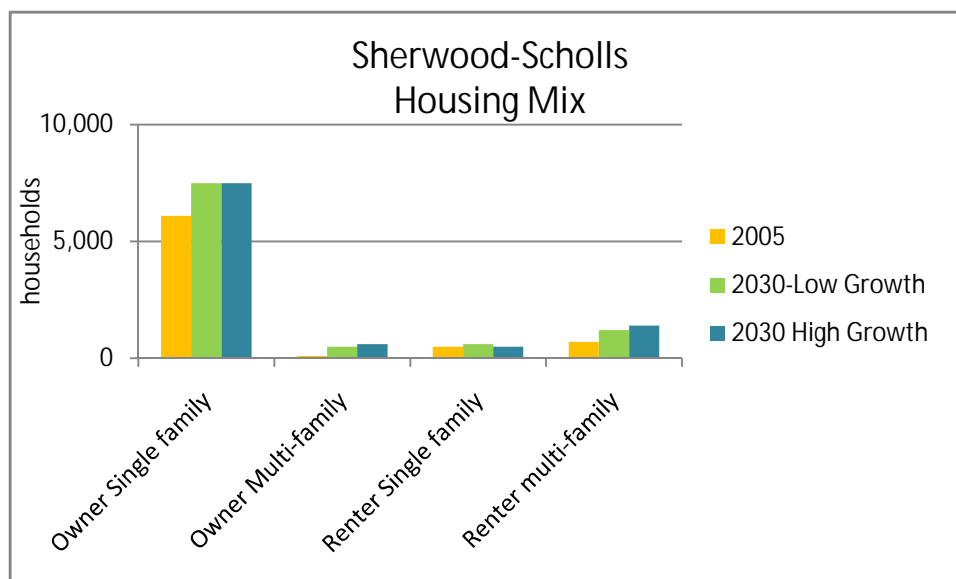
Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

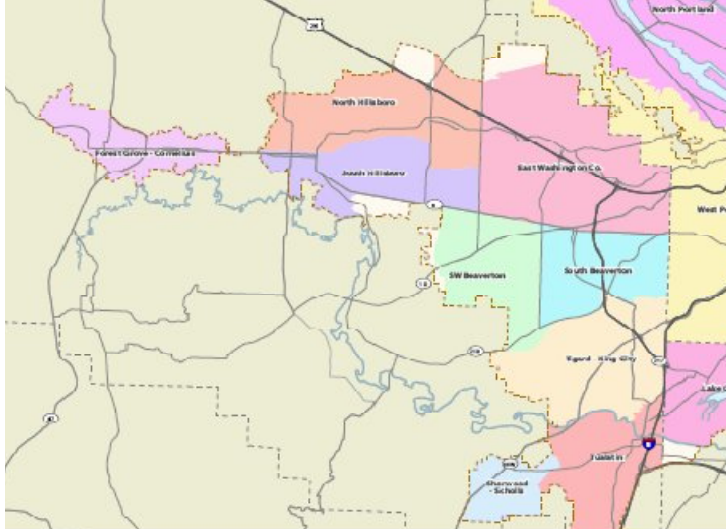
Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Sherwood-Scholls	2005	2030 (low-growth)	2030 (high growth)
Total dwelling units	7,400	9,800	10,000
Subarea share of region's households	1%	1%	1%
Total jobs	28,000	34,700	45,000
Subarea share of region's jobs	3%	3%	3%
Percent of all households by household type			
Household type 1 (median income \$13,800)	4%	6%	6%
Household type 2 (median income \$25,000)	4%	5%	5%
Household type 3 (median income \$35,800)	7%	8%	9%
Household type 4 (median income \$46,700)	15%	17%	17%
Household type 5 (median income \$57,000)	18%	18%	19%
Household type 6 (median income \$69,200)	18%	18%	15%
Household type 7 (median income \$100,100)	19%	17%	18%
Household type 8 (median income \$113,300)	15%	12%	11%
Average annual cost information for all households			
Transportation costs	\$10,200	\$9,800	\$9,700
Housing costs	\$22,700	\$28,100	\$34,300
Income	\$75,100	\$69,700	\$69,200
% Income spent on transportation	14%	14%	14%
% Income spent on housing	30%	40%	50%
% Income spent on housing and transportation	44%	54%	64%
Average annual cost information for all renters			
Transportation costs	\$6,300	\$6,400	\$6,700
Housing costs	\$8,800	\$10,100	\$11,800
Income	\$38,500	\$38,800	\$40,300
% Income spent on transportation	16%	17%	17%
% Income spent on housing	23%	26%	29%
% Income spent on housing and transportation	39%	43%	46%
Number of cost burdened households	400	1,000	1,400
Share of households that are cost burdened	5%	10%	14%



## Subarea: SW Beaverton, Map Reference Number: 37

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes the SW sections of Beaverton as well as large areas of unincorporated Washington County. In 2005, the average income for residents of this subarea was slightly higher than the regional average and is projected to increase by the year 2030. While, in 2005, the share of owner occupied single family (66 percent) is higher than the regional average rate (60 percent) for this housing type, the share of rental multi-family households (25 percent) is lower than the regional average rate (29 percent). By the year 2030, the share of owner occupied single family households is projected to increase slightly and the share of rental multi-family households is projected to decrease slightly.

The share of annual income spent on transportation and housing is fairly consistent with the regional average rate. The share of households that are cost-burdened is projected to increase from 8 percent in 2005 to 9 to 15 percent in 2030, which is lower than the forecasted regional average rate (projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

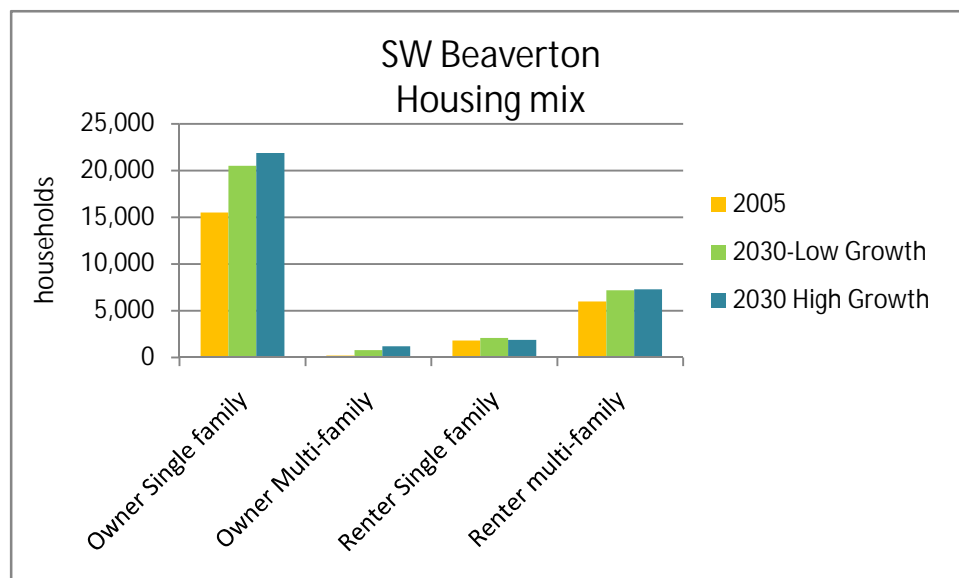
Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

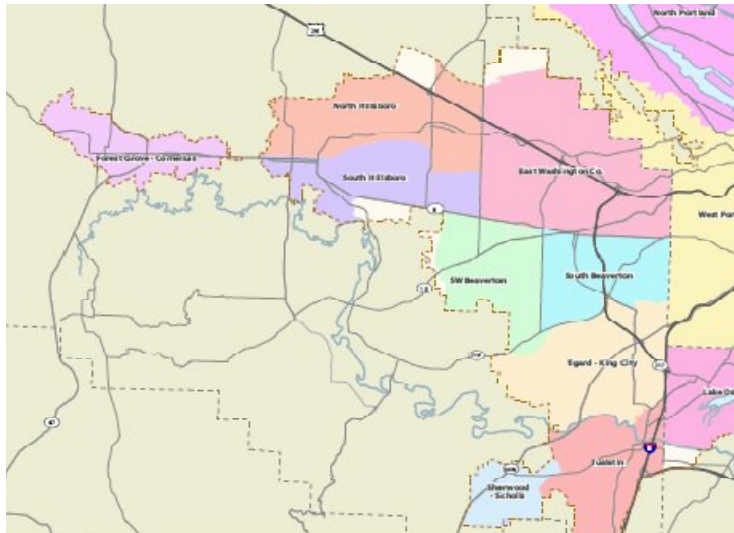
SW Beaverton	2005	2030 (low-growth)	2030 (high growth)
Total dwelling units	23,500	30,500	32,300
Subarea share of region's households	4%	4%	4%
Total jobs	4,300	5,300	6,800
Subarea share of region's jobs	1%	1%	0%
Percent of all households by household type			
Household type 1 (median income \$13,800)	5%	5%	5%
Household type 2 (median income \$25,000)	8%	8%	8%
Household type 3 (median income \$35,800)	10%	10%	11%
Household type 4 (median income \$46,700)	15%	15%	14%
Household type 5 (median income \$57,000)	15%	14%	15%
Household type 6 (median income \$69,200)	16%	17%	15%
Household type 7 (median income \$100,100)	16%	14%	17%
Household type 8 (median income \$113,300)	16%	16%	16%
Average annual cost information for all households			
Transportation costs	\$6,700	\$6,700	\$6,700
Housing costs	\$20,100	\$25,700	\$32,300
Income	\$64,800	\$65,200	\$66,400
% Income spent on transportation	10%	10%	10%
% Income spent on housing	31%	39%	49%
% Income spent on housing and transportation	41%	49%	59%
Average annual cost information for all renters			
Transportation costs	\$4,800	\$4,800	\$4,900
Housing costs	\$9,100	\$10,800	\$12,500
Income	\$36,600	\$40,100	\$40,400
% Income spent on transportation	12%	12%	12%
% Income spent on housing	23%	27%	31%
% Income spent on housing and transportation	35%	39%	43%
Number of cost burdened households	1,900	2,600	5,000
Share of households that are cost burdened	8%	9%	15%





## Subarea: South Hillsboro, Map Reference Number: 38

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes the southern portion of the City of Hillsboro. In 2005, the average income for residents of this subarea was slightly lower than the regional average income and is projected to decrease slightly by the year 2030. Housing costs are projected to increase slightly by 2030. While the share of owner occupied single family (66 percent) was higher than the regional average rate for this housing type in 2005 (60 percent), the share of rental multi-family households (25 percent) was lower than the regional average rate (29 percent). The share of owner occupied single family households is projected to increase slightly in 2030 and the share of rental multi-family households is projected to decrease slightly by 2030. The share of rental single family households, at ten percent in 2005, was slightly higher than the regional average rate for that housing type (7 percent), a trend that continues through the year 2030.

While the share of annual income spent on transportation costs is slightly higher than the regional average, the share of annual income spent on housing costs is fairly consistent with the regional average. The share of households that are cost-burdened is projected to increase from 9 percent in 2005 to 10 to 16 percent in 2030, which is slightly lower than the forecasted regional average rate (projected to be between 17 and 23 percent of all households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

Renters that spend more than half of their household income on transportation and housing.

Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

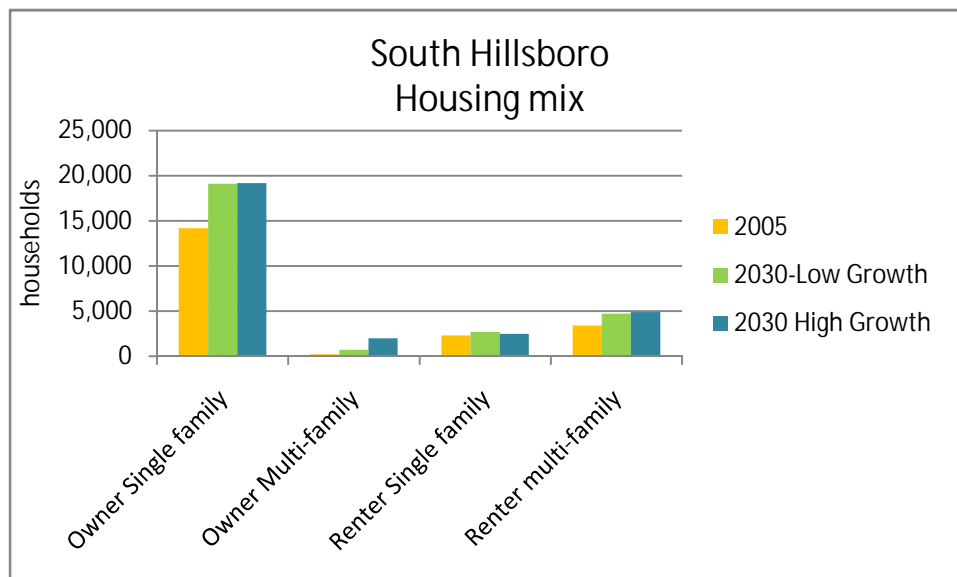
#### Housing costs:

A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

#### Transportation costs:

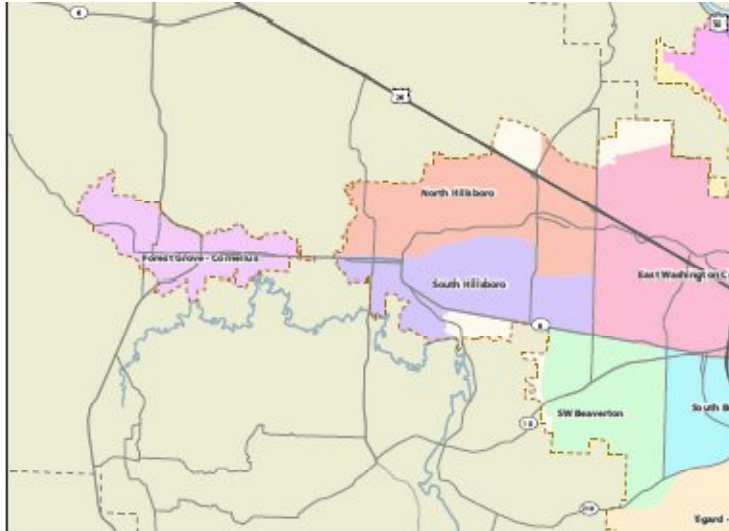
A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

South Hillsboro	2005	2030 (low-growth)	2030 (high growth)
Total dwelling units	20,100	27,100	28,600
Subarea share of region's households	4%	3%	3%
Total jobs	10,300	11,800	19,100
Subarea share of region's jobs	1%	1%	1%
Percent of all households by household type			
Household type 1 (median income \$13,800)	7%	8%	10%
Household type 2 (median income \$25,000)	14%	14%	15%
Household type 3 (median income \$35,800)	17%	18%	18%
Household type 4 (median income \$46,700)	19%	20%	19%
Household type 5 (median income \$57,000)	16%	15%	15%
Household type 6 (median income \$69,200)	11%	10%	8%
Household type 7 (median income \$100,100)	9%	8%	8%
Household type 8 (median income \$113,300)	8%	7%	6%
Average annual cost information for all households			
Transportation costs	\$6,800	\$6,700	\$6,600
Housing costs	\$16,500	\$21,100	\$25,100
Income	\$52,400	\$50,600	\$49,400
% Income spent on transportation	13%	13%	13%
% Income spent on housing	31%	42%	51%
% Income spent on housing and transportation	44%	55%	64%
Average annual cost information for all renters			
Transportation costs	\$5,200	\$5,200	\$5,200
Housing costs	\$8,700	\$10,200	\$11,800
Income	\$39,100	\$39,300	\$39,200
% Income spent on transportation	13%	13%	13%
% Income spent on housing	22%	26%	30%
% Income spent on housing and transportation	35%	39%	43%
Number of cost burdened households	1,900	2,800	4,600
Share of households that are cost burdened	9%	10%	16%



## Subarea: Forest Grove-Cornelius, Map Reference Number: 39

Data is given for the year 2005 and as projections for high and low growth scenarios for 2030. These two scenarios both assume a continuation of current policies and investment trends. The scenarios examine the possible implications of two different population growth rates (low and high growth). Different policies and investments would produce different results.



### Forecast summary:

This subarea includes the cities of Forest Grove and Cornelius. In 2005, the average income for residents of this subarea was significantly lower than the regional average and is also projected to be lower than the regional average in 2030. While the share of owner occupied single family (67 percent) is higher than the regional average rate for this housing type in 2005 (60 percent), the share of rental multi-family households in 2005 (23 percent) is lower than the regional average rate (29 percent). The share of owner occupied single family households is projected to increase slightly in 2030 and the share of rental multi-family households is projected to remain relatively constant through the year 2030.

The share of annual income spent on transportation costs, 22 percent in 2005, was much higher than the regional average. The share of annual income spent on housing is comparable to the regional average. In addition, the share of households that are cost burdened, at 21 percent in 2005, is projected to increase to 28 to 29 percent by the year 2030, which is higher than the forecasted regional average rate (projected to be between 17 and 23 percent of all the households in the region by 2030).

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.

### Definitions:

#### Cost-burdened household:

Renters that spend more than half of their household income on transportation and housing.

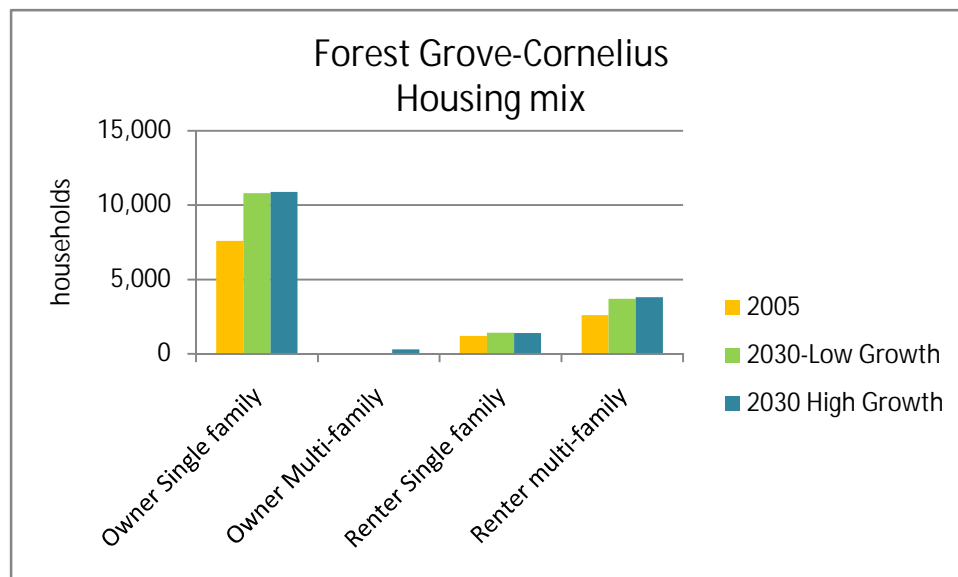
Household types: Households have been grouped into eight categories according to household size, income, age of householder, and whether or not they have children. These household types are numbered one to eight, with progressively higher household incomes.

Housing costs: A comprehensive set of annual household expenditures including rent or mortgage payments, utilities, furnishings, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.

Transportation costs: A comprehensive set of annual transportation expenditures including gasoline, car payments, auto insurance, transit fares, etc. Costs vary, reflecting different demographic preferences and location choices. Costs are expressed in year 2005 dollars.



Forest Grove-Cornelius	2005	2030 (low-growth)	2030 (high growth)
Total dwelling units	11,500	15,900	16,400
Subarea share of region's households	2%	2%	2%
Total jobs	4,800	7,700	12,900
Subarea share of region's jobs	1%	1%	1%
Percent of all households by household type			
Household type 1 (median income \$13,800)	13%	15%	16%
Household type 2 (median income \$25,000)	20%	20%	20%
Household type 3 (median income \$35,800)	18%	18%	19%
Household type 4 (median income \$46,700)	16%	17%	16%
Household type 5 (median income \$57,000)	10%	11%	11%
Household type 6 (median income \$69,200)	9%	9%	7%
Household type 7 (median income \$100,100)	8%	6%	7%
Household type 8 (median income \$113,300)	7%	5%	5%
Average annual cost information for all households			
Transportation costs	\$10,200	\$10,300	\$10,100
Housing costs	\$14,500	\$18,200	\$21,700
Income	\$46,300	\$44,300	\$43,500
% Income spent on transportation	22%	23%	23%
% Income spent on housing	31%	41%	50%
% Income spent on housing and transportation	53%	64%	73%
Average annual cost information for all renters			
Transportation costs	\$6,700	\$6,300	\$6,300
Housing costs	\$7,000	\$7,900	\$9,100
Income	\$27,500	\$24,900	\$25,100
% Income spent on transportation	25%	25%	25%
% Income spent on housing	25%	32%	36%
% Income spent on housing and transportation	50%	57%	61%
Number of cost burdened households	2,400	4,400	4,700
Share of households that are cost burdened	21%	28%	29%



# Appendix 8

## “Needed housing” data tables

---

### Report Purpose

The tables included in this report contain the information required to address "housing needs" requirements in Oregon Revised Statutes 197.296 and 197.303. This report provides a look at the region's historic and forecasted performance in housing mix, density, cost and affordability. Some elements of this appendix also appear in different formats throughout the urban growth report.

### Use of scenarios

MetroScope scenarios are used to forecast future performance. Forecasted results are reported for two different MetroScope scenarios:

- Low Growth Scenario—assumes that population growth occurs at the low end of the forecasted range.
- High Growth Scenario—assumes that population growth occurs at the high end of the forecasted range.

All other assumptions are the same for the high and low growth scenarios. Those assumptions are intended to represent a continuation of current policies and investment trends. Different policy and investment choices or assumptions would produce different results.

Full documentation of the growth forecast is available in Appendix 12 and full documentation of the MetroScope scenario assumptions is available in Appendix 2.

### Relationship of scenarios to the urban growth report

The scenario assumptions and results described in this analysis inform the urban growth report, but do not constitute the urban growth report. The urban growth report is an analysis of residential demand and capacity, while scenarios provide information about the possible performance of the region's residential capacity in light of forecasted demand. Performance is measured as housing mix, density, cost and affordability. If residential development of a particular type and tenure (rent/own) is reported as a scenario forecast, capacity for that household type is implicitly available. In this sense, scenarios do not identify a capacity gap. That determination is left to the urban growth report.

Three additional reasons that the results of these scenarios will differ somewhat from numbers reported in the urban growth report are:

Capture rate: The urban growth report assumes that 61.8 percent of future residential growth in the 7-county area will occur in the Metro UGB. This 61.8 percent capture rate is based on historic data. This UGR capture rate helps to establish the amount of residential demand (through the year 2030) that must be accommodated in the Metro UGB. Scenarios, on the other hand, produce a capture rate as an output of the scenario (i.e. it is not an assumption fed into the model). Consequently, the household numbers reported as scenario results, while similar, are not the same as the household demand numbers used in the urban growth report.

Refill rate: As with the capture rate, the urban growth report assumes a future refill rate. Scenarios, on the other hand, produce a refill rate as an output. Consequently scenario results will again differ somewhat from numbers used in the urban growth report's capacity analysis.

Timeframe: Scenario results are reported for the 2005 to 2030 timeframe. The UGR analysis covers the 2010 to 2030 timeframe. As a consequence, the results are somewhat different.

## Formatting of report and relation to legal requirements

The tables included in this report contain the information required to address "housing needs" requirements in ORS 197.296 and 197.303. For ease of reference, the figures are numbered to correspond to the sections of those statutes:

- Figures 3.1 through 3.3 address the housing capacity and need requirements of ORS 197.296(3)(a) and (b)
- Figures 4.1 AB, C and D address the "buildable lands" inventory requirements of ORS 197.296(4)(a)(A), (B), (C) and (D)
- Figures 5.1 through 5.6 address the housing capacity and need requirements of ORS 197.296(5)(a)(A) and (B)
- Figures 5E.1 and 5E.2 address the housing trend requirements of ORS 197.296(5)(a) (E)
- Figure 6.1 reconciles the calculations of housing land need in this analysis and the UGR
- Figures 303.1 through 303.4 address the "needed housing" requirements of ORS 197.303.

ORS 197.296 suggests providing historic data for the previous five years, but allows for the presentation of a shorter or longer time series if doing so will provide more accurate and reliable data. Consequently the timeframe for the historic data reported in this analysis is sometimes longer than five years.

## Analysis of data

### Figure 3.1: forecasted housing demand by type and tenure

Figure 3.1 displays housing demand and supply by tenure (rent, own) and type (single-family, multi-family) for the years 2005 and 2030. Assuming a continuation of current policies and investment trends, the region is likely to see an increase in the total numbers of all housing types by the year 2030. However, the likely increase in multi-family residences (both owned and rented) is particularly noteworthy. The potential increase in multi-family units (123,000 to 176,000 more by 2030) is greater than the increase in single-family units (100,000 to 124,000 more by 2030).

Figure 3.1: Forecasted number and share of dwelling units by type and tenure (years 2005 and 2030)

Owner	Dwelling units (2005)	Percent of units (2005)	Dwelling units (2030 low growth)	Percent of units (2030 low growth)	Dwelling units (2030 high growth)	Percent of units (2030 high growth)	Difference 2005 to 2030 (low growth)	Differences 2005 to 2030 (high growth)
Single Family Detached	313,752	87.5%	401,395	76.9%	426,604	73.0%	87,644	112,853
Single Family Attached	15,000	4.2%	19,254	3.7%	20,463	3.5%	4,254	5,463
Townhouse Condominium	15,865	4.4%	84,424	16.2%	119,383	20.4%	68,558	103,518
Manufactured	14,000	3.9%	16,947	3.2%	17,995	3.1%	2,947	3,995
Subtotal	358,617	100.0%	522,020	100.0%	584,445	100.0%	163,403	225,828
Renter	Dwelling units (2005)	Percent of units (2005)	Dwelling units (2030 low growth)	Percent of units (2030 low growth)	Dwelling units (2030 high growth)	Percent of units (2030 high growth)	Difference 2005 to 2030 (low growth)	Differences 2005 to 2030 (high growth)
Single Family Detached	41,468	19.4%	46,111	16.8%	43,411	15.0%	4,643	1,943
Single Family Attached	7,200	3.4%	7,970	2.9%	7,474	2.6%	770	274
Apartment	163,375	76.5%	218,089	79.6%	236,285	81.9%	54,714	72,910
Manufactured	1,650	0.8%	1,652	0.6%	1,383	0.5%	2	(267)
Subtotal	213,693	100.0%	273,822	100.0%	288,554	100.0%	60,129	74,861
Combined owner, renter	Dwelling units (2005)	Percent of units (2005)	Dwelling units (2030 low growth)	Percent of units (2030 low growth)	Dwelling units (2030 high growth)	Percent of units (2030 high growth)	Difference 2005 to 2030 (low growth)	Differences 2005 to 2030 (high growth)
Single Family Detached	355,220	62.1%	447,506	56.2%	470,016	53.8%	92,287	114,796
Single Family Attached	22,200	3.9%	27,224	3.4%	27,937	3.2%	5,024	5,737
Townhouse Condominium Apartment	179,240	31.3%	302,513	38.0%	355,668	40.7%	123,273	176,428
Manufactured	15,650	2.7%	18,598	2.3%	19,378	2.2%	2,948	3,728
Total	572,310	100.0%	795,842	100.0%	872,999	100.0%	223,532	300,689

## Figure 3.2: Proforma residential densities

Figure 3.2a (low proforma densities) and Figure 3.2b (high proforma densities) present the variables used to establish the residential density ranges used in this analysis. These proforma values are a blend of MetroScope scenario results and historic data and are used as a potential range of built residential densities. The high densities do not assume any zoning changes. The final column of Figure 3.2 displays forecasted densities per gross buildable acre for four housing types.

The number of gross buildable acres of residential consumption in a given year is divided by the number of total new units for that year, including housing built on vacant land and housing built through infill and redevelopment (refill), yielding the weighted average of 9.99 (low) to 19.93 (high) units per gross acre.

Figure 3.2a (Low proforma residential densities through the year 2030)

	Lot size range (square feet)	Median lot size (sq. ft.)	Median number of units per net buildable acre	Average gross to net acres factor	Average refill rate	Average vacancy rate	Average underbuild factor	Density per gross buildable acre
Single Family Detached	1,750 - 43,560	5,500	7.9	0.65	20%	4%	5%	6.4
Single Family Attached	1,500 - 3,500	3,500	12.4	0.6	22%	4%	5%	9.5
Townhouse Condo Apartment	250 - 2,500	1,750	24.9	0.5	30%	4%	5%	17.6
Manufactured	2,500 - 43,500	5,500	7.9	0.65	20%	4%	5%	6.4
Proforma average weighted density in units per net acre			13.41	Proforma average weighted density in units per gross acre				9.99

Figure 3.2b (High proforma residential densities through the year 2030)

	Lot size range (square feet)	Median lot size (sq. ft.) 2030	Median number of units per net buildable acre	Average gross to net acres factor	Average refill rate	Average vacancy rate	Average underbuild factor	Density per gross buildable acre
Single Family Detached	1,750 - 43,560	4,500	9.7	0.65	30%	4%	5%	8.9
Single Family Attached	1,500 - 3,500	2,500	17.4	0.55	40%	4%	5%	15.8
Townhouse Condo Apartment	250 - 2,500	900	48.4	0.5	45%	4%	5%	43.5
Manufactured	2,500 - 43,500	5,000	8.7	0.65	20%	4%	5%	7.0
Proforma average weighted density in units per net acre			22.08	Proforma average weighted density in units per gross acre				19.93

### Figure 3.3: Proforma gross buildable acres

Based on the low and high proforma densities found in figure 3.2, figure 3.3a (low growth) and figure 3.3b (high growth) show the gross buildable acres demanded by new household growth under two different growth scenarios<sup>1</sup>: 223,532 (low growth) to 300,689 (high growth) new occupied units (232,473 to 312,716 units when adjusted for a four percent vacancy rate). In these scenarios, if households choose to locate in the Metro UGB, there is implicitly adequate capacity. It remains for policy discussion whether this potential future distribution of households would produce the region's desired outcomes.

After adjusting for the refill rate, vacancy rate and under-build factors, these proforma density and growth assumptions produce a total vacant land demand that amounts to 13,967 to 29,292 gross vacant acres. Under these assumptions, single family detached housing would consume about 72 to 74 percent of the acres.

Figure 3.3a (Low growth): regional housing land demand in gross buildable acres (2005 to 2030)

	New dwelling units (low growth)	Low proforma density		High proforma density	
		Adjusted dwelling unit capacity per gross acre	Adjusted gross acres demanded	Adjusted dwelling unit capacity per gross acre	Adjusted gross acres demanded
Single Family Detached	92,287	6.4	14,516	8.9	10,392
Single Family Attached	5,024	9.5	531	15.8	318
Townhouse Condominium Apartment	123,273	17.6	7,018	43.5	2,836
Manufactured	2,948	6.4	464	7.0	422
Totals	223,532		22,528		13,967

<sup>1</sup> This residential demand range is comprised of the number of households "captured" in the Metro UGB in two MetroScope scenarios (low and high growth) between the years 2005 and 2030. For the reasons mentioned in the introductory paragraphs to this analysis, this household demand range is somewhat different from the household demand range used in the UGR.



Figure 3.3b (High growth): regional housing land demand in gross buildable acres (2005 to 2030)

	New dwelling units (high growth)	Low proforma density		High proforma density	
		Adjusted dwelling unit capacity per gross acre	Adjusted gross acres demanded	Adjusted dwelling unit capacity per gross acre	Adjusted gross acres demanded
Single Family Detached	114,796	6.4	18,056	8.9	12,926
Single Family Attached	5,737	9.5	607	15.8	364
Townhouse Condominium Apartment	176,428	17.6	10,044	43.5	4,058
Manufactured	3,728	6.4	586	7.0	533
Totals	300,689		29,292		17,882

## Figures 4.1AB and C: vacant and partially vacant acres

Figures 4.1AB shows the region's residential capacity by generalized zoning. Figure 4.1AB depicts the gross buildable acres of land by "vacant" and "partially vacant" categories.

Table 4.1AB: Gross vacant and partially vacant acres inside the UGB by zoning class (year 2007)

Zone Class	Fully Vacant Tax lot Acres	Partially Vacant Tax Lot Acres	Total Vacant Acres
CC	21	24	45
CG	349	195	543
CN	28	34	62
CO	89	51	140
FF	2,788	3,570	6,358
IH	768	1,066	1,834
IL	2,415	2,386	4,801
MFR1	41	95	135
MFR2	168	174	341
MFR3	116	144	260
MFR4	95	96	191
MFR5	9	32	41
MFR6	1	0	1
MFR7	73	51	124
MU	2	0	2
MUE	1,114	1,371	2,485
MUR1	79	35	114
MUR10	105	66	170
MUR2	120	160	279
MUR3	24	21	45
MUR4	141	150	291
MUR5	177	71	249
MUR6	21	9	31
MUR7	200	87	286
MUR8	128	146	275
MUR9	110	97	207
PF	54	246	299
POS	274	349	622
RRFU	4,130	7,253	11,383
SFR1	47	61	108
SFR10	40	46	86
SFR11	41	16	57
SFR12	77	74	152
SFR14	44	8	52
SFR15	26	44	71
SFR2	778	884	1,662

SFR3	36	41	77
SFR4	1,463	1,663	3,126
SFR5	1,032	1,045	2,077
SFR6	1,043	1,470	2,513
SFR7	407	331	739
SFR8	21	34	55
SFR9	164	378	541
Total	18,859	24,073	42,932

Note: Acreages reported in this table differ somewhat from the acres reported in the UGR because of differences in how public rights of way, public lands, etc. are accounted for.

### Figure 4.1.D: estimate of redevelopment and infill (refill) capacity

Figure 4.1D presents an estimate of the number of developed acres within the UGB with potential for additional residential development during the planning period through infill or redevelopment (refill). This estimate is made based on zoning, land values, improvement values, and tax lot sizes. The maximum refill capacities found in Figure 4.1.D are assumptions that are fed into the two MetroScope scenarios. These estimates do not assume any changes to zoning.

Figure 4.1.D: Estimate of possible refill capacity in UGB based on existing zoning (year 2005)

<b>Zone class</b>	<b>Gross buildable acres</b>	<b>Refill capacity estimate (dwelling units)</b>
MFR1	76	1,147
MFR2	238	4,761
MFR3	160	3,988
MFR4	212	6,353
MFR5	33	1,160
MFR6	3	114
MFR7	134	8,036
MUR1	12	119
MUR10	241	30,114
MUR2	162	2,428
MUR3	24	471
MUR4	235	5,879
MUR5	325	9,762
MUR6	47	1,657
MUR7	288	12,960
MUR8	214	13,878
MUR9	135	16,841
SFR10	38	383
SFR11	12	135
SFR12	140	1,682
SFR14	486	6,808
SFR15	160	2,403
SFR5	1,024	5,122
SFR6	994	5,966
SFR7	450	3,153
SFR8	31	251
SFR9	339	3,048
<i>Grand Total</i>	<i>6,215</i>	<i>148,621</i>

Though this refill capacity is available in the scenarios, it is not necessarily all consumed (developed) in the scenarios. The amount that gets consumed in the model is reported as a forecasted refill rate. The amount of refill that is actually realized in the future will depend on the decisions of individual owners, prices, regional growth and government policies and investments. As detailed in the UGR, it is anticipated that, during the 2010 to 2030 time period, 33 percent of all residential development will occur through refill.

Based on existing policies, Metro anticipates another 42,900 to 52,900 dwelling units to be produced within existing urban renewal districts during the same time frame. Urban renewal district land is not typically zoned residential and is not displayed in Figure 4.1D. However, experience and modeling indicate substantial residential capacity is created in mixed-use urban renewal districts.

## Figures 5.1 through 5.6: historic land consumption in UGB

Figures 5.1 through 5.6 document historically observed development data for comparison with the projected data contained in Figures 3.1 through 3.3. The figures provide at least five years of data on the number, density and average mix of housing types and the trends in density and average mix of housing types that have occurred in the UGB.

Table 5.1: Metro UGB historical land use consumption in acres: 2002-2007

Year	2002	2003	2004	2005	2006	2007
Developed land	201,336	203,145	204,456	205,894	209,419	210,582
Vacant land	52,514	50,705	51,151	49,727	46,235	45,076
Total	253,849	253,850	255,607	255,621	255,654	255,658
Vacant land detail	2002	2003	2004	2005	2006	2007
Residential vacant	16,488	15,617	14,944	13,672	12,307	12,099
Nonresidential vacant	12,047	11,679	11,865	9,764	8,881	8,485
Open space, rural, parks	16,560	16,290	17,303	15,362	15,610	15,307
Total gross buildable acres	45,095	43,586	44,112	38,798	36,797	35,891
Constrained land	7,419	7,118	7,039	10,929	9,437	9,185
Total vacant land	52,514	50,705	51,151	49,727	46,235	45,076

Notes:

- Acreages reported in this table differ somewhat from the acres reported in the UGR because of differences in how public rights of way, public lands, etc. are accounted for.
- For years 2005 - 2007: res = MFR, MUR, SFR; non-res = COM, IND, MUE; other = PF, POS, RUR. Except: no PF in 2005
- For years 2002 - 2004: res = MFR, SFR; non-res = COM, IND, MUC; other = POS, RUR
- For years 2002 - 2005: PF are part of COM
- Constrained land for years 2005 - 2007 is based on the constrained land analysis completed for the 2009 UGR and includes Title 3 and Title 13 land
- Constrained land for years 2002 - 2004 is based on Title 3 land only

Figure 5.2 shows that average densities for new residential construction have been increasing since the mid-1990s.

Figure 5.2: Average density of new residential construction inside the Metro UGB (1995 to 2006)

Year	Estimated dwelling unit permits	Average density per net acre	Average weighted lot size (single-family)	Average weighted lot size (multi-family)
1995	11,692	5.5	No Data	No Data
1996	13,105	8.4	No Data	No Data
1997	13,680	8.6	7,648	2,383
1998	12,449	7.7	8,386	2,027
1999	10,133	7.0	8,840	914
2000	8,710	8.6	6,476	1,268
2001	8,942	6.5	8,356	2,047
2002	7,967	9.0	7,610	1,580
2003	8,557	10.9	6,003	1,416
2004	7,136	9.7	6,190	1,053
2005	8,456	9.7	6,070	1,250
2006	9,104	10.7	5,441	2,586

The average, observed density for new residential construction during the 2002 to 2006 period was approximately 10 units per net acre. A comparison of the historic data with the forecast through year 2030 (see Figure 3.2) shows that residential densities are expected to increase during the period 2010 to 2030 to between 13.5 to 22 units per net buildable acre.

Figure 5.3 provides more explanation for the 1995 – 2006 density trends shown in Figure 5.2. Figure 5.3 presents the number of single family and multi-family units constructed within the UGB during the 1995 to 2006 period. Though lot size, gross to net ratio and refill rate also affect residential density, a change in the mix of dwelling unit types profoundly affects density and associated land consumption. Generally, multi-family housing production tends to increase during periods of economic growth. For example, during the 1995 - 1998 period of quickening economic growth, the multi-family share of the housing market grew to 48.3 percent and densities rose rapidly. Conversely, starting in 1999, regional economic growth slowed, single family market share climbed to over 71 percent and residential densities declined. During the entire eleven-year period from 1995 to 2006, multi-family units comprised about 36 percent of total production. By way of comparison, it is forecasted (see figure 3.1) that multi-family will comprise 38 to 41 percent of production for the 2005 to 2030 period.

Figure 5.3: New residential units inside the UGB by type (1995 to 2006)

<b>Year</b>	<b>New multi-family units</b>	<b>New single-family units</b>	<b>Total units</b>	<b>Multi-family share</b>
1995	5,399	6,293	11,692	46.2%
1996	6,324	6,781	13,105	48.3%
1997	4,675	9,005	13,680	34.2%
1998	3,018	9,431	12,449	24.2%
1999	2,912	7,221	10,133	28.7%
2000	1,461	7,249	8,710	16.8%
2001	2,229	6,713	8,942	24.9%
2002	3,647	4,320	7,967	45.8%
2003	3,772	4,785	8,557	44.1%
2004	2,381	4,755	7,136	33.4%
2005	2,766	5,690	8,456	32.7%
2006	4,374	4,730	9,104	48.0%
<b>Totals</b>	<b>42,958</b>	<b>76,973</b>	<b>119,931</b>	<b>35.8%</b>



Figure 5.4 shows sales price, median house size, lot size and imputed density trends for new single-family homes during the 1995 to 2006 time period. During this time, the trend was rising home prices and declining lot sizes. As prices rose, lot size decreased and number of units per gross acre increased. Building permit data indicate total single family construction was relatively steady, between 6,000 and 7,000 units per year, until 2002 when permit numbers dropped into the 4,000 to 5,000 per year range. Data in Figure 5.4 include single-family attached as well as detached housing.

Figure 5.4: Newly constructed single-family residence characteristics (1995 to 2006)

Year	Median sale price	Median house size	Median lot size	Dwelling units per gross acre	New permits (in UGB)
1995	\$ 169,000	1,858	6,738	4.2	6,293
1996	\$ 179,000	1,896	6,698	4.2	6,781
1997	\$ 191,000	1,957	6,481	4.4	9,005
1998	\$ 192,000	1,882	5,996	4.7	9,431
1999	\$ 204,000	1,958	6,151	4.6	7,221
2000	\$ 191,500	1,904	5,436	5.2	7,249
2001	\$ 191,385	1,838	5,250	5.4	6,713
2002	\$ 197,822	1,793	5,000	5.7	4,320
2003	\$ 209,513	1,830	4,750	6.0	4,785
2004	\$ 237,803	1,914	4,858	5.8	4,755
2005	\$ 274,950	1,973	4,549	6.2	5,690
2006	\$ 315,000	2,025	4,300	6.6	4,730

Figure 5.5 provides data similar to Figure 5.4, but for multi-family units. Here, median rent applies to all multi-family units rather than only newly constructed units. Multi-family housing production has varied year to year, generally increasing during periods of regional economic growth. During the 1995 to 2006 time period, the median rent has increased by approximately 26 percent.

Figure 5.5: Newly constructed multi-family residence characteristics (1995 to 2006)

Year	Median Rent	Units per Gross Acre	New Permits (in UGB)
1995	\$ 572	No Data	5,399
1996	\$ 599	No Data	6,324
1997	\$ 616	14.6	4,675
1998	\$ 634	17.2	3,018
1999	\$ 658	38.1	2,912
2000	\$ 702	27.5	1,461
2001	\$ 730	17.0	2,229
2002	\$ 747	22.1	3,647
2003	\$ 771	24.6	3,772
2004	\$ 795	33.1	2,381
2005	\$ 717	27.9	2,766
2006	\$ 723	13.5	4,374

Figure 5.6 lists attached and detached single-family units by year built. Data come from the home sales survey and make the assumption that all homes built on lots of less than 3,500 square feet are attached units. Figure 5.6 indicates that the attached share of single-family home construction has been steadily increasing over the period 1995 – 2006. (The year 2001 reflects an incomplete sample in the home sales record.) In 1995 small lot or attached dwelling units comprised about six percent of the newly built single-family stock. By the year 2006, small lot/attached units comprised almost 50 percent of the new single-family stock.

Figure 5.6: Newly constructed small lot (or attached single-family) and detached larger lot single family units 1995 - 2006

Year	Attached dwelling units	Detached dwelling units	Total dwelling units	Percent attached/small lot units
1995	144	2,187	2,331	6.2%
1996	225	4,840	5,065	4.4%
1997	265	3,373	3,638	7.3%
1998	324	2,533	2,857	11.3%
1999	751	3,671	4,422	17.0%
2000	807	3,314	4,121	19.6%
2001	233	464	697	33.4%
2002	1,335	2,950	4,285	31.2%
2003	1,975	2,780	4,755	41.5%
2004	1,990	2,765	4,755	41.9%
2005	2,510	3,230	5,740	43.7%
2006	2,305	2,410	4,715	48.9%

## Figure 5E.1: number of new dwelling units by housing type and capacity source

Figure 5E.1.a provides the number of dwelling units that were permitted during the 2001 to 2006 period by housing type and capacity type (vacant land or refill). Further detail on how much development occurred on the partially vacant component of vacant land is included in figure 5E.2.

The refill rate indicates the percent of all new dwelling units that were built through redevelopment and infill. Generally, higher refill rates are achieved for multi-family housing than single-family housing. The bulk of this difference shows up in redevelopment (infill numbers for single-family and multi-family are similar).

Figure 5E.1.a: Number of new dwelling units by housing type and capacity source (2001 to 2006)

New single-family residences					
Year	New units on vacant land	New units through refill	New units through infill	New units through redevelopment	Refill rate
2001 - 2002	3,640	675	365	310	15.6%
2002 - 2003	4,030	755	355	400	15.8%
2003 - 2004	3,755	1,000	445	555	21.0%
2004 - 2005	4,965	725	340	385	12.7%
2005 - 2006	3,645	1,085	400	685	22.9%
Totals	20,035	4,240	1,905	2,335	17.5%
New multi-family residences					
Year	New units on vacant land	New units through refill	New units through infill	New units through redevelopment	Refill rate
2001 - 2002	3,126	521	90	431	14.3%
2002 - 2003	2,199	1,573	515	1,058	41.7%
2003 - 2004	1,329	1,052	297	755	44.2%
2004 - 2005	1,825	941	214	727	34.0%
2005 - 2006	2,976	1,398	25	1,373	32.0%
Totals	11,455	5,485	1,141	4,344	32.4%
New residences (single-family and multi-family combined)					
Year	New units on vacant land	New units through refill	New units through infill	New units through redevelopment	Refill rate
2001 - 2002	6,766	1,196	455	741	15.0%
2002 - 2003	6,229	2,328	870	1,458	27.2%
2003 - 2004	5,084	2,052	742	1,310	28.8%
2004 - 2005	6,790	1,666	554	1,112	19.7%
2005 - 2006	6,621	2,483	425	2,058	27.3%
Totals	31,490	9,725	3,046	6,679	23.6%

### Figure 5E.1.b: lot sizes of new construction by housing type and capacity source

Figure 5E.1.b provides the lot sizes of new dwelling units that were permitted during the 2001 to 2006 period by housing type and by capacity source (refill and vacant).

Figure 5E.1.b: Lot sizes (square feet) of new dwelling units by housing type and capacity source (2001 to 2006)

New single-family residences					
Year	Vacant	Refill	Infill	Redevelopment	Total average lot size
2001 - 2002	7,575	7,803	5,917	9,932	7,610
2002 - 2003	5,973	6,166	5,869	6,408	6,003
2003 - 2004	6,136	6,393	5,035	7,482	6,190
2004 - 2005	5,903	7,210	5,390	8,816	6,070
2005 - 2006	5,265	6,033	4,933	6,675	5,441
Totals	6,148	6,625	5,402	7,606	6,232
New multi-family residences					
Year	Vacant	Refill	Infill	Redevelopment	Total average lot size
2001 - 2002	564	1,675	3,259	1,344	1,580
2002 - 2003	1,457	1,359	676	1,691	1,416
2003 - 2004	1,062	1,042	1,211	976	1,053
2004 - 2005	1,236	1,278	1,456	1,225	1,250
2005 - 2006	3,224	1,228	2,828	1,199	2,586
Totals	1,864	1,281	1,212	1,299	1,675
New residences (single-family and multi-family combined)					
Year	Vacant	Refill	Infill	Redevelopment	Total average lot size
2001 - 2002	4,798	5,134	5,392	4,937	4,848
2002 - 2003	4,379	2,918	2,795	2,985	3,981
2003 - 2004	4,810	3,650	3,505	3,732	4,476
2004 - 2005	4,649	3,859	3,871	3,853	4,493
2005 - 2006	4,347	3,328	4,809	3,022	4,069
Totals	4,590	3,611	3,832	3,504	4,359

## Figure 5E.2: New construction on partially vacant land

Figure 5E.2 provides the number of new dwelling units that were permitted on partially vacant land during the 2001 to 2006 time period. Average lot sizes are also indicated. The undeveloped portion of a developed taxlot may be included in the vacant land inventory as partially vacant land if it meets certain criteria:

- The entire taxlot is at least one acre
- Zoning would allow for the creation of a new lot
- There is at least ½ acre that is undeveloped<sup>2</sup>

Figure 5E.2: new dwelling units on partially vacant land by housing type (2001 to 2006)

New single-family residences					
Year	Partially vacant (dwelling units)	Vacant (dwelling units)	Percent on partially vacant	Partially vacant (lot size in sq ft)	Vacant (lot size in sq ft)
2001 - 2002	1,320	2,280	36.7%	15,077	3,264
2002 - 2003	1,230	2,295	34.9%	6,870	5,671
2003 - 2004	1,925	1,660	53.7%	5,704	6,952
2004 - 2005	2,545	1,685	60.2%	5,461	6,342
2005 - 2006	1,820	1,195	60.4%	5,389	6,123
Totals	8,840	9,115	49.2%		
New multi-family residences					
Year	Partially vacant (dwelling units)	Vacant (dwelling units)	Percent on partially vacant	Partially vacant (lot size in sq ft)	Vacant (lot size in sq ft)
2001 - 2002	675	2,338	22.4%	1,963	1,444
2002 - 2003	708	1,109	39.0%	2,265	1,246
2003 - 2004	384	414	48.1%	1,456	814
2004 - 2005	539	704	43.4%	1,337	1,337
2005 - 2006	1,132	1,167	49.2%	1,946	5,711
Totals	3,438	5,732	37.5%		
New residences (single-family and multi-family combined)					
Year	Partially vacant (dwelling units)	Vacant (dwelling units)	Percent on partially vacant	Partially vacant (lot size in sq ft)	Vacant (lot size in sq ft)
2001 - 2002	1,995	4,618	30.2%	10,640	2,343
2002 - 2003	1,938	3,404	36.3%	5,188	4,229
2003 - 2004	2,309	2,074	52.7%	4,998	5,727
2004 - 2005	3,084	2,389	56.3%	4,740	4,867
2005 - 2006	2,952	2,362	55.6%	4,069	5,919
Totals	12,278	14,847	45.3%		

<sup>2</sup> If the undeveloped portion of the taxlot is less than ½ acre, it would not be considered vacant, but the taxlot could be eligible for infill.

### Figure 5E3(a): estimated capacity on lands zoned mixed use

Figure 5E3(a) provides an estimate of residential capacity on lands zoned mixed use. Capacity on vacant and refill land is included.

Figure 5E3(a): estimated residential capacity on lands zoned mixed use

Zoning class	Estimated dwelling unit capacity
MUR 1	776
MUR 2	4,488
MUR 3	927
MUR 4	9,757
MUR 5	9,437
MUR 6	3,067
MUR 7	19,452
MUR 8	19,804
MUR 9	39,737
MUR 10	24,754
Total	132,200

### Figure 5E3: characteristics of new housing in mixed use zones

Figure 5E3: characteristics of new housing in mixed use zones (2002 to 2006)

Year	Multi-family dwellings		Single-family dwellings		All dwellings	
	New dwelling units	Average lot size (sq. ft.)	New dwelling units	Average lot size (sq. ft.)	New dwelling units	Average lot size (sq. ft.)
2002	753	1,345	370	2,749	1,123	1,807
2003	1,106	642	360	6,640	1,466	2,115
2004	1,003	611	430	2,206	1,433	1,090
2005	723	1,286	755	2,860	1,478	2,090
2006	2,293	3,575	635	1,813	2,928	3,193

### Overview of figures 303.1 through 303.3

Figures 303.1 through 303.3 provide supporting documentation to determine the amount of land necessary to accommodate housing for a 20-year time span. "Housing need" must, under state law, be determined by type and rent/housing price ranges. Accordingly, Figure 303.1 presents total dwelling units within the UGB in 2005 and projections for 2030 by rent/price range and type. All dollar amounts are expressed in year 2005 dollars. Figure 303.2 depicts details of housing type by tenure (rent vs. own) for 2005 and 2030. Figure 303.3 contains an "affordability analysis" for the years 2005 and 2030.

Data for the year 2005 and earlier years come primarily from the Year 2000 Census STF-3 files and data published for the Portland Metropolitan Area in the American Housing Survey. These data are supplemented by detailed data available from the year 2005 calibration of MetroScope. Year 2030 estimates are obtained from MetroScope scenarios that assume a continuation of current policies and investment trends.

The data presented in the accompanying figures and tables derive primarily from MetroScope modeling. In this sense "need" takes on an explicit economic definition where supply and demand are not static points, but respond to each other through price effects. Consequently, scenarios do not identify a capacity gap. Instead, they illustrate the possible price effects of a continuation of current policies and investment trends.

On the demand side of "need", the housing quantities - along with the accompanying prices/rents, tenure and housing type choices - represent what consumers are willing to pay given their income, age and household size and preferences for neighborhood, housing quantity and travel time to work. On the supply side of "need"—housing quantities and types—price represents the adjustment of the vintage housing stock to demand prices and suppliers' responses to housing prices throughout the region given land availability, land prices, zoning, economies of scale factors and development costs.



### Figure 303.1: dwelling unit demand by price and housing type

Figure 303.1a and 303.1b show a possible shift in numbers by price/rent category. Compared to the year 2005, the 2030 distribution is more concentrated toward the higher end of the price/rent distribution. The result is that there are absolute decreases in dwelling units with lower rents and prices. The shift upward in the price/rent distribution reflects a combination of increasing real incomes between 2005 and 2030 and very limited supply in high demand areas within the UGB. The increase in price/rent reflects a relative lack of single-family detached capacity in high-demand central city areas and results in a shift toward higher density housing types.

Figure 303.1a: owner-occupied dwelling units by price (2005\$) and housing type (2005 and 2030)

Owner-occupied dwelling units							
	Total dwelling units			Detached Housing		Attached Housing	
Approx. dwelling value	Year 2005	Year 2030	Difference in dwelling units 2005 to 2030)	Single-family and manufactured units	Manufactured units in parks	Single family units	Apartments, townhouses, condos
< \$150,000	30,259	44,411	14,152	A	A	A	A
\$150,000 - \$200,000	27,191	26,954	(237)	A	A	A	A
\$200,000 - \$250,000	31,796	15,301	(16,495)	MRKT	MRKT	MRKT	MRKT
\$250,000 - \$300,000	21,442	30,657	9,215	MRKT	MRKT	MRKT	MRKT
\$300,000 - \$400,000	44,089	41,522	(2,566)	MRKT	MRKT	MRKT	MRKT
\$400,000 - \$500,000	49,363	52,167	2,804	MRKT	MRKT	MRKT	MRKT
\$500,000 - \$750,000	58,184	107,613	49,429	MRKT	MRKT	MRKT	MRKT
> \$750,000	96,294	265,820	169,527	MRKT	MRKT	MRKT	MRKT
Total Units	358,617	584,445	225,828	116,848	*	*	108,980

Figure 303.1a notes:

- Depending on jurisdiction practice, attached single-family houses (row houses) are included either as detached single-family or as multi-family owner.
- "A" denotes housing that would be partially assisted, given the dwelling value.
- MRKT denotes housing that would be market rate, given the dwelling value.
- \* Because manufactured housing describes a construction technique rather than a housing type, it is not identified in MetroScope or in historic data.
- It is a question for policy makers how many of these units will receive government assistance. As of November 2007, 10,608 households in the tri-county area received Section 8 vouchers.

Figure 303.1b: renter-occupied dwelling units by price (2005\$) and housing type (2005 and 2030)

Renter-occupied dwelling units							
	Total dwelling units			Detached Housing		Attached Housing	
Approx. monthly rent	Year 2005	Year 2030	Difference in dwelling	Single-family and manufactured	Manufactured units in parks	Single family units	Apartments, townhouses, condos
< \$400	43,167	19,195	(23,972)	A	A	A	A
\$400 - \$475	18,967	31,926	12,958	A	A	A	A
\$475 - \$550	25,514	25,812	298	A	A	A	A
\$550 - \$625	27,479	24,531	(2,948)	A	A	A	A
\$625 - \$750	24,854	38,485	13,630	A	A	A	A
\$750 - \$900	34,359	43,000	8,641	A	A	A	A
\$900 - \$1,100	13,315	40,881	27,566	A	A	A	A
> \$1,100	26,038	64,724	38,686	MRKT	MRKT	MRKT	MRKT
Total Units	213,693	288,554	74,861	1,676	*	*	73,185

Figure 303.1b notes:

- Depending on jurisdiction practice, attached single-family houses (row houses) are included either as detached single-family or as multi-family owner.
- "A" denotes housing that would be partially assisted, given the dwelling value.
- MRKT denotes housing that would be market rate, given the dwelling value.
- \* Because manufactured housing describes a construction technique rather than a housing type, it is not identified in MetroScope or in historic data.
- It is a question for policy makers how many of these units will receive government assistance. As of November 2007, 10,608 households in the tri-county area received Section 8 vouchers.

### Figure 303.2: housing and transportation affordability

Figures 303.2a (low growth) and 303.2b (high growth) summarize the regional affordability analysis. Cost-burdened households are defined as renters that spend more than 50 percent of their income on housing and transportation expenses. A more complete discussion of cost burden is included in the Performance section of the urban growth report. Data for owners and renters are presented here.

Figure 303.2a (Low growth scenario): Housing and transportation affordability

Owners			
	Households (year 2005)	Households (year 2030)	Households (change 2005 – 2030)
Spending less than 50% of income on housing and transportation	145,937	60,218	(85,718)
Spending more than 50% of income on housing and transportation	212,681	461,802	249,121
Total owners	358,617	522,020	163,403
Median percent of income spent on housing and transportation	53.5%	63%	9.5%
Renters			
	Households (year 2005)	Households (year 2030)	Households (change 2005 – 2030)
Spending less than 50% of income on housing and transportation	121,633	150,011	28,378
Spending more than 50% of income on housing and transportation	92,060	123,811	31,750
Total renters	213,693	273,822	60,129
Median percent of income spent on housing and transportation	49.5%	49%	-0.5%
Combined (owners and renters)			
	Households (year 2005)	Households (year 2030)	Households (change 2005 – 2030)
Spending less than 50% of income on housing and transportation	267,569	210,229	(57,340)
Spending more than 50% of income on housing and transportation	304,741	585,612	280,871
Total households	572,310	795,842	223,532
Median percent of income spent on housing and transportation	52.0%	58.5%	6.5%

Figure 303.2b (high growth scenario): Housing and transportation affordability

Owners			
	Households (year 2005)	Households (year 2030)	Households (change 2005 – 2030)
Spending less than 50% of income on housing and transportation	145,937	0	(145,937)
Spending more than 50% of income on housing and transportation	212,681	584,445	371,765
Total owners	358,617	584,445	225,828
Median percent of income spent on housing and transportation	53.5%	73.0%	19.5%
Renters			
	Households (year 2005)	Households (year 2030)	Households (change 2005 – 2030)
Spending less than 50% of income on housing and transportation	121,633	86,729	(34,904)
Spending more than 50% of income on housing and transportation	92,060	201,825	109,765
Total renters	213,693	288,554	74,861
Median percent of income spent on housing and transportation	49.5%	57.0%	7.5%
Combined (owners and renters)			
	Households (year 2005)	Households (year 2030)	Households (change 2005 – 2030)
Spending less than 50% of income on housing and transportation	267,569	86,729	(180,841)
Spending more than 50% of income on housing and transportation	304,741	786,271	481,529
Total households	572,310	872,999	300,689
Median percent of income spent on housing and transportation	52.0%	67.0%	15.0%

# Appendix 9

## Residential “economic refill” study: 2001 to 2006

---

(DRAFT: August 11, 2009)

### Introduction

This report presents the fourth residential refill study conducted by Metro for the Portland metropolitan area. These studies are generally conducted every three to five years to examine the historical residential refill rate by looking at actual residential development in the recent past. The most recent prior refill study collected data from 1997 to 2001 and found an average residential refill rate of 30.4% for the period. The current study collected data from 2001 to 2006 and estimated an average residential refill rate of 33.0% over the five year period with wide variation from year to year.

### Background

#### What is refill?

Refill is composed of two types of development: redevelopment and infill. Redevelopment means demolishing an existing structure to build a new dwelling. An example of redevelopment would be tearing down an old house to build four townhouses in its place. Infill means building on land that is classified as developed, but does not require tearing down an existing structure to build a new one. For example, a homeowner owns a half acre lot with one house built on it and the lot is classified as developed in RLIS. Zoning allows the lot to be split into two lots so the homeowner divides the property and builds a second house on the vacant land. This is infill because the original house is still standing.

#### What is the refill rate?

The “refill rate” is the percentage of new dwelling units that are built on land that is already considered to be developed, instead of on vacant land. It is important to note here that we are comparing the number of refill units to the total of all new units built over a particular time period. So the refill rate is a proportion of new development, not a proportion of some land base.

#### Why is the refill rate important?

Metro accounts for a “refill” factor when estimating the residential land supply available within the Urban Growth Boundary in the urban growth report (UGR). For instance, if the residential refill rate is estimated at 20% and Metro’s 20-year growth is assumed to be 215,000 dwelling units, this means 20% of 215,000 units (43,000) will be built on land Metro considers previously developed. If the refill rate were 100%, all residential development would occur on developed land and Metro would require no

additional vacant land for housing. Conversely, if the refill rate were 0%, all future residential development would require vacant land. Clearly, estimates of the present residential refill rate and projections of its future value strongly influence calculations of how much residential land will need to be included within the Urban Growth Boundary.

### **How is the refill rate used?**

The focus of this study is the historical residential refill rate over the period from 2001 to 2006. Building permit data, information about the regional land inventory, aerial photographs and site visits are used to identify where refill is actually happening on the ground. This historical information can help to inform assumptions about future refill rates. However, these historical rates may not be exactly the same as the refill rates that are assumed for projections of future housing needs. The ongoing documentation of historic refill rates provides a better understanding of the factors that may influence refill rates in the future.

### **Differences between the results of this study and refill rates reported in the UGR**

Refill is defined differently in the UGR and in this “economic refill” study. It is important to note that these two different definitions produce different numeric results. The UGR refill rate is used in conjunction with the Regional Land Information System (RLIS), which returns land to the vacant land inventory if an existing structure is torn down and the land remains vacant for a period of time. The economic refill rate is used with a land inventory that classifies previously developed land to be developed, even if the land was scraped clean and remained vacant for several years before being redeveloped. This type of inventory will have a higher proportion of developed land than the UGR refill methodology, so the associated refill rate is usually slightly higher. Which refill rate is used depends on which land accounting system is being used, however the two systems are perfectly consistent and great care is always taken not to double count any type of land or development in either case. Both measures are still in use because the land use forecasting model Metroscope relies on the economic refill rate and the associated land inventory, while we must use a refill rate with a different definition in the context of the UGR.

### **UGR Refill:**

Some prior refill studies, and the Urban Growth Report (UGR), have relied on a “UGR” definition of refill and the resulting refill rates. This definition was driven by the need for a technical definition of refill in terms of the Regional Land Information System (RLIS) that did not require any value judgments. UGR infill and redevelopment are defined as follows:

- Infill: Residential development (denominated in dwelling units) on a parcel without a pre-existing physical structure where Metro considers the parcel developed in the fiscal year (or years) prior to the fiscal year for which the building permit is issued. For instance a single family residential building permit issued between July 03 and June 04 for a parcel classed as developed in RLIS as of June 30, 2004 would be classified as infill provided no previous structure occupied it.

- Redevelopment: Same as above except that a structure or the identifiable remains of a structure were visible on the parcel in the fiscal year prior to the issuance of the residential building permit.

### **Economic Refill:**

This appendix reports an “economic refill” rate. By virtue of reducing the classification exercise to a 99.9% mechanical operation in the context of the UGR, a limited number of building permits are classified in a somewhat counter-intuitive fashion. In order to address this issue, an “economic” classification system was developed. For example, in some fast growing suburban subdivisions on vacant land, a few building permits are assigned to parcels that Metro had classed as developed in the previous year. Since these parcels are no longer in the vacant land inventory, they are properly classed as infill in the UGR. While consistent with the Regional Land Information System (RLIS) accounting framework, this classification is somewhat misleading in an economic sense and would be classified as development occurring on vacant parcels according to the economic definition of refill. Conversely, in some instances on developed land, buildings are demolished and the land held vacant for a number of years. In many of those instances RLIS detects the vacant land and restores it to the vacant land inventory. Subsequently, when the land is redeveloped it is accounted for as development on vacant land according to the land accounting system. From an economic and historical perspective it is clearly redevelopment and would be classified as such under the economic definition of refill.

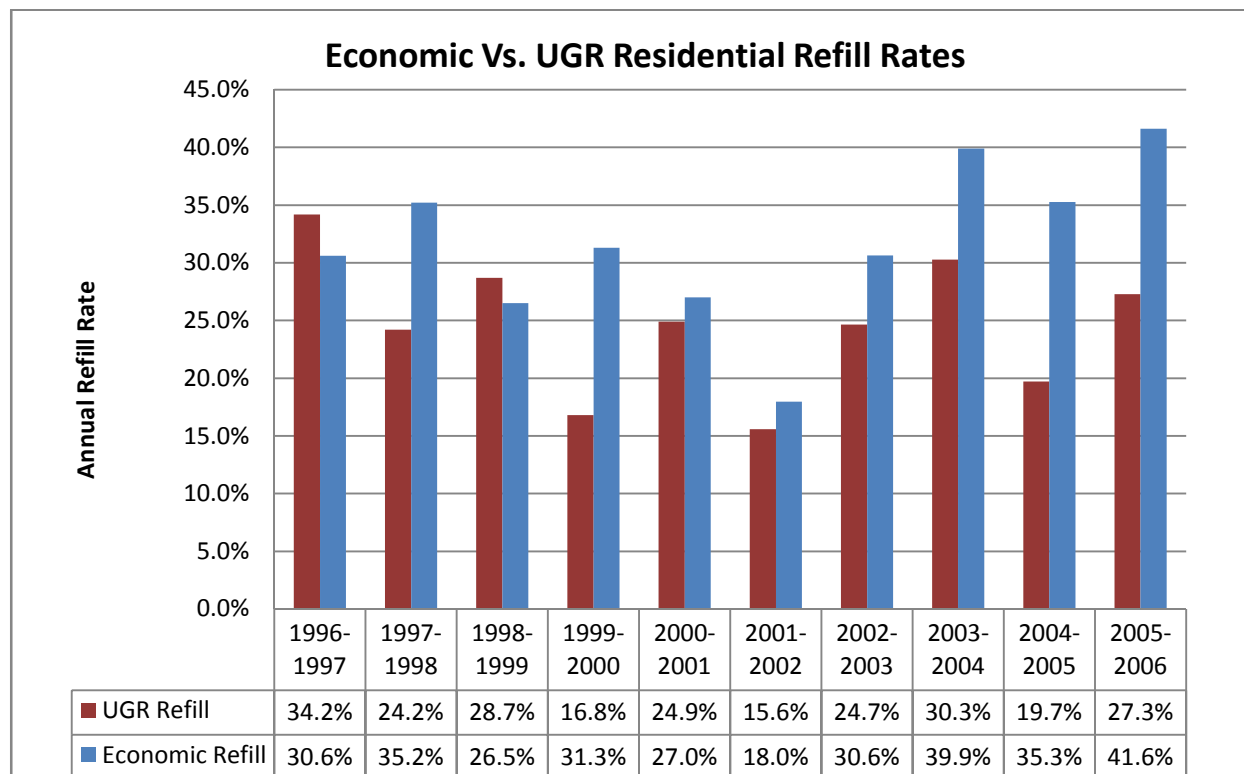
### **Economic refill definitions**

Building permit data were used to identify new dwelling units built in the region over the period from 2001 to 2006. In order to identify each permit as being infill, redevelopment or occurring on vacant land, these classifications are defined as follows:

- Vacant: Residential development (denominated in dwelling units) on a taxlot, or portion of a taxlot, that is identified in the Regional Land Inventory System (RLIS) as vacant and has never had any development on it. This land is generally at least 90% vacant and the historical records show no evidence of any prior development.
- Infill: Residential development on land without a pre-existing physical structure where Metro considers the taxlot to be developed. For example, a homeowner owns a half acre taxlot with one house built on it and RLIS classifies the whole lot as developed. Zoning allows the property to be split into two smaller lots, so the homeowner divides the property and builds a second house on the vacant land. This is infill because the original house is still standing.
- Redevelopment: Same as above except that there was an existing structure at the site of the new development at some point in the past. An example of redevelopment would be tearing down an existing house to build four townhouses in its place. Another example would be building condos on a lot where the existing structure had been torn down years earlier and the land remained vacant for a period of time before being redeveloped.

Figure 1 compares historical UGR and economic refill rates and clearly indicates that the two measures have diverged in recent years. The five year average UGR refill rate for 1996 to 2001 was 26.5% and the average economic refill rate was 30.4%. For 2001 to 2006, the average UGR refill rate was 23.5% and the average economic refill rate was 33.0%. Between the two periods, the average UGR refill rate declined by 3 percentage points and the average economic refill rate increased by 2.6 percentage points.

**Figure 1.** Ten year comparison of economic and UGR refill rates



This gap between the different measures of refill can largely be attributed to how redevelopment is identified under the two systems. From 2001 to 2006, redevelopment accounted for about 77% of observed refill. For 2005-2006, nearly half of the single-family dwelling (SFD) units identified as economic redevelopment were classified as UGR vacant and almost a third of multi-family dwelling (MFD) units classified as economic redevelopment were called UGR vacant. In most cases this is because the redevelopment took place on land where the prior existing development was torn down years before the site was redeveloped, and so it was returned to the vacant lands inventory in RLIS but not in Metroscope's land accounting system. The UGR definition of refill leads to sensitivity to the timing of observations. For example, if an existing house was torn down in January 2006, then an aerial photograph from July 2005 would show the lot as developed and an aerial photograph from July 2006 would show the lot as vacant. If a building permit for a new house were filed for the lot in June 2006, it



would be classified as UGR redevelopment. On the other hand, if the permit was filed in August 2006, it would likely be classified as occurring on vacant land according to RLIS.

Urban renewal areas are a significant driver of redevelopment, so increased urban renewal activity could contribute to this discrepancy between the UGR and economic refill rates. Currently, urban renewal areas account for about 8.3% of acreage within the UGB while nearly 36% of MFD units classified as redevelopment were built in urban renewal areas from 2001 to 2006. Almost 63% of these redevelopment MFD units were misidentified as occurring on vacant land using the UGR definition of refill. By contrast, about 23% of redevelopment MFD units outside of urban renewal areas were misidentified as vacant development.

## **Economic refill study procedures**

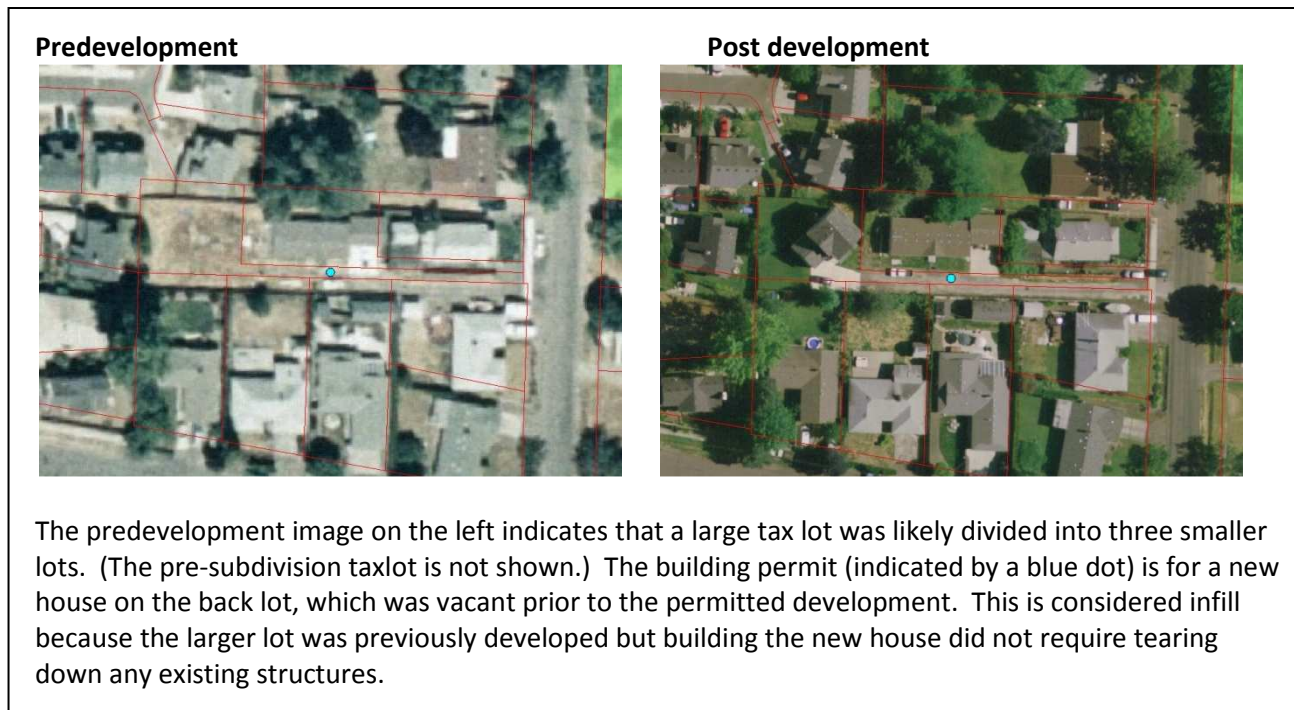
The new dwelling units that were identified in the permit data were classified into one of the three definitions above (vacant, infill or redevelopment) using a series of procedures. First, the new dwelling unit permits were divided into SFD and MFD for analysis. In order to reduce the workload required by the classification process, the SFD permits were sampled at a rate of one in five using geographic weights to ensure a representative distribution across the region. The pool of SFD permits is fairly homogenous as most SFD permits represent a single dwelling on a single residential lot. By contrast, every MFD permit was evaluated, since there are fewer permits of this type and each multi-family development is unique in type, number of units and lot size. The SFD sample findings were then scaled by five so that the tables in this report represent the proper distribution of SFD to MFD units.

For both subsets, SFD and MFD, the following steps were taken:

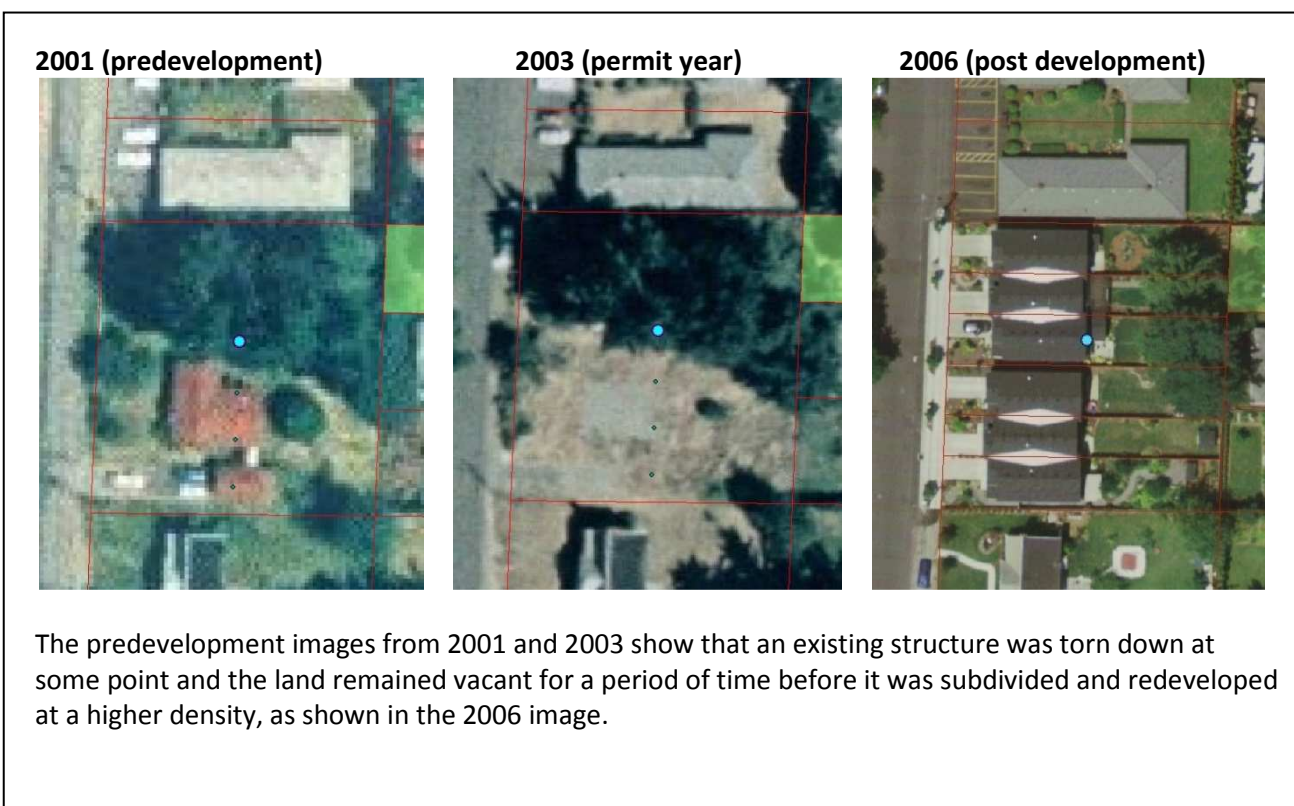
1. Geo-code the permit based on address and find the taxlot that it falls on.
2. Check the Regional Land Information System (RLIS) database and aerial photos both before and after the date of the permit to classify the development as vacant, infill or redevelopment.
3. If these steps could not clearly identify the type of development, a site visit was conducted to try to classify the permit into the most appropriate category.

The following three figures show some examples of how these types of development were identified using the geo-coded permit location, tax lots from RLIS and aerial photographs before and after the development. More examples and descriptions can be found in Attachment 1.

**Figure 2.** Example of building permit identified as infill development



**Figure 3.** Example of building permit identified as redevelopment



**Figure 4.** Example of vacant and redevelopment on the same lot

**Predevelopment**



**Post development**



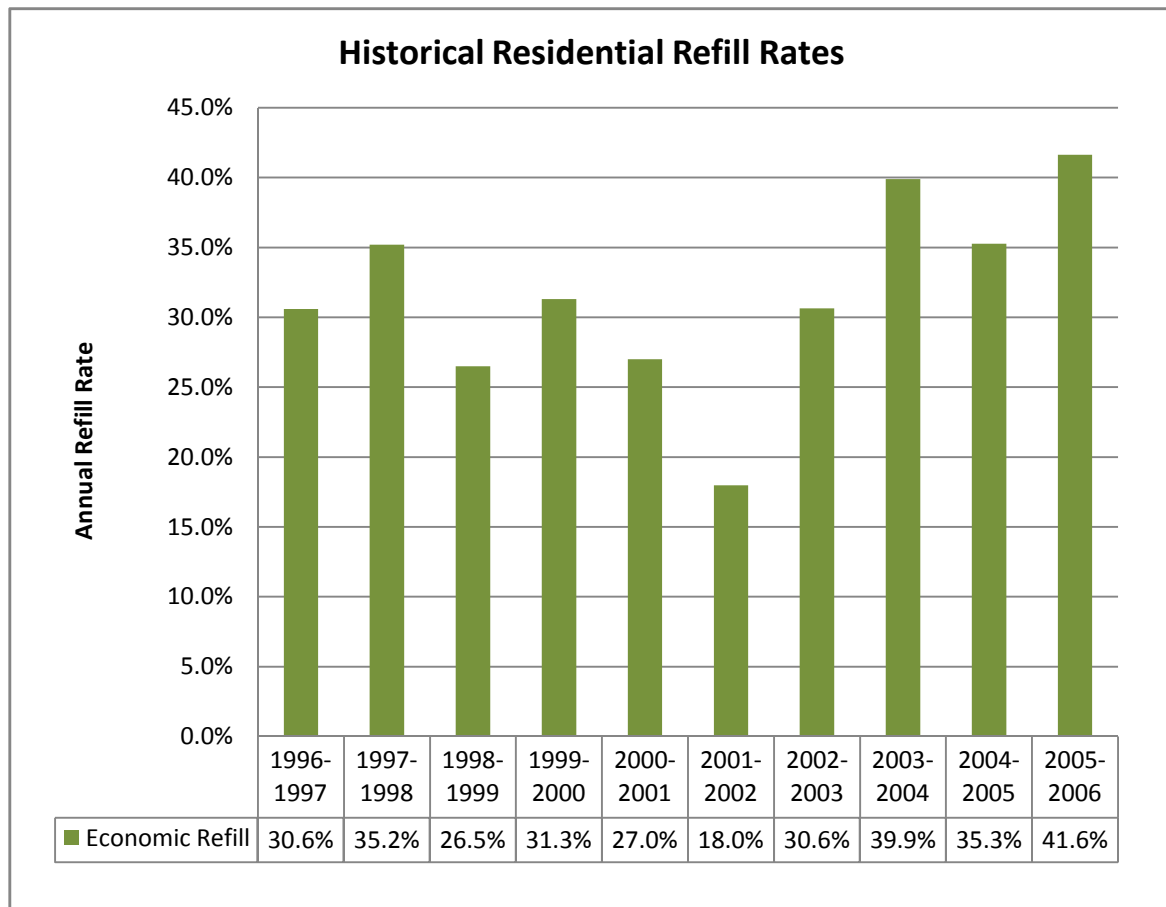
The predevelopment image shows that the left half of the lot was classified as vacant (indicated by the green overlay) while the right half was developed. The subdivision that occurred on the green area would be considered development on vacant land. The subdivision on the right side of the lot required the removal of the existing structure, and would be classified as redevelopment.

## Economic refill study results

### Regional Results

Results from the current study (2001-2002 to 2005-2006) and the most recent prior residential refill study (1996-1997 to 2000-2001) are shown in Figure 5. From 2001 to 2006, the annual residential refill rate ranged from a low of 18.0% in the first year to a high of 41.6% in the final year. The overall refill rate for the five year period was 33.0%, compared to 30.4 % for the previous five years.

**Figure 5.** Historical economic refill rate



Multifamily developments accounted for about 39% of new dwelling units built from 2001 to 2006 while single family dwellings made up 61% of new residential units (Table 1). The refill rate for multifamily dwelling units was much higher than single family, at 46% compared to 25%. Accordingly, the overall residential refill rate is sensitive to the proportional distribution of MFD and SFD development. If the long term share of multifamily dwelling units compared to single family dwellings were higher in the future than that observed over the study period, we could expect a higher overall residential refill rate. If the multifamily share were lower, we would expect a lower overall residential refill rate over the long term. Table 2 shows the impact that various proportional allocations of multifamily and single family dwelling units might have on the residential refill rate in the future, given the current MFD and SFD refill rates.

**Table 1.** Distribution of new dwelling units by permit type

Dwelling Unit Type	Total Units	Proportion of Development	Vacant Units	Refill Units	Refill Rate
Multi Family	16,940	39%	9,170	7,770	45.9%
Single Family	26,515	61%	19,945	6,570	24.8%
Total	43,455	100%	29,115	14,340	33.0%

**Table 2.** Theoretical impact of shares of MFD and SFD development on the overall residential refill rate

Proportion multifamily	Proportion single family	Refill Rate
20%	80%	29%
30%	70%	31%
40%	60%	33%
50%	50%	35%
60%	40%	37%

## Subarea Results

The subarea data for MFD permits in Table 3 show a wide range of refill rates throughout the region. The City of Portland accounted for nearly half of all new MFD units from 2001 to 2006 and 71.5% percent of those were refill units. The highest MFD refill rate occurred in Oregon City – Milwaukie, at 87.8%, however this subarea accounted for less than 1% of MFD development. The overall MFD refill rate of 45.9% was driven largely by the MFD development observed in Portland.

**Table 3.** New multi-family dwelling units from 2001-2006, by subarea

MFD combined jurisdictions (2001-2006) <sup>1</sup>	MFD Vacant Units	MFD Refill Units	MFD % Refill
Oregon City - Milwaukie	19	137	87.8%
Portland	2,287	5,740	71.5%
Gresham - Troutdale - Fairview - Wood Village	797	681	46.1%
Forest Grove - Cornelius	51	39	43.3%
Hillsboro	1,818	691	27.5%
Beaverton	931	282	23.2%
Lake Oswego - West Linn	57	16	21.9%
Clackamas Unincorp - Happy Valley - Wilsonville	432	62	12.6%
Washington County Unincorp	2,107	93	4.2%
Tualatin - Tigard - Sherwood - King City	671	29	4.1%
Totals	9,170	7,770	45.9%

Note: Jurisdictions with fewer than 500 new dwelling units will exhibit much more variability than jurisdictions with more than 1,000 units.

The City of Portland also exhibited a high refill rate for single family dwellings, as shown in Table 4. More than 21% of new SFD permits were issued in Portland and 53.2% of those were considered refill. The lowest SFD refill rate was observed in the Tualatin - Tigard - Sherwood - King City area. The area accounted for about 13% of new single family dwelling units with a refill rate of 10.4%.

<sup>1</sup> These subareas were defined based on the availability of the building permit data. The building permits are classified by the issuing jurisdiction, so these jurisdictions were collapsed down to larger subareas for this report.



**Table 4.** New single family dwelling units from 2001-2006, by subarea

SFD combined jurisdictions (2001-2006)	SFD Vacant Units	SFD Refill Units	SFD % Refill
Portland	2,625	2,980	53.2%
Lake Oswego - West Linn	550	235	29.9%
Hillsboro	3,435	1,010	22.7%
Clackamas Unincorp - Happy Valley - Wilsonville	1,755	400	18.6%
Washington County Unincorp	3,825	870	18.5%
Forest Grove - Cornelius	655	115	14.9%
Beaverton	1,200	200	14.3%
Oregon City - Milwaukie	875	135	13.4%
Gresham - Troutdale - Fairview - Wood Village	1,960	270	12.1%
Tualatin - Tigard - Sherwood - King City	3,065	355	10.4%
Totals	19,945	6,570	24.8%

Note: Jurisdictions with fewer than 500 new dwelling units will exhibit much more variability than jurisdictions with more than 1,000 units.

Figures 6 and 7 are illustrative examples of how refill rates vary across the region and how they might change in the future given a particular set of assumptions. These maps are based on a Metroscope scenario that uses the same assumptions that were used for the current UGR. However, in this case, only the results for the medium growth scenario are presented. A detailed description of the scenario assumptions can be found in Appendix 2.

Figure 6 compares the historical MFD refill rates observed from 2001 to 2006 with the Metroscope projected MFD refill rates for 2005 to 2030. Multifamily dwelling refill rates are generally expected to increase across the region, potentially reaching an overall MFD refill rate of nearly 70% for the region given current policies. This change is largely driven by a lack of infrastructure on newly urbanized land within the projected time period as well as increasing demand for dwelling units closer to the city center and other concentrations of jobs, retail and services. Changing demographics and preferences are increasing the housing demand in existing urban areas, where development is already fairly dense. Accordingly, new dwelling units in these areas must be created through refill development, and multifamily dwellings are particularly well suited for this purpose. Oregon City – Milwaukie is the only subarea where the future MFD refill rate is expected to fall in comparison to the historical data. However, since so little MFD development occurred for the subarea from 2001 to 2006 the estimated historical MFD refill rate of 87.8% should be interpreted with caution. The MFD refill rate is expected to increase dramatically in the Lake Oswego – West Linn area, from 21.9% to 79.9% since the model is anticipating no new vacant land for MFD development in this area by 2030.

Figure 6. Comparison of historical and projected (medium growth scenario) MFD refill rates by subarea

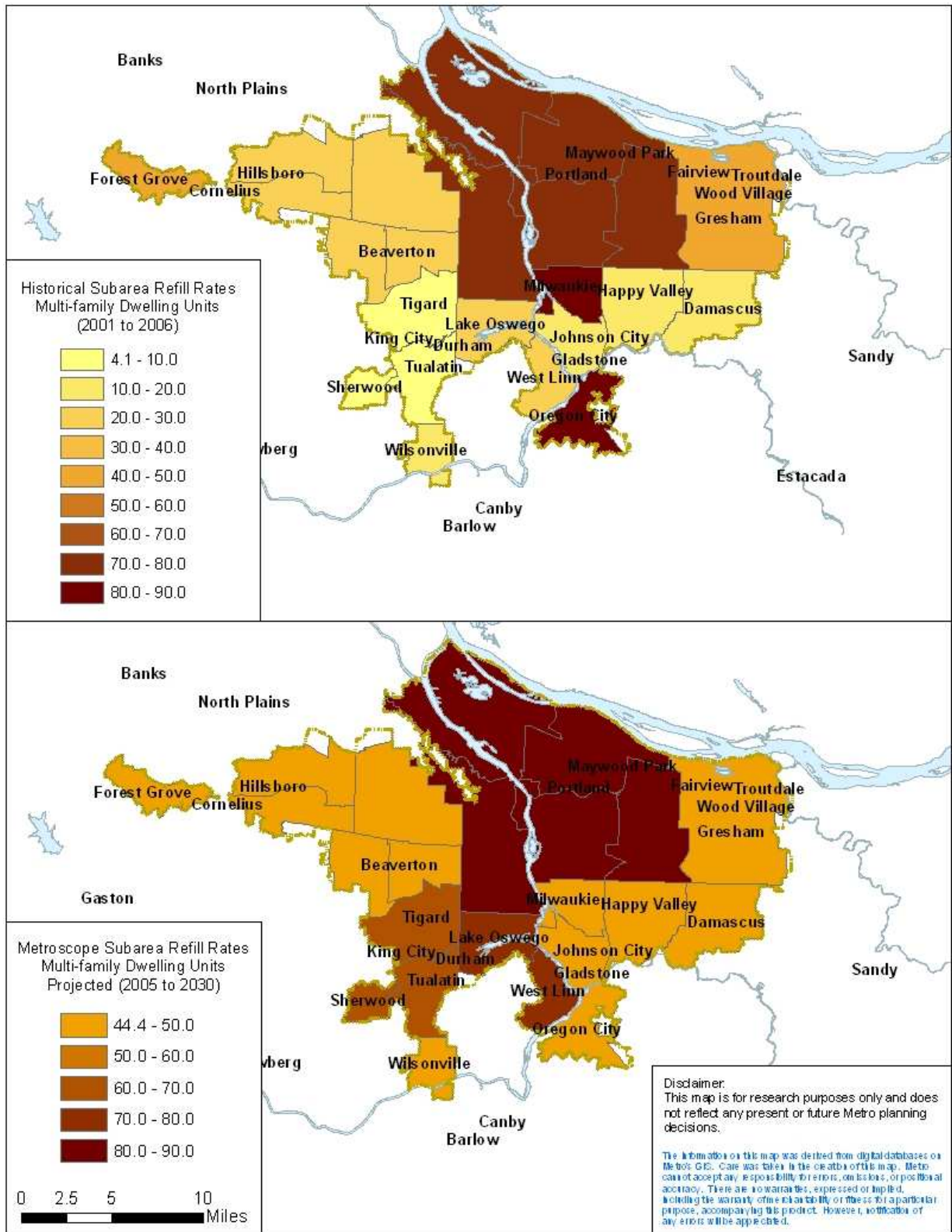
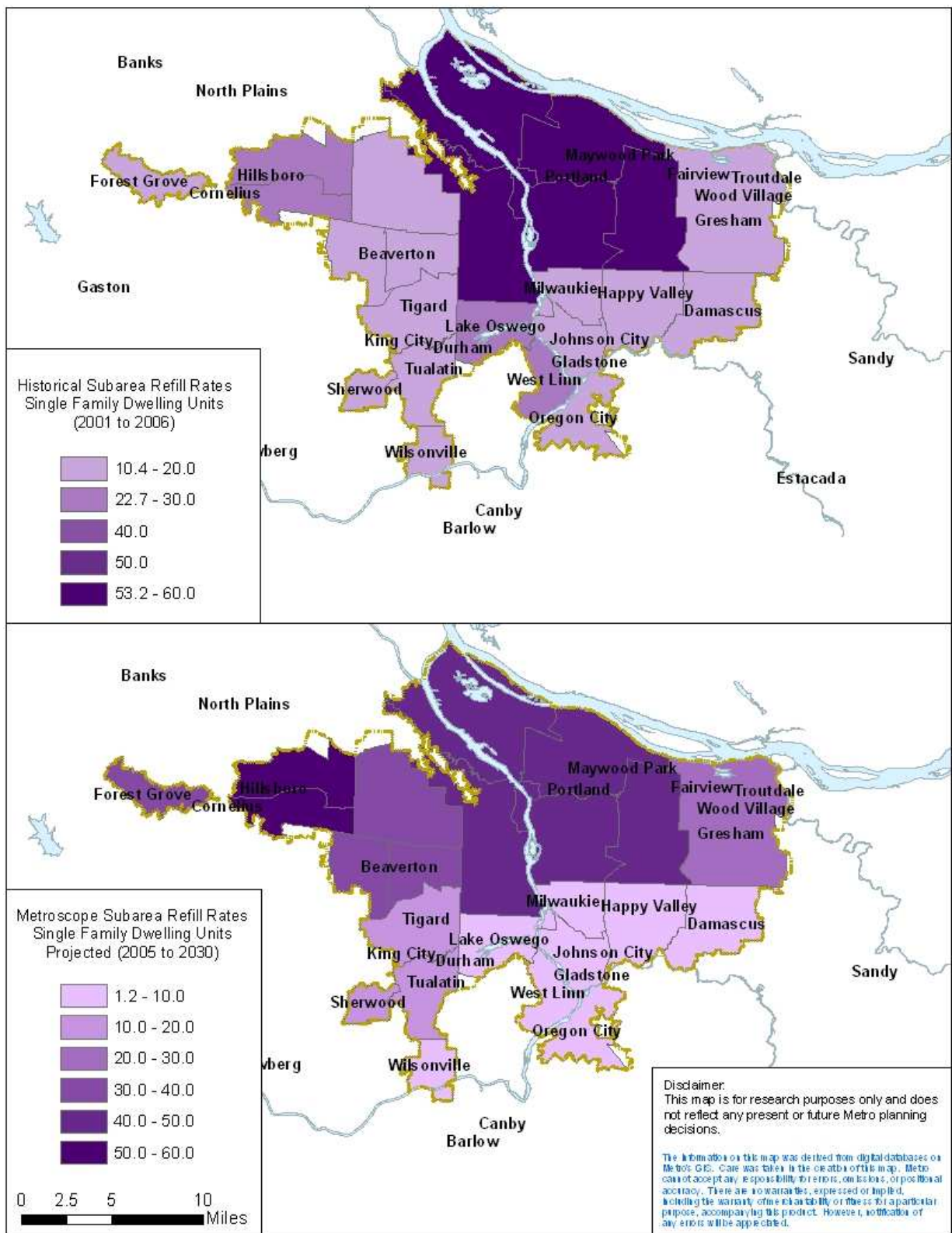




Figure compares the historical SFD refill rates observed from 2001 to 2006 with the Metroscope projected refill rates for 2005 to 2030. The future expectations for SFD refill are more varied than for MFD, with both increases and decreases in the subarea SFD refill rates across the region. In five of the nine subareas the SFD refill rate is expected to increase, with the largest increases projected to occur in the Beaverton, Hillsboro and Forest Grove – Cornelius areas. In four subareas, (Portland, Lake Oswego – West Linn, Oregon City – Milwaukie and Clackamas Unincorporated – Happy Valley – Wilsonville), the SFD refill rate is expected to fall over the period 2005 to 2040. However, this decline is not so much an indication that refill is going to slow down significantly as it is an indication that refill in these areas is expected to shift more toward multifamily instead of single family development. In fact, in these four subareas, multifamily dwelling units are projected to account for between 82% and 92% of the refill residential development in terms of units.

The overall residential refill rate is expected to increase in most subareas in the region. The two exceptions are Clackamas Unincorporated – Happy Valley – Wilsonville, where refill is projected to decline from 17.4% to 11.6%, and Lake Oswego – West Linn, where refill is projected to decline from 29.3% to 9.4%. These results are consistent with the land supply situation in the region and the assumptions for land availability and UGB expansions used for this scenario. In places like the city of Portland, existing vacant supply is being used up and little additional vacant land is anticipated in the area over the forecast period. In contrast, vacant land within the current UGB and new UGB additions are assumed to become available in areas adjacent to the Clackamas Unincorporated – Happy Valley – Wilsonville and Lake Oswego – West Linn subareas. Therefore single family development is projected to take place on new vacant land in these areas, which reduces the residential refill rate. These UGB and land availability assumptions may change with the designation of urban and rural reserves, which would produce different scenario results.

Figure 7. Comparison of historical and projected single family dwelling refill rates by subarea



## ATTACHMENT 1: Classifying development as vacant, infill or redevelopment

This section describes, in detail, the steps to classify building permit data into both an economic refill category and a UGR refill classification.

1. Review Taxlot, Vacant Land and Photo Layer for the year prior to the building permit. Use the following definitions to identify the permit as vacant, infill or redevelopment.
2. Definitions
  - a. **UGR Vacant** is development on a taxlot that is designated as vacant in RLIS prior to the date the building permit is issued. A portion of a taxlot may also be considered vacant in RLIS if it meets the following criteria:
    - i. The entire taxlot is at least one acre in size
    - ii. Zoning would allow for the creation of a new lot
    - iii. There is at least half an acre of undeveloped land on the taxlot

If the land is considered vacant in RLIS, then new development would be considered UGR vacant regardless of whether it is located on a fully vacant taxlot or the vacant portion of a partially developed taxlot.

- b. **UGR Refill** is a term that includes UGR Infill and UGR Redevelopment, defined below:
      - i. **UGR Infill** is the addition of dwelling units to a developed taxlot while preserving the existing structure. By definition, UGR infill should only occur on taxlots that are smaller than one acre since development on larger taxlots would properly be considered development on partially vacant land.
      - ii. **UGR Redevelopment** is the removal of existing structures and replacement with a net increase in dwelling units. If existing structures are removed years prior to the redevelopment, the land may be returned to the RLIS vacant land inventory, in which case the new development would be classified as occurring on vacant land.
    - c. **Economic Vacant** is development on a taxlot that has never been developed. Once developed, the taxlot (or developed portion, if the tax lot is large) is permanently removed from the economic vacant category, even if it is subsequently cleared of improvements.
    - d. **Economic Refill** is a term that includes Economic Infill and Economic Redevelopment, defined below:
      - i. **Economic Infill** is building additional dwelling units on a lot that is not considered vacant in RLIS, without the removal of an existing building. If the land where the permit is located is classified as vacant in RLIS (even if only a portion of the taxlot is vacant), the development is not considered Economic Infill.

- ii. **Economic Redevelopment** is the removal of existing structures and replacement with a net increase in dwelling units. Economic redevelopment includes taxlots that were at one point developed but were cleared and held vacant for years prior to redevelopment (regardless of whether RLIS returns them to the vacant lands inventory.)

Using these definitions, each building permit receives an economic classification (vacant, infill or redevelopment) and a UGR classification (vacant, infill or redevelopment). There are two reasons that a building permit might receive different classifications under the two systems. The first reason is the conceptual difference between the definitions above, particularly in how redevelopment is identified. However, discrepancies between UGR and economic classifications may also arise from mistakes (or inconsistencies) in how land is classified in RLIS, as some of the examples in this section will show.

Other notes:

- 3. When recording lot sizes for building permits, the new lot size is used if the property was subdivided.
- 4. Parking lot conversion is considered redevelopment since something was there prior to the building permit being issued.

## Examples

1. In the pictures below, the old lot is partially vacant (as identified by the green shading). The blue dot shows the location of a permit application on the vacant portion of the land. This is an example that shows development on vacant land on a partially vacant lot. The permit identified by the blue dot would be considered UGR Vacant and Economic Vacant.

Before

After





2. UGR Redevelopment/Infill and Economic Redevelopment/Infill – In regards to the tear down of a SFD and the rebuilding of skinny houses in its place, if the permit falls on the house itself it would be classified both UGR and Economic Redevelopment. However, if the permit falls on the vacant yard it would be classified UGR Infill and Economic Infill.

Before



After



3. In this picture the blue dot falls on property that should have been classified as partially vacant in RLIS. Since it was not, the blue dot would be considered UGR Infill and Economic Vacant. This is an example of a discrepancy that arises due to an error in RLIS. The pink dots on the green space are on land that was properly identified as partially vacant and would be considered both UGR and Economic Vacant.



4. The blue dot below shows UGR Infill, because the taxlot was not considered vacant in RLIS but building a new house did not require the teardown of an existing structure. Since the lot is in a fully developed neighborhood, it may have been overlooked in the vacant lands inventory and never returned to UGR Vacant status. Since there are no existing buildings visible in previous year photos, it was classified as Economic Vacant for this study.

This example is a judgment call that depends on the context of the lot and building permit under consideration. This lot looks like it might have been part of the developed lot next to it before it was sold off for a new house. In that case, it would be considered Economic Infill because it was part of a developed lot and there was less than half an acre of vacant land available for development. In the future, this type of example would more likely be classified as Economic Infill, however development of this type was consistently classified as Economic Vacant for this study.

Pre-Development

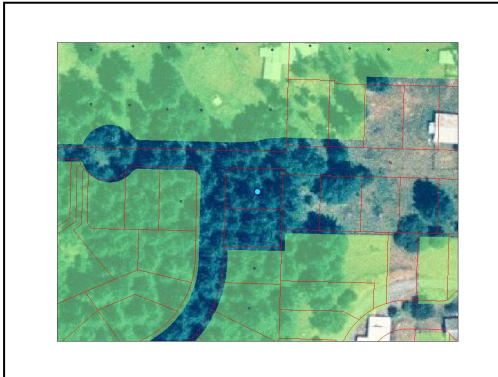


Post-Development



5. Below is another example of how errors can influence the classification of a building permit. This is UGR Infill, Economic Vacant due most likely to surveyor error when checking new development status. The lot with the blue dot on it was probably deemed developed along with the surrounding developing lots before its individual permit was approved. Or it may have been missed in the vacant land layer update.

1996



Pre-Development



Post-Development





6. The following photos show a case where the existing lot is a partially vacant lot, with an existing house that also gets redeveloped. The blue dot on the left is UGR and Economic Vacant, on a partially vacant lot. The blue dot on the right side shows development that is both UGR and Economic Redevelopment. It is possible that another building permit not on the site of the original house, but not on the green vacant land area, could be considered both UGR and Economic Infill.

Pre-Development



Post-Development



7. This is an example of UGR Redevelopment (due to an error in RLIS) and Economic Redevelopment. The blue dot shows the address of the building permit. The year the building permit was issued, 2003, the lot was empty (but not considered vacant), however the 1996 photo shows that there was a house on the lot. This is considered Economic Redevelopment because there once was a building on the lot, even though a significant amount of time passed between the tear down and the replacement (approximately 7 years). More correctly the lot should have been assessed as a vacant lot on the green vacant lot layer in 2003. Then this building permit would correctly be considered UGR Vacant, Economic Redevelopment.

1996

2003 – Permit year

Post Development



8. With condos, the permit may not divulge how many units the application is for, and when geocoded, the permit address will not link to a specific address. General rules created for consistent evaluation are as follows:



When looking at the permit description for the pink dots, each states that the permit is for a five unit condo development. So it can be assumed that each permit is for an entire row of condos. If there is not a description like that, an educated guess can be made by checking the permit value (in these cases, between \$400,000 & \$500,000), and then checking Portland maps for sale price of an individual condo (\$180,000). Because of the higher permit cost (which is based on estimated construction cost), one can assume the permit was for a row of condos.

For instances like the blue dot above, where there is no apparent connection to a specific condo or group of condos, the best reference is to look at surrounding examples. Several things to compare are

1. The permit value – Review the permit value for one of the pink dots. If the blue dot value is comparable, it is most likely the same situation.
2. Street names – Look to see if the street names changed. In the blue dot case, the permit was for the old street name before the development changed a street name. Once this was established, it was easier to find a corresponding house number, and thus the corresponding row of condos.

## **Data Sources**

Regional Land Information System (RLIS) and other data collected and/or maintained by Metro:

- Current and historical taxlots
- Current and historical aerial photographs
- Vacant lands
- Streets

Construction Monitor (<http://www.constructionmonitor.com/>):

- Building permit data available by subscription service

## **Appendix 10: Report on the region's past performance**

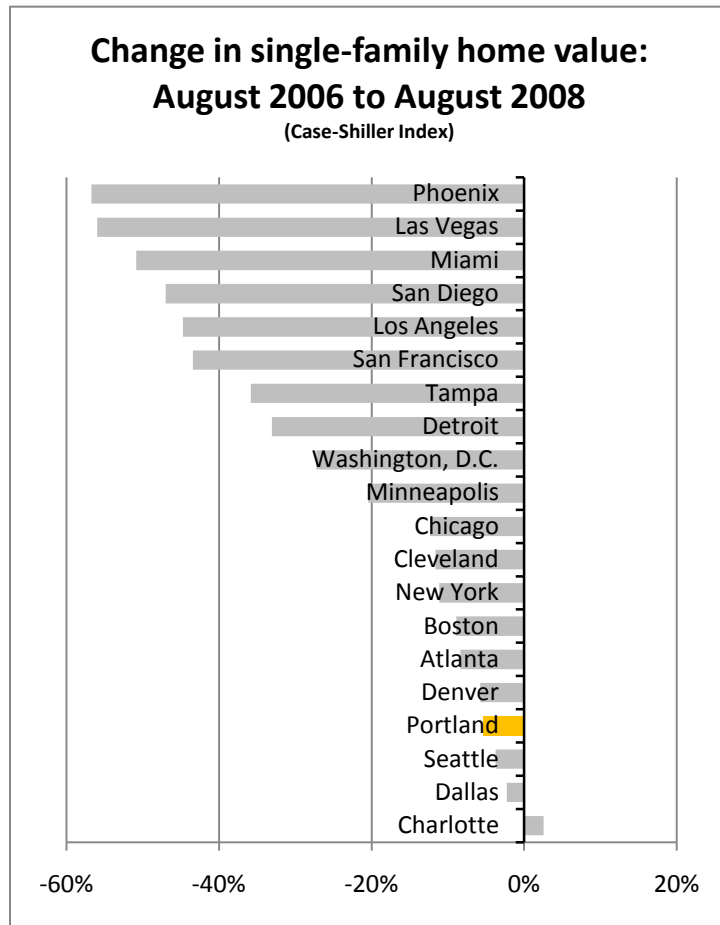
### **The region's historic performance in achieving its desired outcomes**

Unlike past UGRs, this report is intended to assess not only residential capacity and need, but to provide some basic information about how the region has been performing in terms of its six desired outcomes. This appendix compiles information on past performance and relates it to the six desired outcomes that define the characteristics of a successful region.

## Preservation of home values

Applies to desired outcome(s):

1. Vibrant, walkable communities
2. Economic competitiveness and prosperity



For most families, a house is their single largest investment. In the Portland metro region, home values have remained relatively stable during a tumultuous two years when values have crashed in many other cities. Given the complexity of the dynamics that influence housing values, it is difficult to explain why some cities have fared better than others. However, it is likely that actions taken at the local and regional level to implement the 2040 Growth Concept, with its focus on reinforcing existing centers and corridors and restrained approach to outward growth, deserve some of the credit.

## Costs of living (source: U.S. Bureau of Labor Statistics)

Two primary household budget items are housing and transportation. Operating on the assumption that transportation costs would always be minimal, a common tactic has been to “drive until you qualify for the mortgage.” Now it has become clear that energy price increases are here to stay. We must account for the combined cost of housing and transportation when considering housing and transportation choices.

Compared with other cities in the western U.S., the Portland region offers housing and transportation at relatively low prices. When these costs are expressed as a percentage of income, the Portland region is about average in affordability (amongst cities in the western U.S.).

### Applies to desired outcome(s):

1. Vibrant, walkable communities
2. Economic competitiveness and prosperity
3. Transportation choices
6. Equity

### Average annual cost of housing<sup>1</sup> per household (2005)

Phoenix	\$ 8,414
<b>Portland</b>	<b>\$ 9,862</b>
Denver	\$10,078
Seattle	\$10,741
Honolulu	\$10,887
Anchorage	\$11,391
Los Angeles	\$13,030
San Diego	\$14,511
San Francisco	\$15,947

### Average annual cost of transportation per household (2005)

Denver	\$8,646
<b>Portland</b>	<b>\$8,845</b>
Seattle	\$9,491
San Francisco	\$9,518
Honolulu	\$9,921
Phoenix	\$10,549
Los Angeles	\$10,972
San Diego	\$11,301
Anchorage	\$12,596

### Average annual cost of housing and transportation per household (2005):

<b>Portland</b>	<b>\$18,707</b>
Denver	\$18,724
Phoenix	\$18,963
Seattle	\$20,232
Honolulu	\$20,808
Anchorage	\$23,987
Los Angeles	\$24,002
San Francisco	\$25,465
San Diego	\$25,812

### Average annual cost of housing and transportation as a percent of income (2005)

Denver	29%
San Francisco	29%
Honolulu	30%
Phoenix	31%
Seattle	32%
<b>Portland</b>	<b>33%</b>
Anchorage	34%
Los Angeles	36%
San Diego	37%

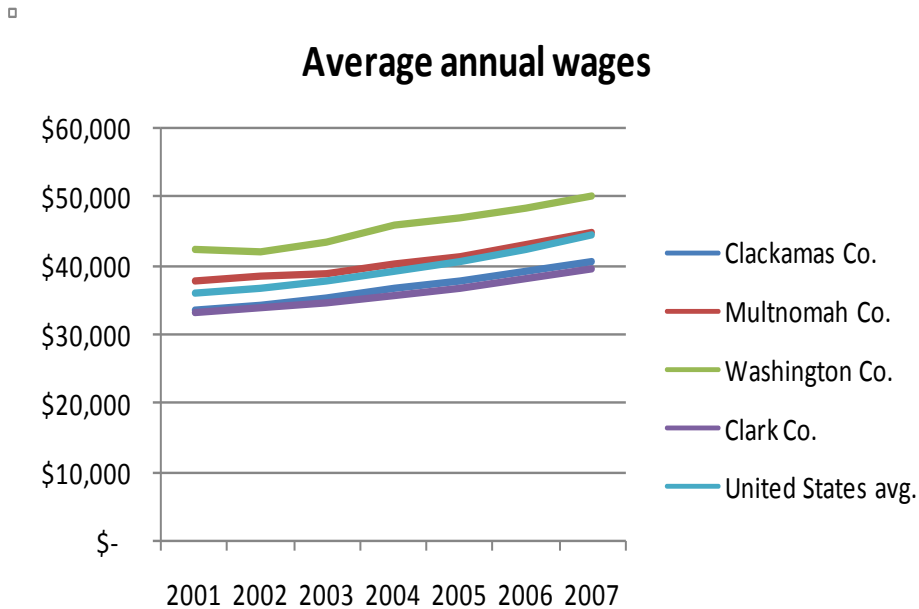
<sup>1</sup> “shelter” portion only of housing costs only

**Average annual wages** (U.S. Bureau of Labor Statistics)

The ability to find gainful employment is an important measure of the economic and social well-being of the region. Average annual wages in both Multnomah and Washington counties have consistently exceeded the national average. A healthy economy is the product of many factors, including the preservation of the region’s quality of life, which is an important attractor of employers and a skilled work force.

Applies to desired outcome(s):

- 2. Economic competitiveness and prosperity
- 6. Equity





## Water quality (source: Oregon Department of Environmental Quality)

How we care for our watersheds now and in the future will be a critical means of preserving our region's environmental health and its identity as a leader in conservation and sustainability. The Oregon Water Quality Index (OWQI) is tracked by the Oregon Department of Environmental Quality. The index analyzes a defined set of water quality variables and produces a score describing general water quality. The water quality variables included in the OWQI are temperature, dissolved oxygen (percent saturation and concentration), biochemical oxygen demand, pH, total solids, ammonia and nitrate nitrogens, total phosphorus, and bacteria.

### Applies to desired outcome(s):

5. Clean air and water, healthy ecosystems

	2003	2004	2005	2006
Sandy River at Troutdale Bridge	91	91	91	90
Beaverton Creek at Cornelius Pass Rd. (Orenco)	53	55	56	54
Clackamas River at High Rocks	91	91	91	92
Clackamas River at McIver Park	95	95	95	95
Clackamas River at Memaloose Rd.	92	92	92	95
Columbia Slough at Landfill Rd.	37	39	43	44
Fanno Creek at Bonita Rd. (Tigard)	62	61	61	62
Johnson Creek at SE 17th Ave. (Portland)	29	29	31	30
Swan Island Channel midpoint (Willamette River)	80	81	81	81
Tualatin River at Boones Ferry Rd.	59	61	60	57
Tualatin River at Elsner Rd.	66	66	65	63
Tualatin River at Hwy 210 (Scholls)	65	65	63	62
Tualatin River at Rood Bridge	76	78	78	80
Willamette River at Hawthorne Bridge	82	83	84	85
Willamette River at SP&S railroad bridge (Portland)	79	80	84	82
Columbia River at Portland Marker 47	82	83	83	86

Very poor	Poor	Fair	Good	Excellent
Less than 60	60 – 79	80 - 84	85 - 89	90 - 100

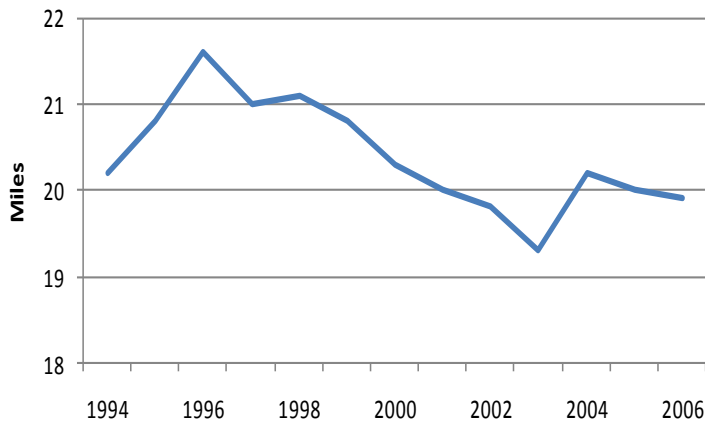


## Vehicle miles travelled (VMT) (source: Federal Highway Administration)

### Applies to desired outcome(s):

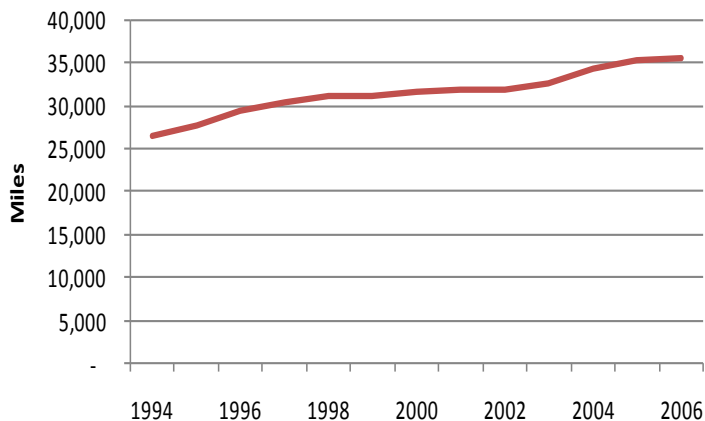
1. Vibrant, walkable communities
2. Economic competitiveness and prosperity
3. Transportation choices
4. Reduce greenhouse gas emissions
5. Clean air and water, healthy ecosystems

Portland region: daily VMT per capita



On average, each of us is driving less than we did in the mid 1990s. This is a trend that will need to continue in order to reduce greenhouse gas emissions.

Portland region: total daily VMT



However, we will need to see even greater reductions in per capita VMT. Because of population growth, total daily VMT for the region has increased. In order to reduce greenhouse gas emissions below 1990 levels<sup>2</sup>, each of us (and future residents) will need to drive much less than we do today. The compact urban form envisioned in the 2040 Growth Concept is the surest way to make that reduction in total VMT.

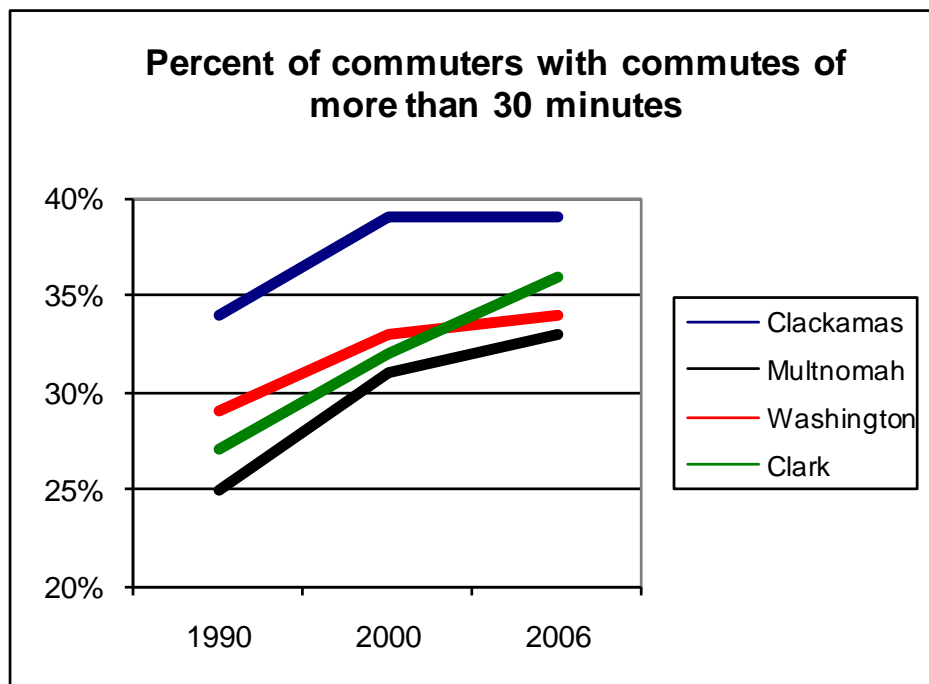
<sup>2</sup> Oregon state law requires that growth in greenhouse gas emissions be halted by 2010, that emissions be reduced to 10% below 1990 levels by 2020, and 75% below 1990 levels by 2050.

## Commute time (source: U.S. Census Bureau)

Good growth management practices can help to reduce the distance between home and work. However, as the region has matured as a metropolitan area, commute times have increased. A steadfast commitment to good land use policy, reinforcement of centers and corridors, and smart transportation investments remain the most effective means of moderating commute times (and other trip times).

### Applies to desired outcome(s):

2. Economic competitiveness and prosperity
3. Transportation choices
4. Reduce greenhouse gas emissions
5. Clean air and water, healthy ecosystems
6. Equity



## Commute by bicycle

(source: U.S. Census)

In many communities throughout the United States, commuting by bicycle is all but impossible. Many cities in our region have been planned in ways that make bicycle commuting a viable and pleasant option. There's still much room for improvements, however.

### Applies to desired outcome(s):

1. Vibrant, walkable communities
2. Economic competitiveness and prosperity
3. Transportation choices
4. Reduce greenhouse gas emissions
5. Clean air and water, healthy ecosystems
6. Equity

### 1990

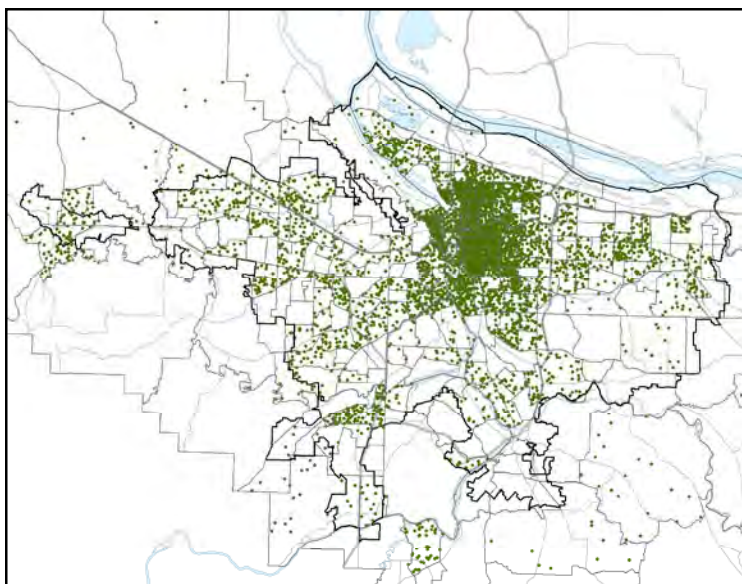
Sacramento	1.9%
Seattle	1.5%
Portland	1.1%
Phoenix	1.1%
San Diego	1.1%
San Francisco	1.0%
Hillsboro	0.9%
Beaverton	0.7%
Los Angeles	0.6%
Gresham	0.3%
New York	0.3%
Atlanta	0.3%
Lake Oswego	0.0%

### 2000

San Francisco	2.0%
Seattle	1.9%
Portland	1.8%
Sacramento	1.4%
Phoenix	0.9%
San Diego	0.7%
Los Angeles	0.6%
New York	0.5%
Gresham	0.4%
Hillsboro	0.4%
Beaverton	0.3%
Atlanta	0.3%
Lake Oswego	0.2%

### 2006

New York	5.5%
Portland	4.2%
Seattle	2.3%
San Francisco	2.3%
Sacramento	1.3%
Hillsboro	1.1%
Beaverton	0.9%
San Diego	0.8%
Los Angeles	0.6%
Phoenix	0.6%
Atlanta	0.5%



Year 2000 (3-county area)

One dot = one bike commuter

.9% of commuters

6,425 bike commuters

Commute by transit (source: U.S. Census)

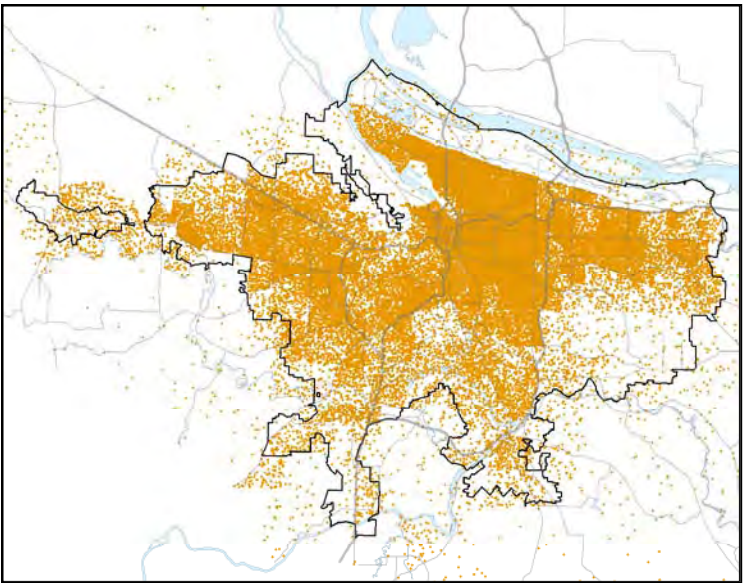
Our region has good reasons to be proud of the transit system that we continue to build. But, we should continue to strive for better. Several other cities in the U.S. provide examples of how much more we may be able to increase transit ridership.

- Applies to desired outcome(s):
- 7. Vibrant, walkable communities
  - 8. Economic competitiveness and prosperity
  - 9. Transportation choices
  - 10. Reduce greenhouse gas emissions
  - 11. Clean air and water, healthy ecosystems
  - 12. Equity

1990	
New York	51.9%
San Francisco	33.2%
Atlanta	19.7%
Seattle	15.8%
Portland	11.0%
Los Angeles	10.5%
Gresham	5.5%
Beaverton	4.9%
San Diego	4.2%
Sacramento	4.0%
Hillsboro	3.5%
Phoenix	3.1%
Lake Oswego	2.9%

2000	
New York	52.8%
San Francisco	31.1%
Seattle	17.6%
Atlanta	15.0%
Portland	12.3%
Los Angeles	10.2%
Beaverton	8.3%
Gresham	7.6%
Hillsboro	6.5%
Sacramento	4.6%
San Diego	4.2%
Lake Oswego	3.7%
Phoenix	3.3%

2006	
New York	54.2%
San Francisco	30.3%
Seattle	17.8%
Atlanta	14.8%
Portland	12.6%
Los Angeles	10.9%
Beaverton	10.1%
Hillsboro	7.7%
Sacramento	4.6%
San Diego	4.1%
Phoenix	3.7%



Year 2000 (3-county area)  
One dot = one transit commuter  
7.6% of commuters  
55,831 transit commuters

Commute by driving alone (source: U.S. Census)

Driving alone remains the predominant mode of commuting in our region. In order to make other modes viable choices for more people, we must continue taking an integrated approach to land use and transportation.

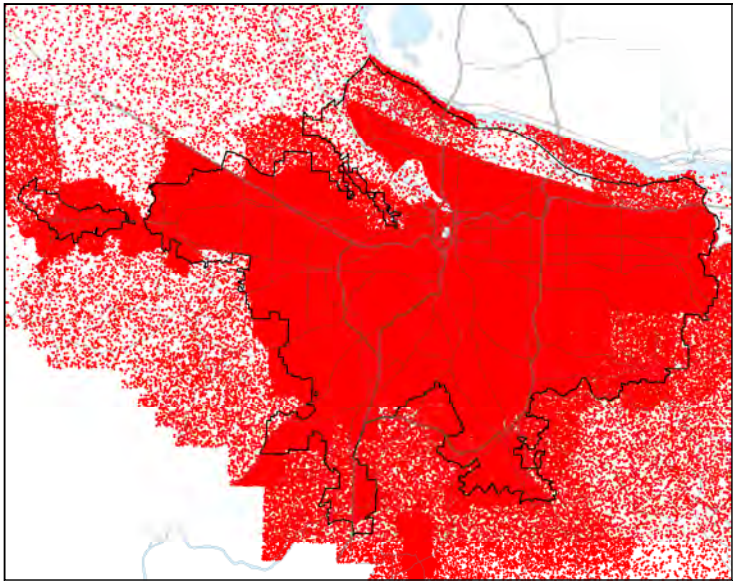
Applies to desired outcome(s):

- 1. Vibrant, walkable communities
- 2. Economic competitiveness and prosperity
- 3. Transportation choices
- 4. Reduce greenhouse gas emissions
- 5. Clean air and water, healthy ecosystems
- 6. Equity

1990	
New York	24.0%
San Francisco	38.5%
Seattle	58.7%
Atlanta	61.2%
Portland	65.0%
Los Angeles	65.2%
San Diego	70.7%
Sacramento	71.7%
Hillsboro	73.4%
Phoenix	73.7%
Gresham	75.7%
Beaverton	76.7%
Lake Oswego	81.9%

2000	
New York	24.9%
San Francisco	40.5%
Seattle	56.5%
Portland	63.7%
Atlanta	64.0%
Los Angeles	65.7%
Sacramento	71.0%
Phoenix	71.7%
Beaverton	72.5%
Gresham	72.5%
Hillsboro	73.4%
San Diego	74.0%
Lake Oswego	78.8%

2006	
New York	23.5%
San Francisco	40.5%
Seattle	55.2%
Portland	60.6%
Atlanta	64.9%
Los Angeles	67.2%
Hillsboro	68.3%
Sacramento	72.5%
Phoenix	72.7%
San Diego	74.7%
Beaverton	75.0%



Year 2000 (3-county area)  
One dot = one drive alone commuter  
71.5% of commuters  
523,140 drive alone commuters



Commute by walking (source: U.S. Census)

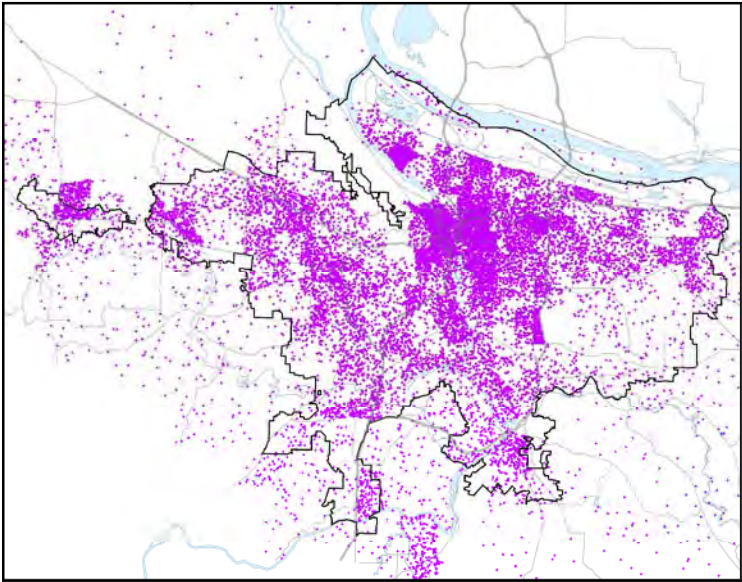
The ability to walk to work is perhaps the most basic measure of how the region is faring in creating a compact urban form. By this measure, some of our region’s communities are faring better than others.

- Applies to desired outcome(s):
- 1. Vibrant, walkable communities
  - 2. Economic competitiveness and prosperity
  - 3. Transportation choices
  - 4. Reduce greenhouse gas emissions
  - 5. Clean air and water, healthy ecosystems
  - 6. Equity

1990	
New York	10.7%
San Francisco	9.8%
Seattle	7.2%
Portland	5.6%
San Diego	4.9%
Los Angeles	3.9%
Atlanta	3.8%
Sacramento	3.4%
Phoenix	2.7%
Hillsboro	2.6%
Beaverton	2.3%
Gresham	1.6%
Lake Oswego	1.6%

2000	
New York	10.4%
San Francisco	9.4%
Seattle	7.4%
Portland	5.2%
San Diego	3.6%
Los Angeles	3.6%
Atlanta	3.5%
Beaverton	3.1%
Sacramento	2.8%
Hillsboro	2.2%
Phoenix	2.2%
Lake Oswego	2.0%
Gresham	1.8%

2006	
New York	9.8%
San Francisco	9.6%
Seattle	8.4%
Portland	5.2%
Atlanta	4.6%
Hillsboro	4.2%
San Diego	3.6%
Los Angeles	3.4%
Sacramento	3.0%
Beaverton	2.4%
Phoenix	1.9%



Year 2000 (3-county area)  
One dot = one walk commuter  
3.2% of commuters  
23,761 walk commuters

**Active living** (source: Centers for Disease Control)

Urban form plays an important role in either encouraging or discouraging physical activity. The opportunity to visit open spaces or incorporate biking or walking into everyday routines are a couple of ways that residents of the Metro region have benefited from a tradition of good planning.

- Applies to desired outcome(s):**
- 1. Vibrant, walkable communities
  - 2. Economic competitiveness and prosperity
  - 3. Transportation choices

**Percent of metropolitan area population that gets recommended amount of physical activity (year 2005)**

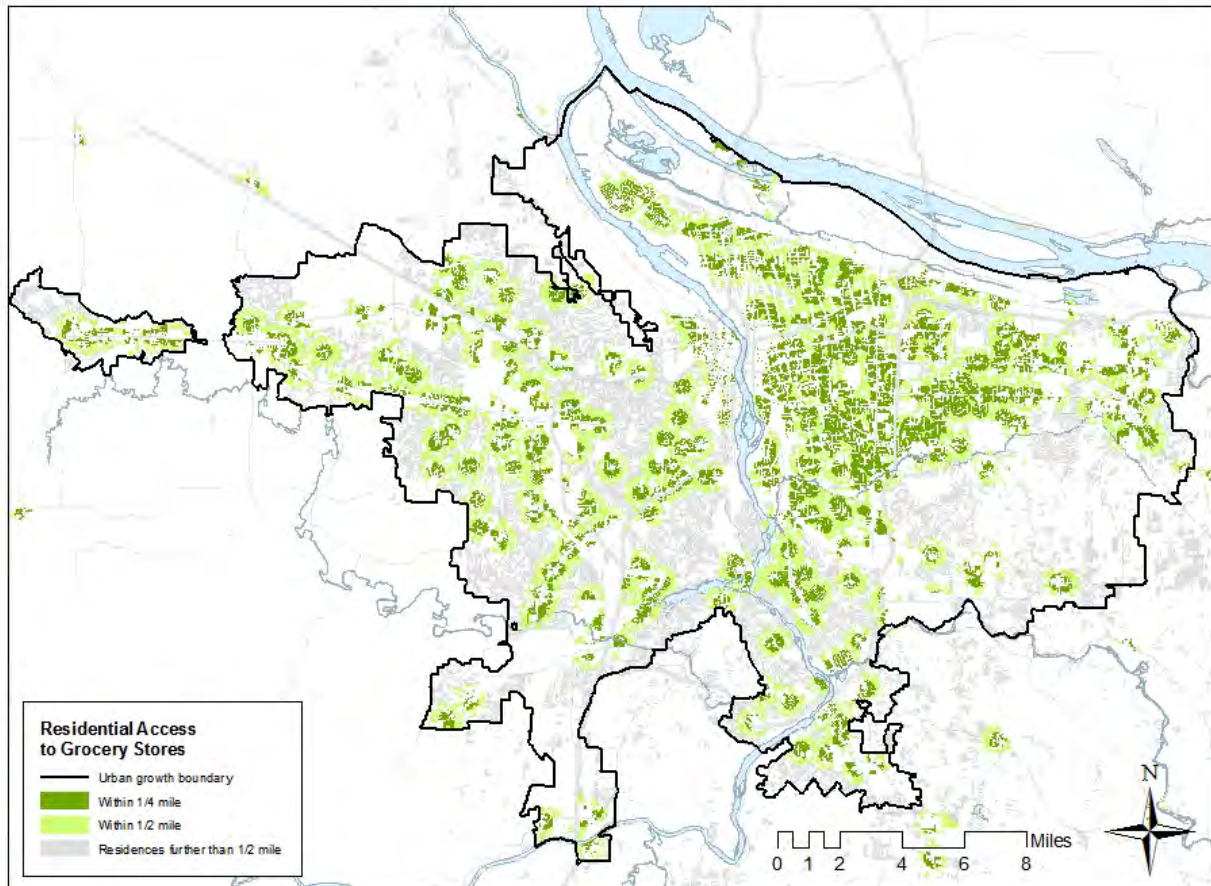
San Francisco	53%
Portland	52%
San Diego	52%
Seattle	51%
Phoenix	51%
Denver	50%
Albuquerque	48%
Los Angeles	45%
Austin	44%
Atlanta	41%

## Grocery store<sup>3</sup> within walking distance

Many communities in our region have mixed-use developments that give people the option of walking to take care of everyday tasks such as grocery shopping. These communities are vibrant places to live and work and will be key to reducing the region's auto dependence.

### Applies to desired outcome(s):

1. Vibrant, walkable communities
2. Transportation choices
6. Equity



<sup>3</sup> Includes convenience stores



## Jobs-to-housing balance

Ideally, people would live close to where they work, thereby saving money and time spent commuting. However, for a number of reasons, achieving a jobs-to-housing balance at the local jurisdiction level (i.e. city) does not appear to have the intended effect of shortening commutes:

- Many households have two or more employees, thereby reducing the likelihood that all members of a household will find employment in their city of residence.
- Employees have specific qualifications and wage requirements that will not necessarily be met by jobs that are nearby.
- Employers have specific worker requirements that will not necessarily be fulfilled by the local labor pool.
- Workers may change jobs with some frequency, but each job change will not necessarily result in a residential move.
- Wages and rents may be mismatched for an employee in a given city.

Data from the U.S. Census Bureau (Longitudinal Employer-Household Dynamics) indicate that many Metro region residents make commutes<sup>4</sup> not only to other cities, but to other counties. However, most trips are for non-commute purposes. Creating a local mix of uses is an important means of reducing non-commute trip frequency and distance.

Year 2006 data on commute behavior are summarized on the following pages for Clackamas, Clark, Washington and Multnomah counties.

---

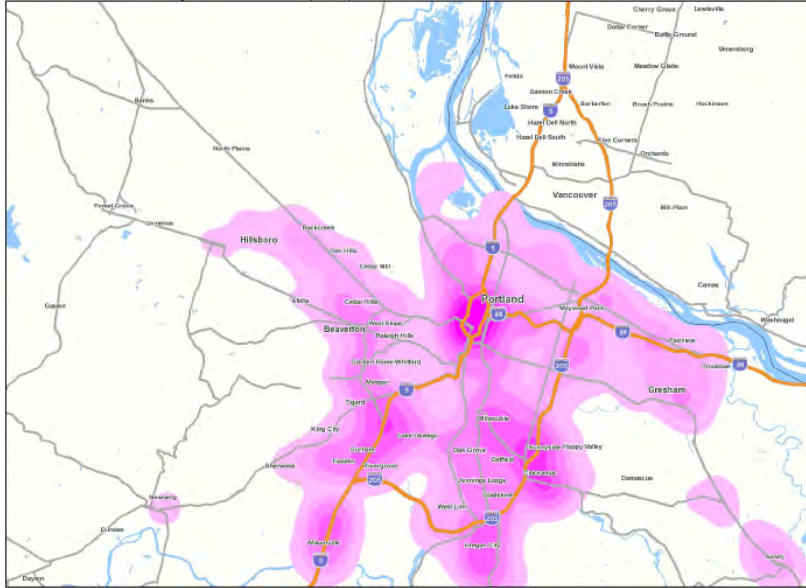
<sup>4</sup> Data on following pages is for primary job only

## Jobs-to-housing balance: Clackamas County

Source: U.S. Census Bureau (Longitudinal Employer-Household Dynamics)

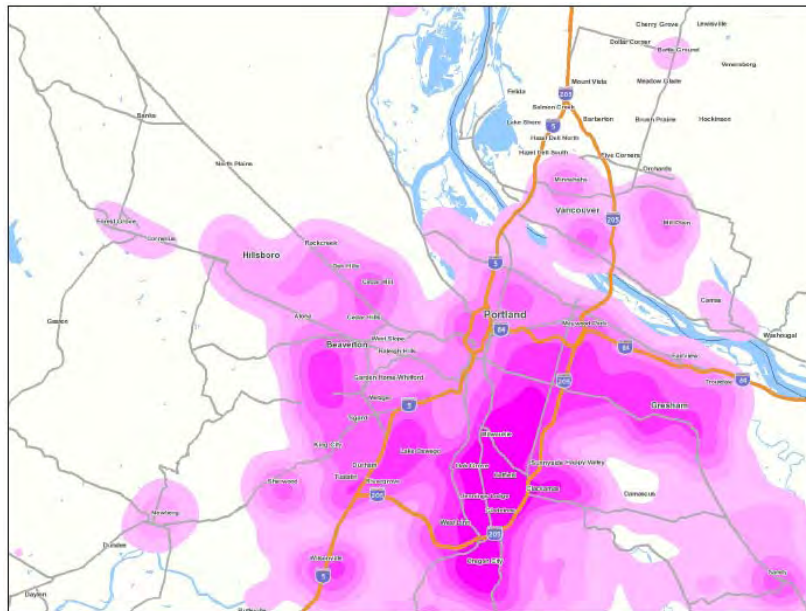
Clackamas County is sending workers to and attracting workers from locations throughout the region.

### Where Clackamas County residents work (2006)



<b>Portland</b>	29.6%
<b>Oregon City</b>	5.3%
<b>Beaverton</b>	4.0%
<b>Lake Oswego</b>	3.8%
<b>Tigard</b>	3.7%
<b>Milwaukie</b>	3.6%
<b>Wilsonville</b>	3.4%
<b>Gresham</b>	3.3%
<b>Tualatin</b>	2.9%
<b>Hillsboro</b>	2.0%
<b>All Other Locations</b>	38.6%

### Where Clackamas County workers reside (2006)



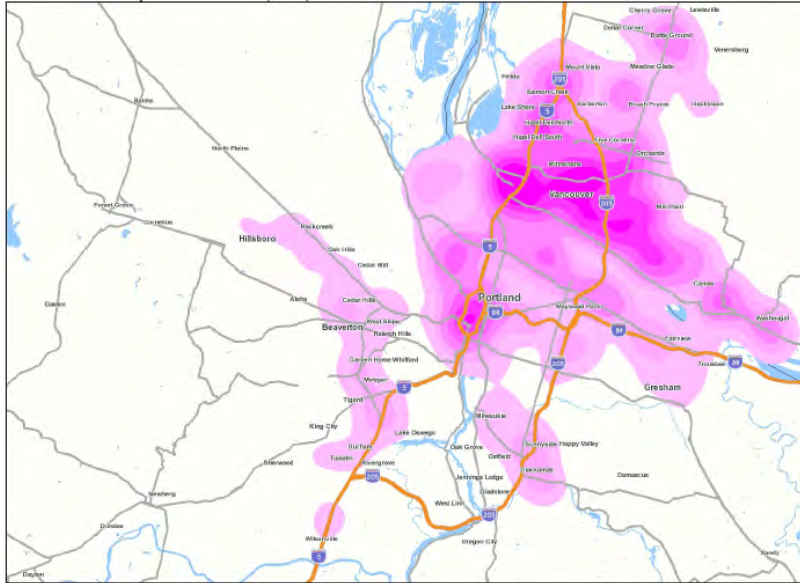
<b>Portland</b>	19.4%
<b>Gresham</b>	4.6%
<b>Oregon City</b>	4.5%
<b>Lake Oswego</b>	3.0%
<b>Beaverton</b>	3.0%
<b>West Linn</b>	2.8%
<b>Milwaukie</b>	2.6%
<b>Salem</b>	2.5%
<b>Oatfield</b>	2.3%
<b>Canby</b>	2.2%
<b>All Other Locations</b>	53.0%

## Jobs-to-housing balance: Clark County

Source: U.S. Census Bureau (Longitudinal Employer-Household Dynamics)

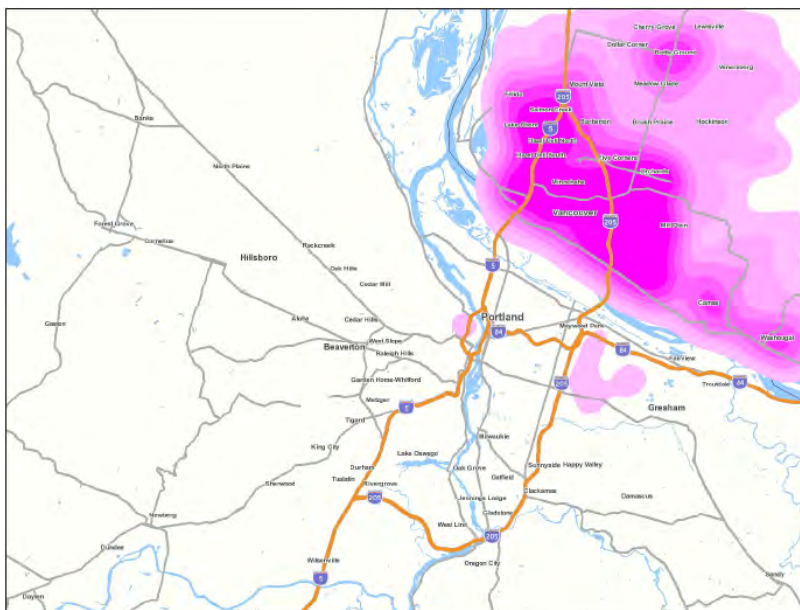
Many Clark County residents commute to jobs in the Metro region, particularly in Portland. However, most of Clark County's jobs are filled by those who live north of the Columbia River.

### Where Clark County residents work (2006)



<b>Vancouver</b>	31.4%
<b>Portland</b>	21.9%
<b>Camas</b>	3.1%
<b>Orchards</b>	1.9%
<b>Salmon Creek</b>	1.9%
<b>Walnut Grove</b>	1.7%
<b>Battle Ground</b>	1.6%
<b>Seattle</b>	1.6%
<b>Five Corners</b>	1.5%
<b>Gresham</b>	1.5%
<b>All Other Locations</b>	31.9%

### Where Clark County workers reside (2006)



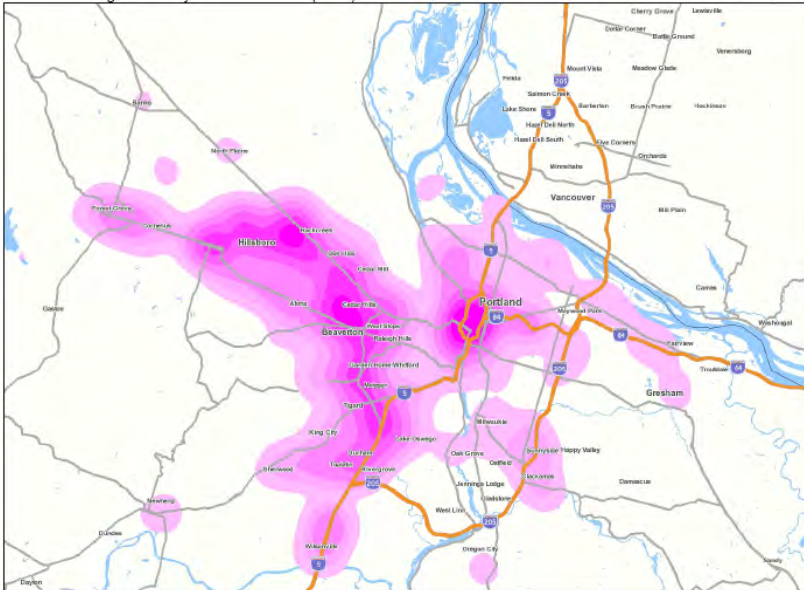
<b>Vancouver</b>	29.3%
<b>Portland</b>	5.0%
<b>Orchards</b>	4.3%
<b>Salmon Creek</b>	3.8%
<b>Camas</b>	3.2%
<b>Five Corners</b>	3.0%
<b>Battle Ground</b>	2.9%
<b>Washougal</b>	2.4%
<b>Hazel Dell North</b>	2.2%
<b>Mill Plain</b>	2.1%
<b>All Other Locations</b>	41.8%

## Jobs-to-housing balance: Washington County

Source: U.S. Census Bureau (Longitudinal Employer-Household Dynamics)

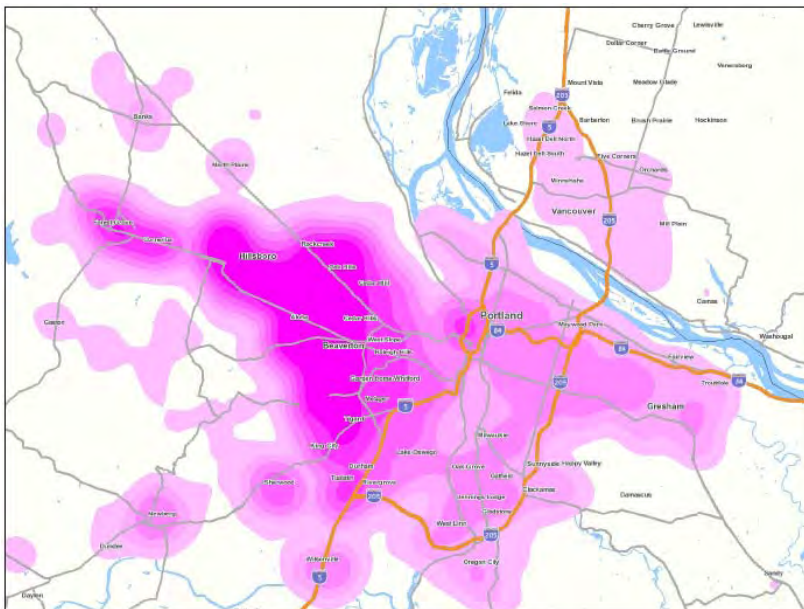
Washington County is sending workers to and attracting workers from locations throughout the region.

### Where Washington County residents work (2006)



<b>Portland</b>	25.1%
<b>Hillsboro</b>	16.7%
<b>Beaverton</b>	15.6%
<b>Tigard</b>	6.1%
<b>Tualatin</b>	3.2%
<b>Forest Grove</b>	2.2%
<b>Lake Oswego</b>	2.1%
<b>Wilsonville</b>	2.0%
<b>Aloha</b>	1.8%
<b>Salem</b>	1.4%
<b>All Other Locations</b>	23.8%

### Where Washington County workers reside (2006)



<b>Portland</b>	17.0%
<b>Hillsboro</b>	10.6%
<b>Beaverton</b>	9.9%
<b>Aloha</b>	5.2%
<b>Tigard</b>	3.9%
<b>Forest Grove</b>	2.5%
<b>Tualatin</b>	2.0%
<b>Gresham</b>	1.9%
<b>Lake Oswego</b>	1.7%
<b>Vancouver</b>	1.5%
<b>All Other Locations</b>	43.8%

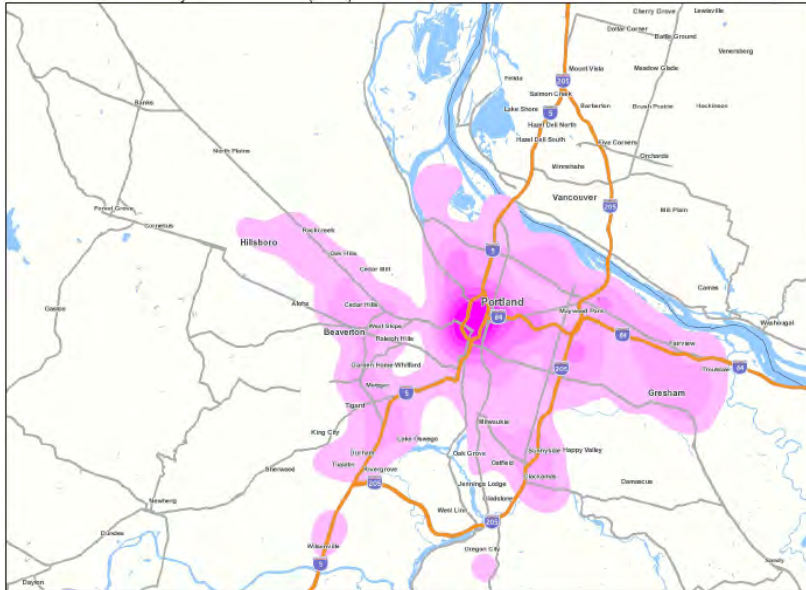


## Jobs-to-housing balance: Multnomah County

Source: U.S. Census Bureau (Longitudinal Employer-Household Dynamics)

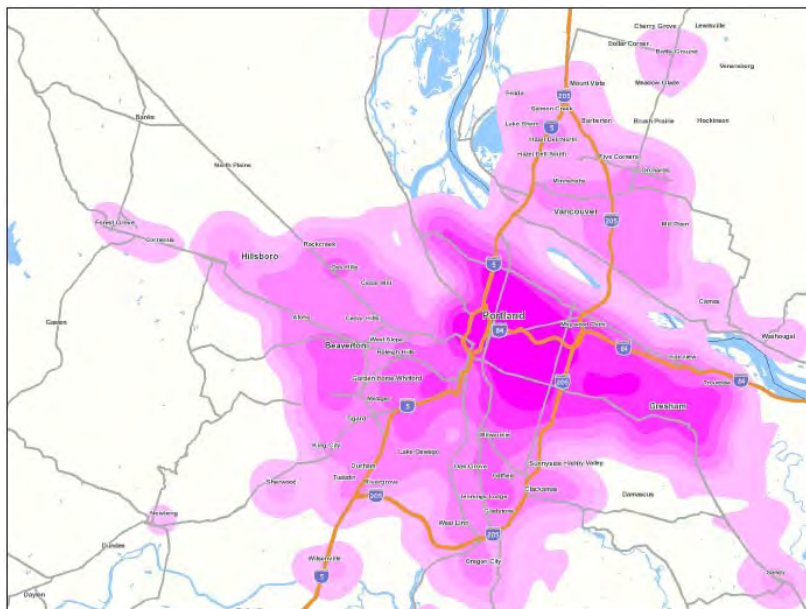
Multnomah County is sending workers to and attracting workers from locations throughout the region.

### Where Multnomah County residents work (2006)



<b>Portland</b>	58.2%
<b>Gresham</b>	5.9%
<b>Beaverton</b>	4.7%
<b>Hillsboro</b>	2.6%
<b>Tigard</b>	2.6%
<b>Vancouver</b>	1.5%
<b>Lake Oswego</b>	1.4%
<b>Milwaukie</b>	1.4%
<b>Tualatin</b>	1.3%
<b>Salem</b>	1.2%
<b>All Other Locations</b>	19.2%

### Where Multnomah County workers reside (2006)



<b>Portland</b>	42.6%
<b>Gresham</b>	7.2%
<b>Vancouver</b>	4.2%
<b>Beaverton</b>	3.5%
<b>Hillsboro</b>	1.8%
<b>Lake Oswego</b>	1.6%
<b>Tigard</b>	1.5%
<b>Troutdale</b>	1.3%
<b>Aloha</b>	1.3%
<b>Milwaukie</b>	1.2%
<b>All Other Locations</b>	33.8%

# Employment Demand Factors & Trends

## Task 1 Report - Metro Employment & Economic Trends Analysis

Final Draft

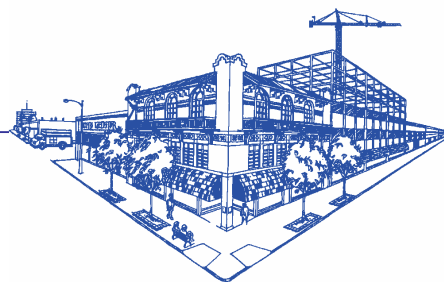
Prepared for:

Metro

March 2009

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

Economic and Development Services



---

---

# Employment Demand Factors & Trends

## Task 1 Report - Metro Employment & Economic Trends Analysis

Final Draft

Prepared for:

Metro  
600 NE Grand  
Portland, Oregon 97232

Prepared by:

E.D. Hovee & Company, LLC  
P.O. Box 225  
2408 Main Street  
Vancouver, Washington 98666  
(360) 696-9870

Eric D. Hovee, Principal  
Tess Jordan, Senior Economic Planner

March 2009

---

---

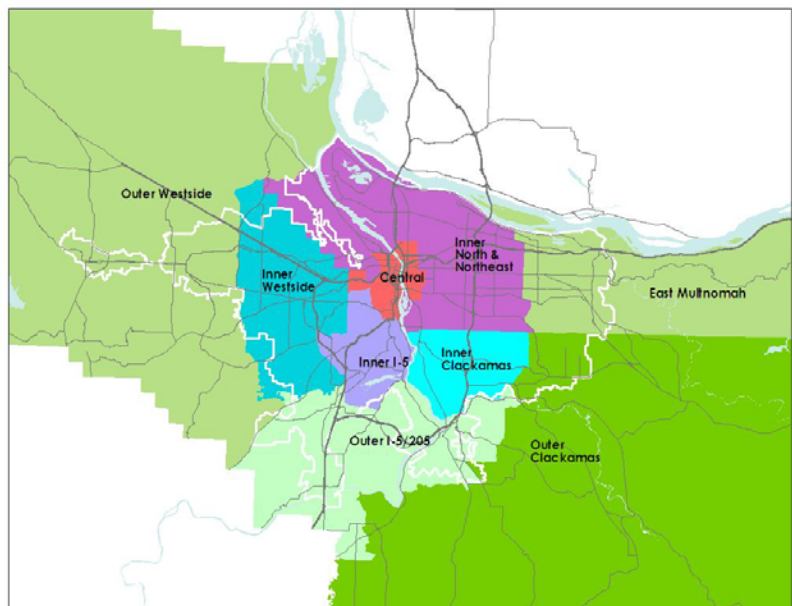
# EMPLOYMENT DEMAND ANALYSIS OVERVIEW

Metro is engaged in conducting an employment and economic trends analysis for the Portland metropolitan region. This report covers *Task 1*, describing employment trends and demand factors and focused on the region's documented experience over the 2000-2006 time period.

For this analysis, the three-county Metro region has been divided into nine geographic subareas, which can be further aggregated to three overall *ring geographies*:

- Central (also a subarea of its own)
- Inner ring (Inner North & East, Inner Westside, Inner I-5 and Inner Clackamas)
- Outer ring (Outer Westside, East Multnomah County, Outer Clackamas and Outer I-5/205).

Market Area Geographies



This overview highlights major observations and findings from this Task 1 *Employment Demand Factors and Trends* analysis report, including a summary of implications for shaping a new employment land demand paradigm. Employment is one of many approaches to measuring economic activity. Because the focus of this report is how business uses land, employment and building development are emphasized. Other factors – such as wage levels, technology and capital intensiveness, monetary output and comparative regional advantage (or location quotients) – are not considered. This report also does not evaluate which industries and jobs the region should endeavor to encourage, but rather reports past trends as illustrated via employment data.

## EMPLOYMENT TRENDS SUMMARIZED

Employment trends have been evaluated by market subarea geography, 2040 Design Types and by NAICS industry sector. Consistent with the forecast allocation approach being recommended, primary emphasis and confidence is placed on summary data for the subarea and design type geographies.

***Employment by Industry Sector.*** As of 2006, the tri-county region (both inside and outside the Urban Growth Boundary) had total non-agricultural covered employment estimated at 842,000 jobs. This represents an increase of roughly 22,500 jobs since 2000, a relatively slow



0.5% annual job growth over a period marked by an economic downturn and subsequent recovery.

This is the longest time period for which subregional data is available and encompasses close to a full economic cycle. However, growth within this time period was far weaker than the 2.9% annual average growth experienced during the previous decade (see Figure 1, Chapter 1).

In 2006, the tri-county area captured 83% of jobs within the larger seven-county region, with the bulk of remaining jobs located in Clark County, Washington. This was a slight reduction from its year 2000 capture rate of 84%.

Sectoral shifts in the region's employment reflect the evolution of business job classification, as well as actual job losses and gains. When viewed by industry sector, the following key region-wide trends are noted:

- The service sector is associated with by far the largest recent growth and in 2006 accounted for 56% of the tri-county's covered employment.
- Health care and social assistance dominated service sector job growth, with a net gain of 17,000 jobs. Other growth service industries included accommodation and food service, management of companies and public administration.
- The industrial sector includes construction, utilities, manufacturing and wholesale and distribution. In 2006 30% of tri-county jobs were within the industrial sector, a decline from this sector's 32% share in 2000. Regional employment shifted away from this sector at an average annual rate of 0.6% and a reported total decline of 8,800 jobs.
- Manufacturing, a subset of the industrial sector, reported a net loss of 6,700 jobs. This is associated both with businesses retracting and moving outside of the tri-county area (including to Clark County), and a shifting in businesses' self-description of their employment away from industrial SIC/NAICS job classifications. A countervailing trend of note over this time period is manufacturing output, which the Bureau of Economic Analysis reports increased by more than \$9 billion for the seven-county region between 2001 and 2006. Within the manufacturing sector, business growth (or profit) appears to contradict job growth, due in part to high commodity pricing and strong export markets. Equivalent data for other industrial sectors such as transportation and warehousing is suppressed due to confidentiality.
- Retail jobs also declined over this time period. Ten percent of tri-county employment is within the retail sector, which contracted at a reported rate of -1.2% annually for a net loss of 6,300 jobs between 2000 and 2006. This contrasts with the 2.3% annual job growth rate retail experienced during the 90s. *Note:* prior to 2000, retail included dining (with SIC job classification). Post-2000, NAICS places dining within the service sector.

***Employment by Market Subarea.*** Based on the subareas defined for this analysis:

- About one-half of the tri-county region's 2006 employment was located within the largely developed inner ring geography; the remainder was divided between the central ring and the outer ring.

- This distribution of regional employment is shifting, as central and inner ring geographies lost jobs by between 0.2% and 0.5% annually during the first half of this decade, and outer ring geographies added jobs at a pace above 3% per year. While outside of the purview of this report, Clark County also reported rapid job growth during this time period of 2.2% annually. This growth rate is below the tri-county outer ring subareas and significantly above the over-all tri-county growth rate of 0.5%.
- Service sector jobs increased throughout the region, in all but one subarea. The Central subarea and Outer Westside subareas report especially strong service sector gains at 10,400 and 7,000 net new jobs respectively. This likely reflects both job growth and some job reclassifications.
- Within the inner ring, the Central and North & Northeast subareas show the largest job loss, particularly for industrial jobs. Together, these two submarkets report a decline of 24,000 industrial jobs, resulting in a net job loss across all sectors of 16,800. Most inner ring geographies also experienced retail job losses, for a combined central/inner ring loss of 7,800 retail jobs.
- In contrast, outer ring subareas added industrial jobs, enough to off-set about 65% of inner/central ring losses (but still resulting in a regional industrial employment decline). Retail job growth was also widespread across outer ring subarea (+3,200), enough to off-set about 50% of inner/central ring employment decline.

***Employment by Design Type.*** Job growth also has been analyzed for 2040 Design Types:

- All of the *urban-focused* 2040 Design Types (centers and corridors) reported job growth occurring at rates below the 0.5% annual growth rate experienced region-wide with the exception of Town Centers, which grew at an equivalent pace. City Center and Corridors reported half as rapid growth (0.2% annually) and Regional Centers reported an extremely low 0.03% annual growth rate. This did vary by subarea, as discussed in the body of the report. Service and public sector jobs fueled what growth did occur within these most urban of the 2040 Design Types, with the exception of Town Centers which also reported retail growth.
- *Title 4* Industrial Areas are associated with the strongest growth rate at 4.3% annually, primarily via industrial jobs. However, approximately 30% of net new jobs locating in Industrial Areas were non-industrial (primarily service sector) jobs. The bulk of Industrial Areas (85%) are located within the region's outer ring. Employment Areas (58% of which are in the outer ring) grew more slowly at 2.4%, primarily through service sector jobs that offset a significant shift away from industrial employment. Regionally Significant Industrial Areas (RSIAs) reported a job base erosion of close to 1% annually. RSIAs are predominantly located within the central and inner ring geographies; about 70% are within the Portland harbor/Columbia Corridor.

## DEVELOPMENT TRENDS SUMMARIZED

Development of industrial, commercial and mixed use building space for employment use has also been evaluated at a subregional level using the proprietary CoStar real estate inventory. This analysis addresses questions of how job growth corresponds to real estate development, the form

of recent development throughout the region and to the extent to which these patterns have changed in recent years.

***Industrial & Commercial Development Trends.*** The commercial real estate industry typically distinguishes between industrial (including flex space), office and retail building types, a classification scheme far more generalized than job sectors. Key trends are summarized by building type and highlight the differences between subarea and design type geographies.

*Overview Notes:*

- Despite a regional shift away from *industrial* sectors jobs between 2000 and 2006, the CoStar commercial real estate inventory indicates that over 17 million square feet of industrial space has been completed since 2000 (although ‘recent development’ covers a longer time frame, through January 2009 rather than through 2006). This partly reflects a dispersal of service sector jobs into lower cost industrial and retail building formats, but also indicates a disconnect between job trends and development trends.
- While reported *retail* jobs declined, CoStar data indicates that 9.3 million square feet of new retail space was developed throughout the region. Some of this space outside of regional retail centers undoubtedly accommodates service sector (including dining related) employment.
- The region’s service sector driven job gains of close to 40,000 (including public sector) have served as a major impetus for the more than 9.5 million square feet of net added *office* space.
- Some discrepancies between building space and job numbers may exist as the result of mixing different data sources. However, this analysis clearly suggests that the development of industrial and commercial *real estate product* has out-paced job gains since 2000, throughout the region.

*Industrial Development:*

- Aligning with reported industrial job trends, a substantial portion of new industrial building product appears to be concentrated in the tri-county region’s outer ring (61%). Clark County also developed significant industrial product over this time period. Virtually no net new product classified as industrial has been built in the Central subarea since 2000.
- Post-2000 industrial development has concentrated in the subareas of Inner North and Northeast (inner ring), and East Multnomah and Outer I-5/205 (outer ring).
- The vast majority of both historic and recently developed industrial space is classified as distribution or warehouse throughout the region.
- Most industrial product remains 1-2 story in height, with a few notable exceptions such as Intel’s Ronler Acres (half office, 4 stories) and two-story buildings that house clean rooms, warehouse and food processing in other outer ring subareas.
- Flex space (typically with 50%+ office use) remains a small component of the over-all industrial market. It is heavily concentrated in the Inner Westside, with recent development also favoring outer Westside subareas. About 30% of post-2000 flex space

is two stories, mostly in conjunction 30,000-40,000 square foot structures in campus-oriented business or office parks.

#### *Office Space Development:*

- The outer ring's share of commercial buildings (both office and retail) close to doubled for post-2000 development.
- The Central subarea continues to support a slight majority of the region's office inventory (52%). Since 2000, however, the Central subarea has captured only 26% of the 9.5 million square feet of new office space developed in the tri-county region. In contrast, 41% of new development has located within the inner-ring (and 33% in the outer ring).
- The Central subarea retains its Class A office space dominance with 58% of the region's inventory, but Class A space developed since 2000 has been fairly evenly distributed between the Central subarea and the inner and outer ring.

#### *Retail Development:*

- New retail development has favored outer ring subareas, which have captured close to 50% of all post-2000 retail development (and virtually 100% of net retail job gains). In comparison, Portland's Central subarea has captured just 10% of new retail building development.
- As might be expected, with recent retail development larger retail centers have favored the outer ring subareas whereas smaller centers and main street development have dominated Central subarea and inner ring development patterns.

#### *Structured Parking:*

- While not generally considered a real estate development product of its own, structured parking is critical to achieving the higher urban densities associated with the 2040 design concept. To date, structured parking development remains limited to narrow geographies and uses within the region.
- Outside of the Central City, office buildings within Washington Square regional center Kruse Way (Inner I-5 subarea) have developed some structured parking without public subsidy.
- Within the Central subarea, a substantial portion of structured parking for retail customer use is provided as part of the City of Portland's *Smart Park* system. Outside of Central subarea mixed-use products, structured parking is confined to regional malls within the inner ring and Outer Westside subareas.
- Medical institutions and smaller medical office buildings are a prime sponsor of structured parking, especially in the Inner Ring and the Outer Westside subareas. Major corporate campuses – such as Nike, Adidas and Intel – have also developed structured parking over the last 10 years.
- Other identified examples of structured parking are municipal sponsored, either serving city offices (Hillsboro) or a private development supported by public funding support (for instance, the Beaverton Round). The region's office, business and industrial parks still generally rely primarily upon surface parking lots.

***Intensity of Employment Development.*** This analysis operationalizes development density via the metric of floor area ratios (FARs), which are calculated by dividing building square footage by land square footage. Key observations are noted as follows:

- Commercial sector building development – office and retail – has become denser post-2000 across the region, although at present only the Central subarea is associated with FARs averaging above 1.0.
- All subareas for which data is available report substantial post-2000 commercial FAR increases ranging between 80% and 170% compared to development on the ground pre-2000.
- On average, even inner ring subareas continue to build commercial and industrial at single-level, surface-parking densities (FARs below 0.5). An important caveat for this analysis is that square footage data appears to be extremely limited for development within Washington and Clackamas Counties.
- Within the region’s urban-focused 2040 Design Types, employment-related FARs are much higher, approaching 1.0 within regional centers and exceeding 0.40 within town centers and corridors. These areas clearly appear to have densified in recent years (post-2000).
- Title 4 areas – RSIs, Employment and Industrial Areas – report typical industrial and office FARs of 0.30, with little variation over time (except for RSIs where FARs have increased for development occurring post-2000).

## DEMAND FACTORS

The final chapter of this Task 1 report covers several topics of special interest in allocating job growth to the region’s land supply.

***Employment on Vacant vs. Redeveloped Land.*** A major factor in estimating the land needs associated with future employment growth is the extent to which building development locates on vacant (greenfield) parcels versus parcels on which some existing – likely low valued – development is located, so that the new building represents land redevelopment.

Historic use data was available for a limited portion of parcels for which post-2000 development is reported. For the 450 taxlots region-wide for which data was available, more than one-half (53%) were properties on which some amount of development was located prior to the current building. Forty-seven percent of these taxlots were vacant prior to their post-2000 development.

When broken down by ring geographies, redevelopment rates appear to be far higher for the central and inner ring market geographies. Redevelopment rates appear to correlate with both land values and the extent of prior development within a subarea.

The Central subarea is associated with the highest redevelopment rate of 65%. The inner ring reported a high redevelopment rate of 59%. Predictably, the redevelopment rate was lowest in the outer ring at 36%. *Note:* An important caveat associated with these results is that necessary taxlot detail was missing for most taxlots within Washington and Clackamas Counties; results are most reliable for Multnomah County subareas.

***Consumer Expenditures as Retail Driver.*** By and large, retail potential and actual spending appear to be roughly in balance in the 4-county Portland metro area (including Clark County) – with locally generated retail demand exceeding supply by about 4%. While there are potential imbalances within specific merchandise categories, these may be more the result of different consumer spending priorities and development patterns in the Portland metro area, rather than indications of actual sales leakage.

Consequently, further retail development over the longer term is expected to be dependent primarily on some combination of population growth and destination tourism activity (aided by Oregon’s lack of retail sales tax). While the geographic distribution of retail sales could change between subareas within the region, in the absence of population and/or tourism growth, this shifting would be a zero-sum game, with some subareas gaining at the expense of others.

***Institutional Utilization.*** Institutional uses warrant special consideration, because of their growing importance to the region’s employment and land use patterns that are distinct from those of many other employers. Institutions such as medical, education and other public agency functions often tend to cluster employment, requiring larger parcels or aggregations of parcels, developing land more intensively (e.g. with structured parking) and locating in a variety of zones other than commercial and industrial (such as residential).

Metro’s 2035 employment forecast projects that a significant 20% of net new employment is expected to be within the health and education sectors, accounting for 98,000 and 24,000 net added jobs respectively between 2008 and 2035. A portion of these jobs will be within institutional settings. A review of 2006 employment indicates that, within these sectors, 60% - 80% of employment occurs at sites with more than 50 employees.

In focus groups being conducted as a part of Task 6 for this employment and economic trends analysis work program, institutional land users report somewhat conflicting priorities:

- Dense (multi-story) development appears to work well for administrative and non-patient functions. On the other hand, lower profile mid-rise development often better maintains accessibility, reduces development costs and avoids neighborhood conflicts.
- Especially given the challenges of building in an often residential environment, institutional preference is to expand on-site (where existing agreements are in place) rather than to acquire new land on which to expand.
- Institutions value both easy auto accessibility (as most clients access institutions via cars) and good transit service, especially to serve the needs of a diverse workforce.
- Space needs are impacted in somewhat divergent direction via both an aging population (with greater health care needs and thus space needs) versus reduced on-site visits and fewer over-night stays (which may reduce medical institution space needs).

With the exception of major research functions, institutions increasingly appear oriented to decentralize and bring services closer to where people live. Given that the bulk of the region’s population growth is projected for the outer ring, institutional employment growth is expected to follow suit and favor outer ring and other locations anticipated for substantial household growth.

***Industrial Building & Site Utilization.*** A key topic of special interest affecting regional land demand is how land utilization has changed and will change within the industrial sectors. To what extent have or will industrial uses densify and thus reduce land needs? How do industrial trends influence this?

There are few clear trends on industrial land use and building development. As noted, a substantial portion of the region's flex space and a few notable industrial buildings have been developed since 2000 at 2+ stories within the region, primarily in outer ring geographies.

Despite these developments (and some increase in FARs for RSIA's), over-all average industrial FARs appear to have changed very little, and if anything are decreasing. This decrease is likely related to the historic stock of multi-story warehouse space; such space is largely considered dysfunctional for modern warehouse uses and is not being replicated as businesses relocated to newer, lower profile buildings.

Metro's 2035 employment projections call for wholesale trade, warehousing and distributing to comprise approximately 45% of net new industrial sector job growth (58,000 new jobs between 2008 and 2035). Data indicates that warehouse buildings typically support fewer jobs per square feet than other types of industrial uses.

Of the remaining industrial sector jobs projected, high tech accounts for 45% and construction accounts for 39%; neither of which can be considered as 'traditional' industrial sector land users. Other manufacturing jobs are projected to account for only 4% of non-distribution related industrial job growth – a total of just 3,000 net added jobs between 2008 and 2035.

Based on preliminary Task 6 focus group results, the best opportunities for increased density of distribution related development may relate more to opportunities for high-cube space (with higher ceilings for more rack storage) than to multi-story development. Most manufacturing space is also expected to remain at one and in some cases two stories, albeit with high ceiling space requirements for some processes and with 2+ stories more possible for office, administrative and some R&D components of a firm's operations. For existing land constrained industrial uses, transition from at-grade to structured parking also may be considered in some cases.

***Building Square Feet per Employee.*** Land needs forecasting (Task 3) will also incorporate standard assumptions on square requirement per employee, varied by sector. Generally, these values have been considered as relatively stable although there is speculation about changing densities in the years ahead with higher overall cost of real estate. A range of values from various sources are reported in the body of this report and will be more fully considered as input variables within the Task 3 analysis to come.

***Implications for New Demand Paradigm.*** The results of this Task 1 analysis (together with Task 2 location variables trends research) will inform subregional employment forecasting within Task 3. Regional employment totals are expected to be consistent with Metro's already completed 2005-2060 *Regional Population and Employment Forecast for the Portland-Beaverton-Vancouver OR-WA Primary Metropolitan Statistical Area (PMSA)*.

The New Demand Paradigm associated with Task 3 will allocate this employment to the tri-county portion of the larger metro area by industry sector, subarea geography and design types using a range rather than point estimate approach. Based on research being completed with Tasks 1, 2 and 6 of this Employment and Economic Trends research, the following implications are noted for the Task 3 demand allocation process.

1. The 2002 *Urban Growth Report* projected that the tri-county UGB would capture 75% of future job growth; this employment analysis indicates that the tri-county area captured 83% of 2006 employment. Task 3 forecast allocation scenarios may be varied to reflect this more recent experience and/or land capacity constraints within certain job sector or land use design types.
2. The Metro 2060 forecast provides a range rather than point estimate of future total employment but without detailed employment sector (or industry-specific) projections. This approach reflects the increasingly dynamic nature of the national and metro area economy and is proposed to be continued with the forecast allocation process – placing primary emphasis on subarea geography and design type categories rather than sector specific projections.
3. A baseline forecast allocation is expected to reflect the continued trend of job movement towards the outer rings of the metro region – especially for job sectors seeking Title 4 land and population-driven components of retail and institutional (service) growth. An alternative scenario may reflect growth patterns possible if urban-focused design types (centers and corridors) successfully compete for higher shares of regional employment growth.
4. Prior forecast allocations have translated employment growth to land demand with use of employment density factors (measured in terms of *jobs per acre*). In contrast, this planned allocation modeling process will pursue a two-step approach:
  - Application of *employment per square foot of building area* standards based on Metro and other research which generally are not expected to change materially over the forecast periods (of 5, 20 and 50 years) – at least in base case scenario.
  - Variation of *building to site area (or FAR)* standards reflecting both recent experience and regional policy objectives. FAR variations are seen as the primary means of influencing the future land footprint associated with regional employment growth.
5. Commercial office, retail and institutional uses have begun to transition to higher FARs, a trend that is forecast to continue albeit with higher FARs expected for the central and inner ring than the outer ring of the tri-county region. At FARs in the range of 0.50+/- (depending on use), transition from at-grade to structured parking and lowered parking ratios with active transit access would also be anticipated.
6. With the exception of RSIA's, industrial FARs do not yet appear to be increasing within the tri-county region but are maxing out at about 0.30. A baseline forecast scenario can



be expected to maintain this cap for the foreseeable future. Alternative scenarios may reflect other industrial development patterns with reduced development footprint – including transition to higher cube distribution, structured parking for some major employers at site constrained facilities, and/or reduced tri-county capture for uses with lower ratios of employment per square foot of building area.

7. Information from this analysis suggests consideration of adjusting refill rates (currently assumed at 50% for commercial use and industrial at 35%) by location as well as by land use. Higher refill rates would be indicated for central and inner ring than for outer ring subareas. More information is needed – likely anecdotal – to support varying these rates by land use.

As Metro and local jurisdictions explore this new demand paradigm, additional data resources may be needed above and beyond what is currently available across the region. Important data-related tools to maintain and improve upon our ability to track the relationship between job and development trends include accurately geocoded ES-202 job data (potentially to the taxlot level of accuracy) and better populated tax assessor's databases for current land use, building square footage and year built (with best coverage currently available for Multnomah County).

# Table of Contents

EMPLOYMENT DEMAND ANALYSIS OVERVIEW	1
Employment Trends Summarized	1
Development Trends Summarized	3
Demand Factors	6
EMPLOYMENT DEMAND FACTORS & TRENDS INTRODUCTION	13
Purpose of Task 1 Analysis	13
Geographic Market Subareas	13
I.    EMPLOYMENT TRENDS	15
Employment By Industry Sector	17
Employment by Subarea Geography	19
Employment by Design Type	25
II.   DEVELOPMENT TRENDS	34
Industrial & Commercial Broad Development Trends	35
Intensity of Employment-Related Development	40
III.  DEMAND FACTORS	45
Employment on Vacant vs. Redeveloped Lands	45
Consumer Expenditures as Retail Driver	46
Institutional Utilization	48
Industrial Building & Site Utilization	49
Building Square Feet per Employee	51
Implications for New Employment Demand Paradigm	53
APPENDIX. DETAILED DEVELOPMENT DATA TABLES	55

# Table of Figures

Figure 1.	Tri-County Covered Employment Trends (1990-2007)	15
Figure 2.	Three-County Job Change by Two-Digit NAICS (2000-2006)	18
Figure 3.	Market Subarea Geographies	20
Figure 4.	2006 Subarea Job Totals and Net Growth (2000-2006)	21
Figure 5.	Subarea Growth Trends (2000-2006)	22
Figure 6.	Job Sector Trends within Central and Inner Ring Subareas (2000-2006)	23
Figure 7.	Sectoral Trends within Outer Ring Subareas (2000-2006)	24
Figure 8.	2040 Growth Concept Employment Design Type Geographies	26
Figure 9.	Parcel Land Area within Design Types (in acres)	27
Figure 10.	2006 Employment & 2000-2006 Growth by 2040 Design Type	28
Figure 11.	2006 Employment & 2000-2006 Growth by 2040 Design Type	29
Figure 12.	Sectoral Trends within Urban Design Types	31
Figure 13.	Sectoral Trends within Title 4 Areas	32
Figure 14.	2009 and Post-2000 Commercial Real Estate Inventory	35
Figure 15.	Subarea Floor Area Ratios (pre & post 2000)	41
Figure 16.	Building Square Footage Data Available by Subarea	42
Figure 17.	Design Type Floor Area Ratios (Employment-related Development)	43
Figure 18.	FARs by Design Type Detail	44
Figure 19.	Former Use of Parcels that Developed Post-2000 for Employment Uses	46
Figure 20.	Retail Sales Leakage as % of Demand – By Merchandise Type (2008)	47
Figure 21.	2006 Education and Health Care Employment by Employees per Site	48
Figure 22.	Projected Employment Growth 2008 – 2035 by Employees per Site	49
Figure 23.	Square Feet per Employee	51

# EMPLOYMENT DEMAND FACTORS & TRENDS INTRODUCTION

Metro is engaged in conducting an employment and economic trends analysis for the Portland metropolitan region. This project will outline a *new paradigm* for evaluating the building and land demands associated with regional job growth over 5-, 20-, and 50-year time horizons.

The employment and economic trends analysis is intended to be serve as background for the *Urban Growth Report* Metro will complete in 2009. Other uses include land use and transportation modeling (including the MetroScope model), local jurisdiction information for Goal 9 comprehensive plan updates, and general information for business and economic development organizations throughout the region.

Six tasks have been outlined with this employment and economic trends analysis work program:

- Task 1 – Employment Demand Factors and Trends (this report)
- Task 2 – Variables Affecting Location Decisions
- Task 3 – New Demand Assessment Paradigm
- Task 4 – New Capacity/Inventory Approach
- Task 5 – Frame Choices for Job Needs
- Task 6 – Focus Groups

## PURPOSE OF TASK 1 ANALYSIS

This Task 1 report provides quantitative benchmarking to inform the rest of the assessment process, particularly the subsequent demand paradigm modeling of Task 3. The analysis encompasses a review of subregional job growth by sector since 2000, commercial development trends in location and form by 2040 Design Types and market subarea geographies, and a number of ‘special topics’ that impact land demand: redevelopment/infill versus greenfield development, consumer demand as a retail driver, and institutional and industrial development trends and average building space used per employee.

*This is a draft report intended for review with Metro, the Employment Coordination and Advisory Committee (CAC) and Metro Council.<sup>1</sup>*

## GEOGRAPHIC MARKET SUBAREAS

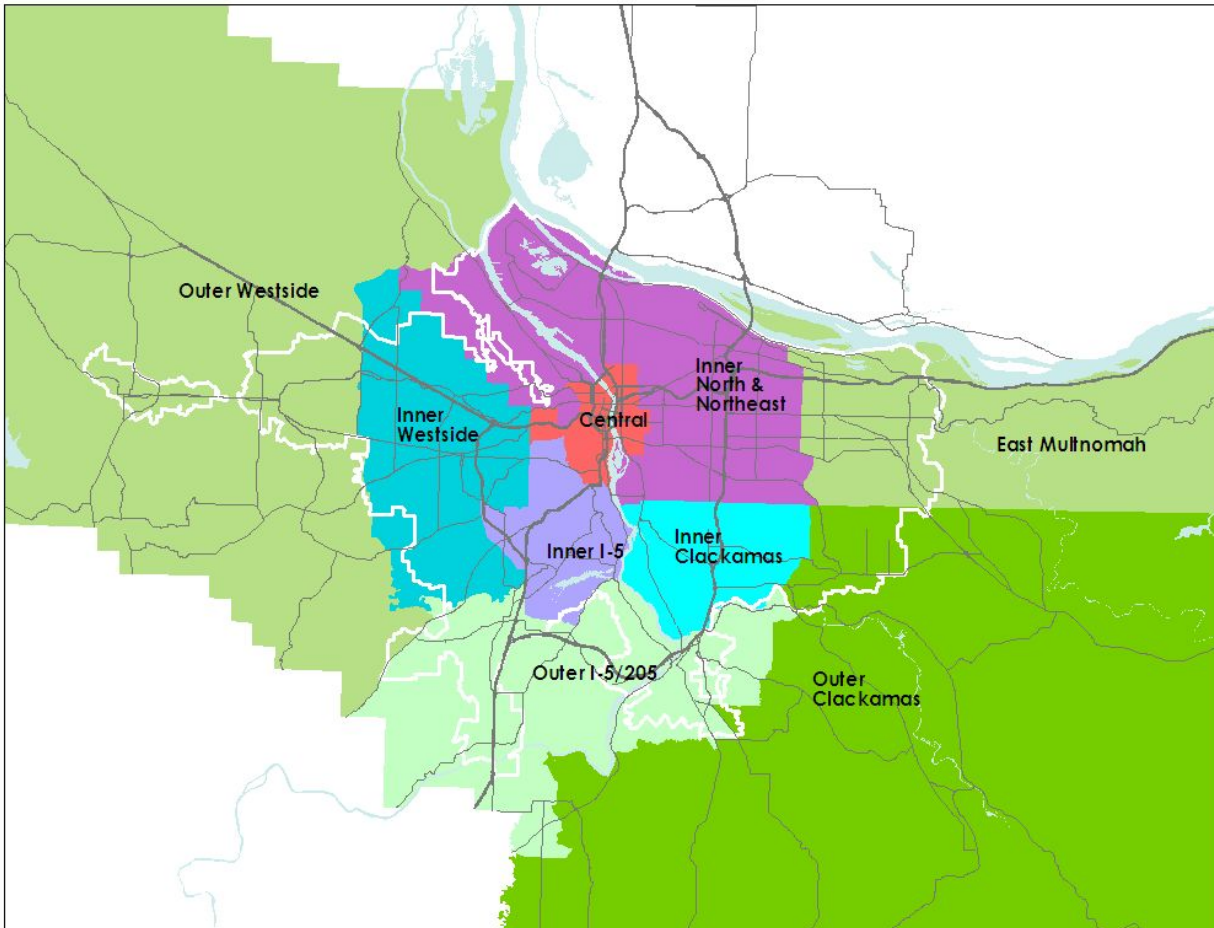
To review subregional trends in employment and development, the three-county Metro region has been divided into nine geographic subareas, mapped below. These subareas are intended to reflect major market distinctions; they vary by size and current density of employment activity. Subareas were designed to be compatible with MetroScope Census Tract geographies. The nine subareas can be aggregated to three overall *ring geographies*:

---

<sup>1</sup> Information for this report has been compiled from sources generally deemed to be reliable. The accuracy of data obtained from third-party sources is not guaranteed, is subject to change, and accompanied by limitations as noted in this report. Observations and findings in this report are those of the authors. They should not be construed as representing the opinion of other parties prior to their express approval, whether in whole or part.

- Central (also a Subarea of its own)
- Inner ring (Inner North & East, Inner Westside, Inner I-5 and Inner Clackamas)
- Outer ring (Outer Westside, East Multnomah County, Outer Clackamas and Outer I-5/205).

### Market Area Geographies



The remainder of the report is organized by three primary topic areas:

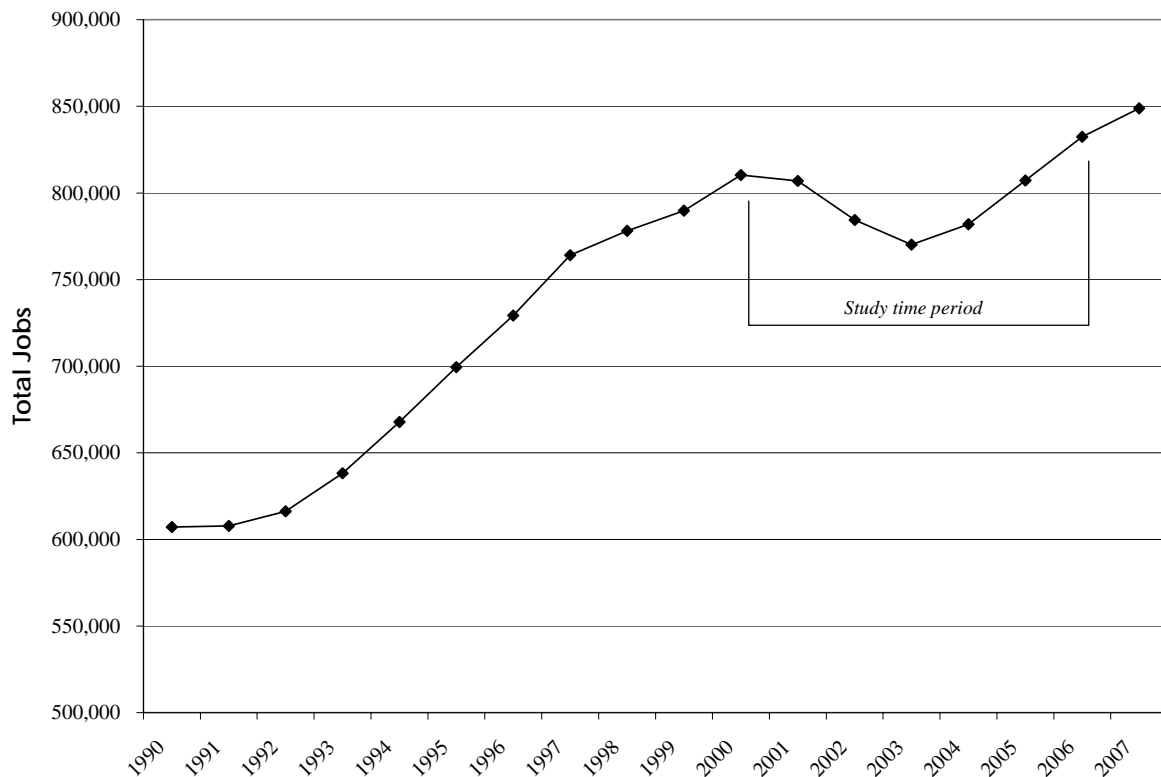
- I. Employment Trends
- II. Development Trends
- III. Demand Factors

## I. EMPLOYMENT TRENDS

The employment trends analysis reviews tri-county regional job growth through the *dual lenses* of regional subareas and land use designations. This review is intended to inform the allocation of projected future regional employment between subareas and land use designations, together with longer-term, regional-level job trends. Past trends are considered to be one, but not the only, indicator of future growth potentials.<sup>2</sup>

Subregional employment trends have been analyzed using geocoded Employment Security 202 (ES 202) data for the years 2000 and 2006. Geocoding allows for sub-regional analysis of employment trends, and as a relatively recent data innovation, this is the longest time period for which data is available. This period covers close to a full economic cycle; however, tri-county job growth during this recent period of recover and expansion was relatively weak compared with regional job gains experienced during the previous decade, averaging only 0.5% annually.

**Figure 1. Tri-County Covered Employment Trends (1990-2007)**



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

<sup>2</sup> This discussion of employment trends updates and revises an initial draft memo dated November 11, 2008, and incorporates newly geocoded (mapped) employment data for improved accuracy. 2006 is the latest year for which detailed geocoded employment information is currently available.

**Data Limitations.** ES 202 data is the most comprehensive and timely source available, compiled from employees covered by unemployment insurance and generally covering about 85% of all employment.<sup>3</sup> Other than firms expanding or declining and opening or closing, there are two primary issues associated with this data that impact its portrayal of job growth:

- 1) Employment has been parceled out to sites for employees with multiple sites, and this process may be more or less accurate in one of the two years (with a tendency towards greater accuracy in later years).
- 2) Employers self-report NAICS, which can vary over time (even for some larger firms).

The second set of issues related to changing employment classification is of greater concern, for several reasons including:

- National changeover from the Standard Industrial Classification (SIC) to North American Industry Classification System (NAICS) occurred post-2000, leading to new classifications and some confusion for many employers.
- There appears to be some trend toward companies reporting more than one NAICS, with a separate NAICS assigned to groups of employees as appropriate. For instance, in 2000 one major Portland area firm described its employment sites as concerned with retail and wholesale. In 2006, it described various employment sites as concerned with retail, wholesale, warehousing, and the management of companies. This greater detail in and of itself has shifted some employment away from the industrial sectors, as employment appears to be increasingly split between a company's former 'primary' industry classification (e.g. warehousing, manufacturing) and other classifications (such as management, which falls within the service sectors).
- If a company buys another company, the acquired company often will take on the NAICS of the parent company.
- The nature of a business may change, or a business may change its understanding of its core function.
- Companies self-report NAICS, and sometimes are inconsistent over time.<sup>4</sup>

*Because of these issues, sectoral-level changes (for instance, the reported decline in manufacturing jobs and increase in service jobs) are best understood as shifts in the nature of the region's employment rather than necessarily as job growth or decline within a firm.*

---

<sup>3</sup> Alternative data sources include the Covered Employment Statistics, a sample survey-based time series that is adjusted to match ES 202 data, and the Economic Census, completed once every five years (with a several year lag before data release and not available at a sub-regional level). Total firm employment has been allocated to employment sites when appropriate; however, geocoding error remains one risk associated with the data and the conclusions drawn from the geocoded data base.

<sup>4</sup> Metro staff and EDH reassigned year 2000 NAICS for approximately 1,300 out of 59,000 records with consistent names and addresses in both years but inconsistent NAICS codes.

*Employment data should also be viewed as most reliable when summed on a geographic subarea or design type level, rather than when sectoral-level data is compared over time. This approach is consistent with anticipated forecast allocations, which may place equal or greater reliance on patterns of subregional and design type rather than sectoral allocations.*

This chapter reviews employment trends within the time period for which subregional data is available are reviewed by:

- Employment sector
- Subarea geographies
- 2040 Design Types

## EMPLOYMENT BY INDUSTRY SECTOR

As of 2006 there were just over 842,000 non-farm jobs in the tri-county region (excluding the largely non-urban agriculture, fish and forestry sector).<sup>5</sup> This figure represents a modest 0.5% annual increase over 2000 tri-county employment, or 22,500 new non-farm jobs over a six-year period. Reported post-2000 job growth is significantly lower than the 2.9% annual average reported for 1990 through 2000.

For context, the tri-county's weak job growth post-2000 was not unique. It was well above the national average job growth rate (of only 0.3%), indicating that in fact the Portland region fared better than many areas. Statewide growth job growth also fell after 2000, but remained about twice the annual average reported for the tri-county area over the entire 2000-2006 period.

In 2006, the tri-county region captured 83% of jobs within the larger seven-county geography (including Clark and Skamania Counties, Washington, and Oregon's Columbia and Yamhill Counties). Clark County captured the bulk of the remainder. The tri-county's capture of the seven-county PMSA fell slightly in 2006 from 84% in 2000. The share of seven-county employment within the Urban Growth Boundary was nearly as high, and also declining: 79% in 2006 and 81% in 2000.

Job change is reported in the following table by two-digit NAICS (North American Industrial Classification System), as well as by the four major NAICS groupings used throughout this report:

- Industrial (of which manufacturing is a subset)
- Retail
- Services
- Public sector

*Note:* 'Other' is a final remnant category of unclassified jobs.

---

<sup>5</sup> This sector reports wide fluctuations; reporting requirements vary by firm size, which tends to vary annually.



Region-wide, net employment gains are indicated only for the services and public sectors over the six-year study period considered. Services now comprise 56% of the tri-county non-farm economy. This aggregated sector increased by just fewer than 44,000 jobs, a 1.3% average annual growth rate (compared with roughly a 3.5% growth rate during the 90s).

**Figure 2. Three-County Job Change by Two-Digit NAICS (2000-2006)**

EDH Sector	NAICS	2000	2006	2006 Distribution	Change Net	AAGR
Industrial	21 Mining	490	430	0%	(60)	-2.2%
	22 Utilities	7,030	4,000	0%	(3,030)	-9.0%
	23 Construction	44,900	48,980	6%	4,080	1.5%
	31 Man: food, textile, apparel	10,090	9,370	1%	(720)	-1.2%
	32 Man: wood, petrol, chemicals	21,680	19,170	2%	(2,510)	-2.0%
	33 Man: metal, machine, computer	81,670	78,170	9%	(3,500)	-0.7%
	<i>Manufacturing subtotal</i>	<i>113,440</i>	<i>106,710</i>	<i>13%</i>	<i>(6,730)</i>	<i>-1.0%</i>
	42 Wholesale Trade	53,490	51,390	6%	(2,100)	-0.7%
	48 Transportation	27,190	25,040	3%	(2,150)	-1.4%
	49 Transport & Warehousing	12,540	13,720	2%	1,180	1.5%
	<b><i>Industrial subtotal</i></b>	<b><i>259,080</i></b>	<b><i>250,270</i></b>	<b><i>30%</i></b>	<b><i>(8,810)</i></b>	<b><i>-0.6%</i></b>
Retail	44 Retail	57,360	58,510	7%	1,150	0.3%
	45 Retail: Dept, misc.	33,710	28,460	3%	(5,250)	-2.8%
	<b><i>Retail subtotal</i></b>	<b><i>91,070</i></b>	<b><i>86,970</i></b>	<b><i>10%</i></b>	<b><i>(4,100)</i></b>	<b><i>-0.8%</i></b>
Services	51 Information	26,600	20,440	2%	(6,160)	-4.3%
	52 Finance & Insurance	41,370	45,450	5%	4,080	1.6%
	53 Real Estate	21,400	18,980	2%	(2,420)	-2.0%
	54 Prof., Scientific, Tech Services	42,220	43,930	5%	1,710	0.7%
	55 Management*	9,130	21,010	2%	11,880	14.9%
	56 Admin Support, Waste	48,420	53,660	6%	5,240	1.7%
	61 Education	67,800	65,590	8%	(2,210)	-0.6%
	62 Health & Social Asst.	73,200	90,120	11%	16,920	3.5%
	71 Arts, Enter., Recreation	12,830	12,440	1%	(390)	-0.5%
	72 Accommodation & Food	58,650	65,670	8%	7,020	1.9%
	81 Other Services	33,280	31,560	4%	(1,720)	-0.9%
	<b><i>Service subtotal</i></b>	<b><i>434,900</i></b>	<b><i>468,850</i></b>	<b><i>56%</i></b>	<b><i>33,950</i></b>	<b><i>1.3%</i></b>
Public	92 <b>Public Administration</b>	<b>30,470</b>	<b>35,690</b>	<b>4%</b>	<b>5,220</b>	<b>2.7%</b>
Other	99 Unclassified	650	240	0%	(410)	-15.3%
	0 Unclassified	3,380	-			
	<b>Total</b>	<b>819,550</b>	<b>842,020</b>	<b>100%</b>	<b>22,470</b>	<b>0.5%</b>

\*Note: Between 2000 and 2006, the industrial classification system changed from the Standard Industrial Classification System to the North American Industrial Classification System. 2000 NAICS data was converted to SIC codes, but some reported job change is the result of incompatibility between these two systems, particularly within the management sector.

Source: ES 202, Metro, E.D. Hovee & Company, LLC.

Health care and social assistance lead the service sector's job growth, with a net gain of close to 17,000 jobs, equal to 75% of the region's total net job growth. Other areas of service sector

growth were experienced with accommodation and food service, public administration, administrative support and waste management, finance and insurance and construction.<sup>6</sup>

The employment growth reported for the new management sector appears due in large part to reclassification of jobs (moving to the NAICS from the Standard Industrial Classification system) as much as actual growth in corporate headquarters jobs. Information is also a newly added sector and therefore also subject to error in trends reporting, but its loss of 6,000+ is in line with sustained job losses following the technology (dot-com) bust of 2001-2.

The industrial sector includes construction, manufacturing and wholesale and distribution. This sector contracted at an average of -0.6% annually during the study period, despite gains in both construction and transport and warehousing. This is a sharp contrast to the 2.6% annual growth during the 90s.<sup>7</sup>

In 2006 industrial jobs comprised about 30% of the tri-county job base, with manufacturing about 40% of that total (or 13% of regional jobs). Over the 2000-2006 time period the manufacturing subsector contracted even more rapidly than the larger industrial sector, at a rate of about -1.0% annually. At least a portion of this job loss may be associated with businesses retracting and moving outside of the tri-county area (for instance, to Vancouver Washington), as well as the administrative changes reported above (e.g. businesses re-coding themselves). A countervailing trend of note over this time period is manufacturing output, which the Bureau of Economic Analysis reports increased by more than \$9 billion for the seven-county region between 2001 and 2006. Within the manufacturing sector, business growth (or profit) appears to contradict job growth, due in part to high commodity pricing and strong export markets. Equivalent data for other industrial sectors such as transportation and warehousing is suppressed due to confidentiality.

Retail employment also contracted over this time period. Ten percent of tri-county employment is within the retail sector, which contracted at -0.8% annually (vs. 2.3% growth during the 90s).

## EMPLOYMENT BY SUBAREA GEOGRAPHY

A second way of considering employment trends is by geographic subarea. For purposes of subregional analysis, the Portland tri-county region has been divided into nine market subarea geographies as illustrated on the following map. Subareas are intended to reflect major market distinctions, and vary in geographic size and current job density. Subareas also represent aggregations of Metrostat Census Tract geographies.<sup>8</sup>

---

<sup>6</sup> As of 2008, widely reported construction job loss still did not appear within OED employment numbers.

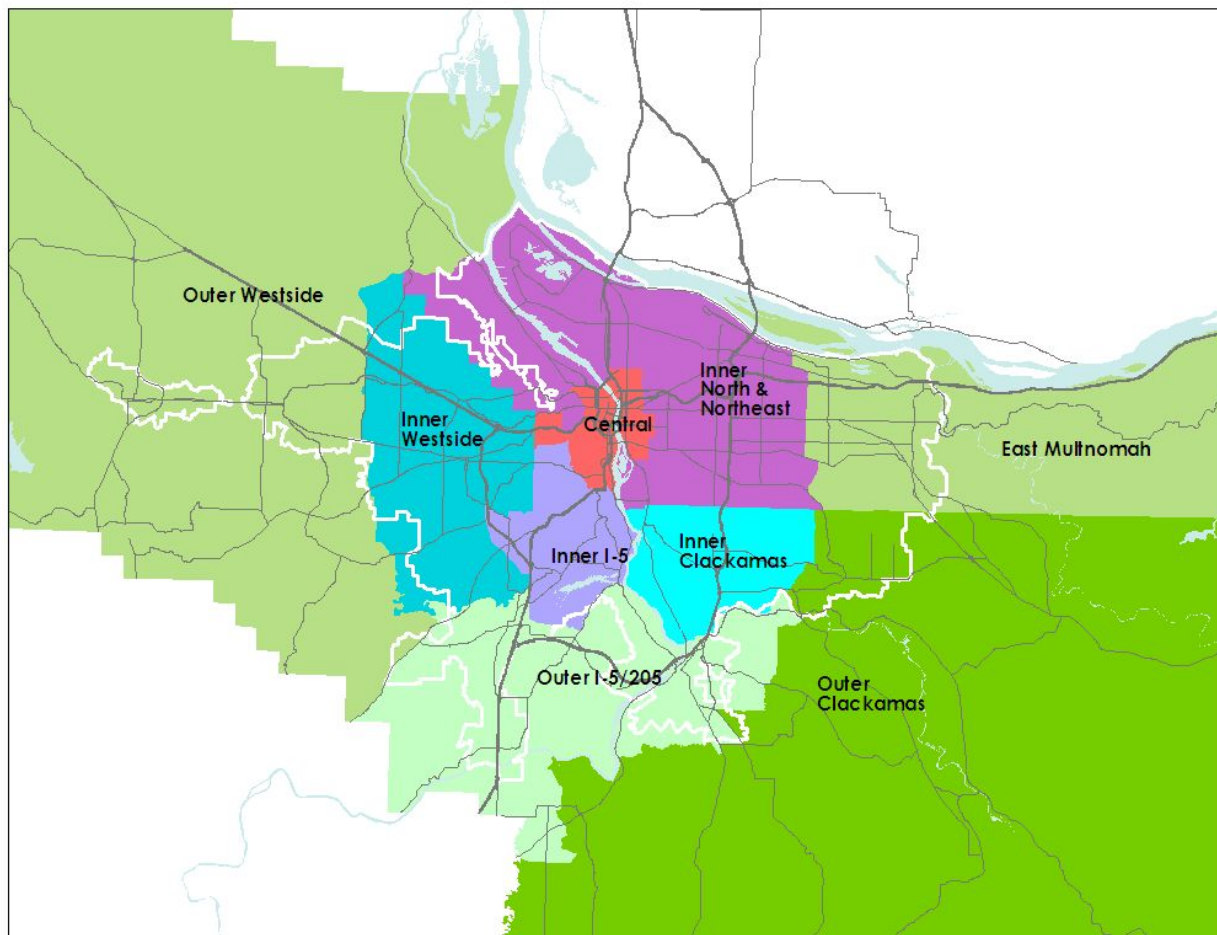
<sup>7</sup> Job gains have been noted for some portions of manufacturing during the post-2001 period of economic recovery, especially in leading edge firms that also benefited from devaluation of the dollar. However, it remains to be seen whether the overall shift away from industrial employment continues or can be arrested within portions of the region's economy for which sustainable competitive advantage can be demonstrated.

<sup>8</sup> Some notable and unavoidable anomalies derive from this need to conform Metrostat census tract boundaries. An example is the inclusion of Hillsdale and Providence St. Vincent within the Central subarea.

The nine subareas can be further aggregated to three overall *ring geographies*:

- Central (also a subarea)
- Inner ring (Inner North & East, Inner Westside, Inner I-5 and Inner Clackamas)
- Outer ring (Outer Westside, East Multnomah County, Outer Clackamas and Outer I-5/205).

**Figure 3. Market Subarea Geographies**



Note: Subareas are compatible with E-zone geography (aggregations of Census Tracts) to allow for comparison with Metroscope outputs.

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

As noted, there is a greater degree of confidence in employment trends reported by subarea geography (not broken down by jobs sector) as an indication of total job changes within the region.

Of the nine tri-county subareas, the Central subarea comprises the largest number of jobs with approximately 24% of the region's employment as of 2006. Inner North & East Portland represents the subarea with the 2<sup>nd</sup> largest employment base at 22%; the Inner Westside encompasses about 14%. The remaining subareas contain less than 10% of the region's employment each.

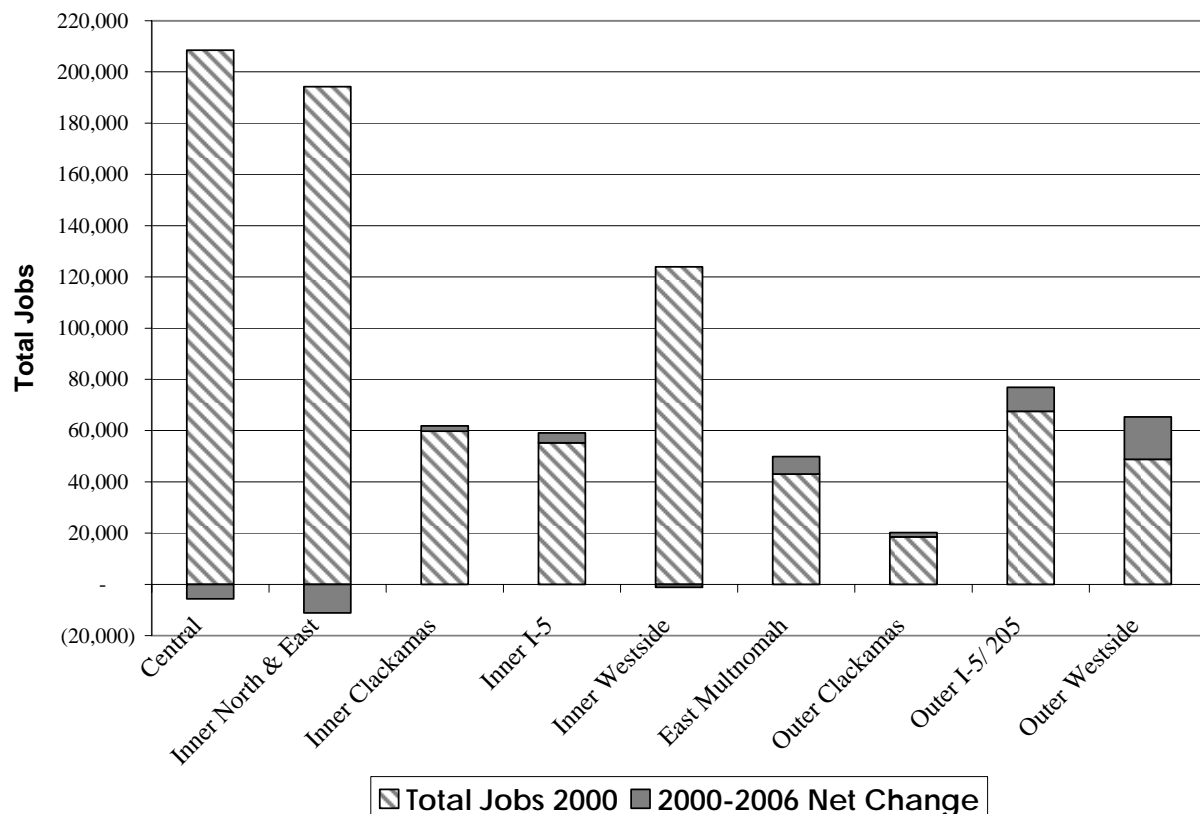
When the nine market subarea geographies are aggregated into central, inner and outer rings, their respective shares of total employment are as follows:

- Central: 25% (declining 0.5% annually)
- Inner ring: 50% (declining 0.2% annually)
- Outer ring: 26% (growing 3.2% annually)

Despite the region's significantly reduced growth post-2000, some subareas and design types were more successful in attracting new jobs.

**Subarea Overview.** Subarea job totals and net growth between 2000 and 2006 are illustrated by the following chart. While the Central and Inner North & East subareas account for the largest shares of the region's employment base, both have experienced job losses over the last 6 years (losses of 5,700 and 11,100 respectively). The Inner Westside also reports job losses of 1,100.

**Figure 4. 2006 Subarea Job Totals and Net Growth (2000-2006)**



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

Outer ring subareas reported much stronger growth trends, increasing its share of regional employment from 22% to 25% over these six years. Annual gains in each of the four subareas averaged 1.6% - 5.6% annually. The single fastest growing subarea is the Outer Westside

(adding 16,500 jobs in 6 years at more than twice the growth rate of any other subarea). Outer I-5/205 and East Multnomah County also both reported annual growth above 2%.

The following table portrays the same information in numerical format.

**Figure 5. Subarea Growth Trends (2000-2006)**

	Inner Ring					Outer Ring			
	Central	Inner North & East	Inner Clack.	Inner I-5	Inner Westside	East Mult.	Outer Clack.	Outer I-5/205	Outer Westside
Total Jobs 2006	202,800	183,300	61,900	59,100	122,900	49,900	20,167	76,900	65,300
2006 Share	24%	22%	7%	7%	15%	6%	2%	9%	8%
2000-2006 Net Change	(5,700)	(11,100)	2,000	3,900	(1,100)	6,900	1,717	9,400	16,500
Annualized Growth	-0.5%	-1.0%	0.6%	1.2%	-0.1%	2.7%	1.6%	2.3%	5.6%

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

While outside of the analysis scope of this report, Clark County functions as part of the Portland economy and labor shed. Non-agricultural job growth within Clark County appears to have followed outer ring trends, growing at an average annual rate of 2.2% – well above the tri-county average. At 130,000 jobs in 2006, Clark County represents about half as many jobs as the tri-county outer ring subareas combined, and added 16,000 additional jobs between 2000 and 2006.

***Subarea Trends by Job Sector.*** Job growth between 2000 and 2006 can be further described in terms of shift between employment sectors. As discussed above, sectoral changes should be understood as shifts in the nature of employment as well as actual job losses or gains.

This review indicates substantial shifting of employment activity both between subareas and by industry sector:

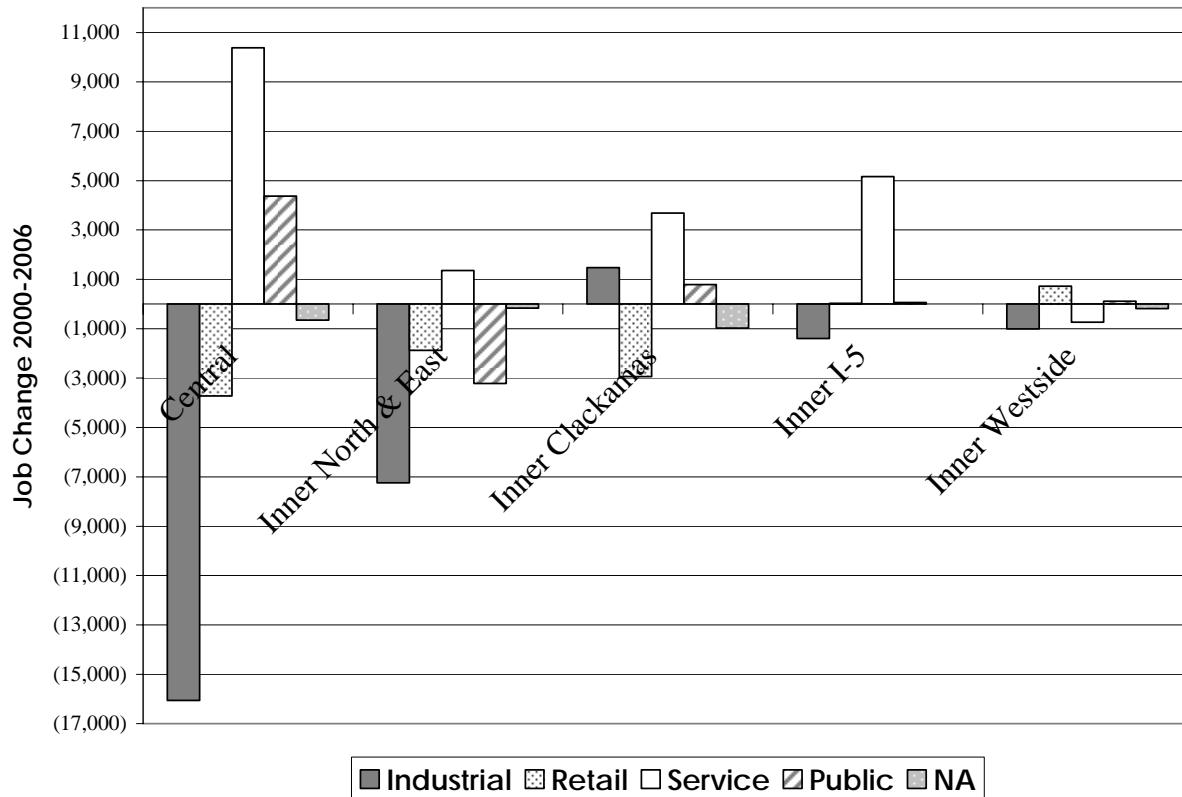
- When grouped together, the *outer ring* subareas gained jobs across all of the four broad job sector aggregations of industrial, retail, service sector and public sector.<sup>9</sup>
- Within the *Central* and aggregated *inner ring* subareas, in contrast, employment shifted away from the industrial and retail sectors, and the inner ring subareas report public sector job declines as well.
- Only service sector jobs increased across *all three* of the ring geographies.

**Industrial:** Over the study timeframe, the Central and most inner ring subareas report lower numbers of jobs identified with the industrial sectors: utilities, manufacturing, wholesale trade, and transportation & warehousing. Inner Westside subareas report declines of 1,000 to 1,400

<sup>9</sup> NAICS 2-digit sectors aggregated into these groupings are as follows. Industrial: 11,21,22,23,31,32,33,42,48,49. Retail: 44,45. Service Sector: 51,52,53,54,55,56,61,62,71,72,81. Public Administration: 99.

jobs within these sectors; Inner North & East of 7,000, and the Central subarea of over 16,000 industrial jobs.

**Figure 6. Job Sector Trends within Central and Inner Ring Subareas (2000-2006)**



Note: NA indicates jobs without a NAICS classification

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

Re-classifying portions of industrial companies as ‘management’ (a service sector classification), likely accounts for a portion of this jobs shift, although data checking attempted to correct for this.

Inner Clackamas was the one exception to the close-in shift away from industrial jobs; this subarea gained close to 1,500 industrial sector jobs, with gains in both durable manufacturing and transportation and warehousing.

Despite the widespread shift away from industrial employment, as of 2006 the central and inner rings still retained more than 75% of the region’s jobs in utilities, wholesale trade, transportation and warehousing.

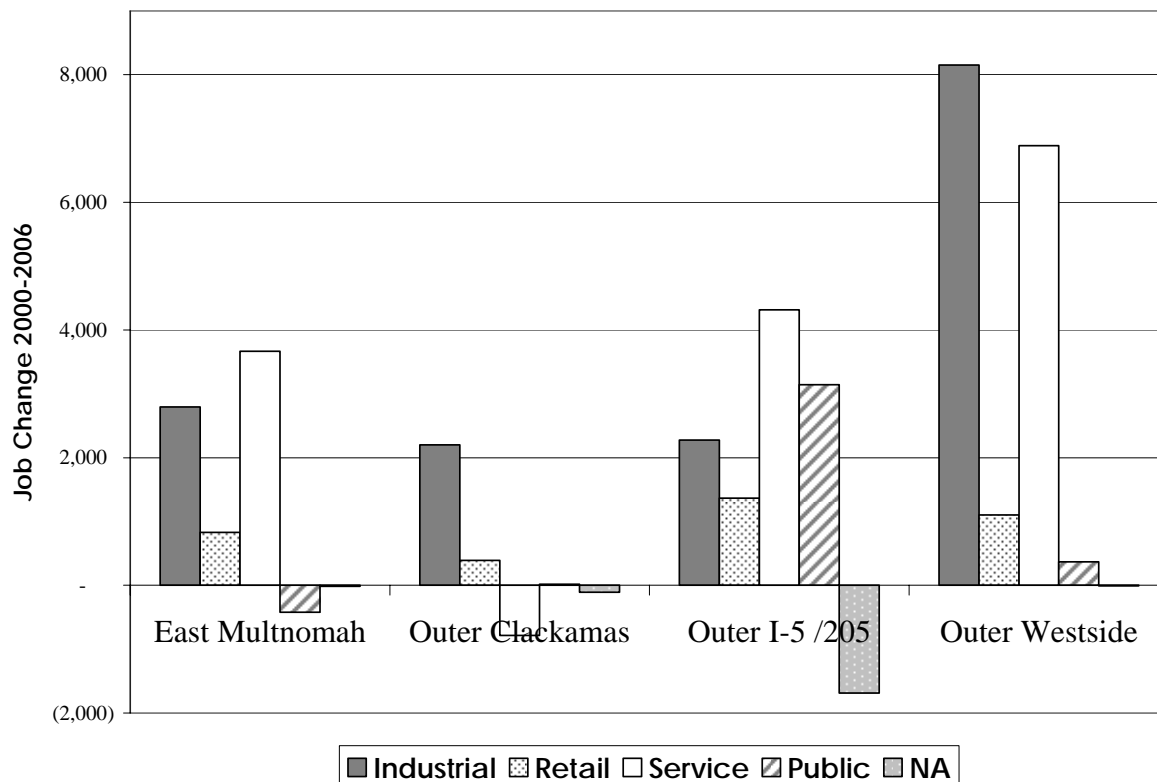
In contrast to the inner shift away from the industrial sectors, these sectors grew in all outer ring subareas: by approximately 8,200 jobs in the Outer Westside and more modest gains ranging from 2,200 to 2,800 in the remaining subareas.

Of the industrial sectors, manufacturing especially favored the outer ring, largely due to the Outer Westside manufacturing job gains of over 5,400. By 2006, the outer ring subareas represented 47% of the region's manufacturing jobs (up from 41% just six years earlier).

Construction employment (a part of the industrial sector aggregation) declined within the Central City and added twice as many jobs in the outer ring as in the inner ring (4,200 and 1,900 jobs, respectively).

**Retail:** Retail appears to be following the over-all trend of the region's jobs in moving outward. Within the Central subarea, jobs identified as retail declined by 3,700. Inner North & East and Inner Clackamas subareas also reported declines of 1,900 and 3,000 respectively. In contrast, retail employment increased in all outer ring subareas by a range of 400 to 1,400 net added jobs.

**Figure 7. Sectoral Trends within Outer Ring Subareas (2000-2006)**



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

**Services:** Services represent the one sector with growing numbers across almost all of the region's market subarea geographies. Over the six-year time frame, a substantial number of jobs were added in each ring:

- Central: +10,400
- Inner ring: +9,500 (with the Inner Westside reporting a loss, largely due to declines within the information and finance sectors)

- Outer ring: +14,100 (with the greatest gains in the Outer Westside – 7,000 – and a decrease of 800 reported for the Outer Clackamas subarea)

Health care and social assistance, administrative and waste management and finance and insurance were the greatest contributors to inner ring subarea service job gains. In the outer ring, growth in these sectors was matched in accommodation and food service. Management, public administration and education stand out as service growth drivers in the Central subarea.

## EMPLOYMENT BY DESIGN TYPE

The 2040 Growth Concept defines design types intended to guide growth and implement the 2040 regional vision:<sup>10</sup>

- Urban focused design types include the Central City, Regional Center, Town Center, and Corridor designations.
- Three Title 4 designations are also analyzed: Regionally Significant Industrial Areas (RSIAs), Industrial Areas and Employment Areas. These are intended to preserve land for industrial and employment uses by limiting non-industrial uses (particularly retail).

When these seven Design Type (including Title 4) designations are combined, they contain approximately 75% of all tri-county employment. The remaining 25% of the tri-county non-farm job base is located along streets not designated as corridors and within residential zones (e.g. as with a number of school, medical and other institutional uses). Jobs located in areas not designated with any of the Design/Title 4 types are classified as ‘Other.’

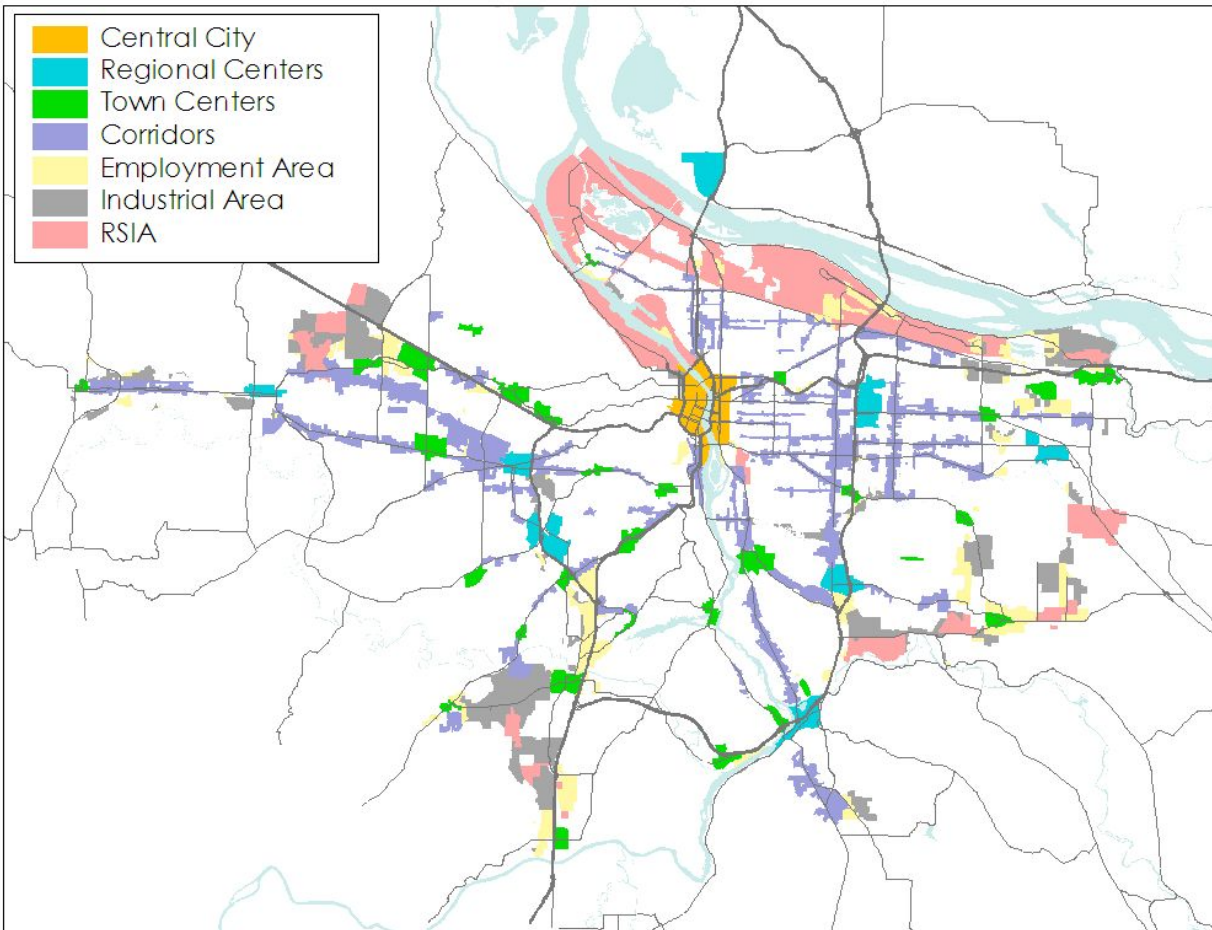
The analysis areas that correspond to the four urban design types and three Title 4 areas are illustrated by the following map.

---

<sup>10</sup> Station areas have not been analyzed due to their frequent overlap with other 2040 Design Types. Title 4 land is here defined as land not within a 2040 center or corridor Design Type, some of which overlap. This methodology enables all of the Design Types indicated to be summed to equal total regional jobs – as a control total.



**Figure 8. 2040 Growth Concept Employment Design Type Geographies**



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

***Design Type Overview.*** To give context to this design type discussion, the following table reports total acreage within parcels within the seven design types. This illustrates that parcels within Title 4 lands account for more than 40,000 acres region-wide, approaching four times the acreage identified with the urban design type designations. Design types are also not evenly distributed among the subareas: Inner North and Northeast contains almost 70% of the region's RSIA land, for example, whereas the majority of both Industrial and Employment Areas are located within the region's outer ring.

In general, Title 4 areas were intended to preserve land for employment uses. However, the character of these areas varies across the region, as they were fairly recently identified by local jurisdictions (by Metro's action in 2002) with varying land use and economic development objectives. For instance, some jurisdictions classified rail-served land as an Industrial Area; others classified rail-served land as Employment Area. In many cases designations were applied to land already developed with significant employers or public uses (corporate headquarters, airports, prisons). There are no lands indicated as having the RSIA designation with the Inner I-5 and Inner Westside market subarea.

**Figure 9. Parcel Land Area within Design Types (in acres)**

Subarea	Central City	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Total
Central	420	2		90	120	80	210	920
Inner N/NE	2	250	640	270	13,060	410	1,180	15,810
Inner Clackamas		420	500	480	820	870	630	3,720
Inner I-5		170	370	680		70	690	1,980
Inner Westside		380	770	1,920		530	920	4,520
East Multnomah		30	410	800	2,050	2,300	1,440	7,030
Outer Clackamas				210	950	2,080	1,500	4,740
Outer I-5/205		690	540	940	570	3,600	1,660	8,000
Outer Westside		380	210	300	1,260	2,800	410	5,360
Total	400	2,300	3,440	5,690	18,830	12,740	8,640	52,080
Percent	1%	4%	7%	11%	36%	24%	17%	100%
Central	100%	0%	0%	2%	1%	1%	2%	
Inner Rings	0%	53%	66%	59%	74%	15%	40%	
Outer Rings	0%	47%	34%	40%	26%	85%	58%	

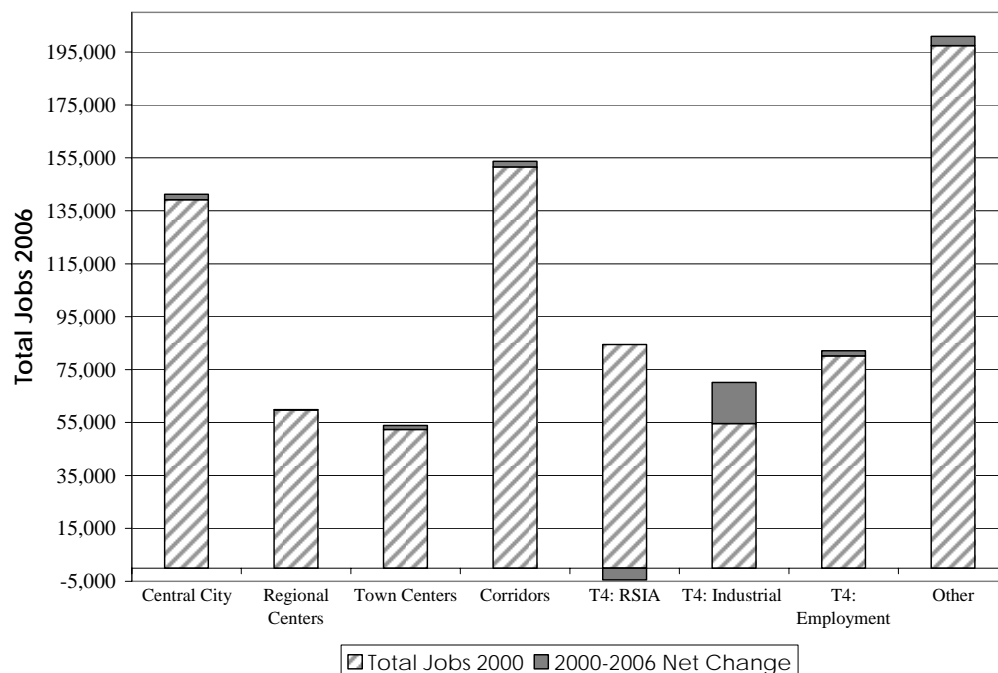
Source: Metro, RLIS, E.D. Hovee & Company, LLC.

The category of ‘Other Areas’ is not reflected within the above acreage chart; this residual category includes all tri-county land not within a designated design type (hundreds of thousands of acres).

Of Metro’s identified Design Types, Corridors and Central City accommodate the largest number of jobs at about 154,000 and 141,000 2006 jobs respectively. Taken together, these two design types account for 35% of the tri-county region’s job base but only 5% of the acres within the seven design types analyzed in this report.

However, more jobs (nearly 209,000 or 25% of the regional total) are accounted for by ‘Other’ employment than by any one of the design types. Job growth on land not captured within a Design Type was below the tri-county average.

**Figure 10. 2006 Employment & 2000-2006 Growth by 2040 Design Type**



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

The most significant job gains by far are reported for industrial areas (+ 15,600 jobs). All other Design Types gained between 100 and 2,200 jobs over this time period. ‘Other’ land (not classified as a Design Type) gained 3,500 jobs.

Of the urban design types, Town Centers appear to fare the best with a modest 0.5% annualized growth rate, equal to the regional growth average. The Inner Westside added 3,150 jobs within its nine Town Centers, which together represent 30% of the region’s Town Center acreage. Outer Westside, Inner North & Northeast and Inner Clackamas also reported Town Center gains. It is important to note that trends within the relatively smaller geographies of Town Centers, Regional Centers and Corridors can be more susceptible to substantial job changes from actions of single prominent employers rather than broad economic trends.

The Central City experienced slower growth of about 0.2% per year. It is important to note that the Central City design type is distinct from the Central subarea, which has about 30% more jobs with a larger geographic boundary, and which reported job losses during the study time frame.<sup>11</sup>

Job growth within Corridors (including Main Streets) occurred at a modest rate about equivalent to that of the Central City at 0.2% per year. Corridor job growth varied widely by subarea: an average loss of about 2,100 jobs was reported for the Central and Inner Clackamas subareas, IN

<sup>11</sup> The primary geographic difference is that the Central subarea encompasses more land on the Westside than does the Central City design type, suggesting that the *subarea’s* job declines occurred west of I-405.

contrast, the Outer Westside, Outer I-5/205 and Inner Westside subareas reported an equivalent average gain.

Regional Centers fared least well with negligible job growth (0.03%), primarily due to losses significant losses indicated for the Inner Westside (Beaverton and part of Washington Square) that off-set gains in other subareas, primarily the outer subareas of East Multnomah and Outer Westside.

**Figure 11. 2006 Employment & 2000-2006 Growth by 2040 Design Type**

	Urban Design Types				Title 4 Areas*				Total
	Central City	Corridors	Regional Centers	Town Centers	RSIA	Industrial	Employment	Other	
Total Jobs 2006	141,280	153,740	59,870	53,900	80,040	70,170	82,080	200,950	842,040
2006 Share	17%	18%	7%	6%	10%	8%	10%	24%	100%
2000-2006 Net Change	2,060	2,200	110	1,480	(4,460)	15,600	1,930	3,550	22,480
2000-2006 Annualized Growth	0.2%	0.2%	0.0%	0.5%	-0.9%	4.3%	0.4%	0.3%	0.5%

Note: Title 4 jobs reflect those jobs *within* Title 4 areas but *outside* of centers and corridors (some of which overlap with Title 4 areas).

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

Title 4 areas report some of the strongest growth trends, particularly Industrial Areas (at an annualized growth of 4.3%). Again, these areas are disproportionately located in the outer subareas, where 85% of the tri-county's Industrial Areas acreage is located. The Central subarea reported losses (corresponding to the Central Eastside and portions of Lower Albina); all other subareas reported a gain. Significant gains include the Outer Westside (+8,250), East Multnomah (+4,330) and Outer I-5/205 (+2,540). Inner Clackamas and Inner Westside also each added over 1,000 jobs within Industrial Areas.

In contrast, RSIA report job *losses* averaging 0.9% annually. Seventy percent of RSIA land is within the Inner North and Northeast subarea, along the Willamette and Columbia Rivers, the Columbia Corridor, and surrounding the airport. This designation includes all of the Port of Portland's properties, and the region's land with the longest industrial tradition. Known issues impacting some vacant and underutilized parcels within the harbor area include unresolved contamination, older facilities that require retooling, and some pricing pressure for land that interfaces with urban development. At sites with substantial remediation costs, redevelopment for industrial use may be more financially challenging than for commercial uses (as industrial is typically associated with lower average per acre pricing. It is unknown the extent to which these issues have impacted the reported job losses within North & Northeast RSIA (-2,500 jobs).

RSIA losses were in fact the largest within the Central subarea, however, at close to -3,000. This RSIA covers the Fred Meyer and Tri-met headquarters sites (between SE Powell and SE Holgate) and surrounding uses. Two thirds of the reported job loss is attributed to Tri-Met,

potentially changes of employment location. The remainder is dispersed among smaller employers.

***Design Type Job Sector Trends.*** Reviewing Design Type job changes at a finer level of detail – by job sector – is less stable and more subject to data ‘noise’ than reviewing job totals. Keeping this in mind, design type job trends have been reviewed via four broad job sector aggregations: industrial, service, retail and public sector.

The *first chart* displays trends within the 2040 Design Types of Centers and Corridors. Employment shifted away from the industrial sectors within all of these urban design type categories. The greatest industrial sector job losses were within:

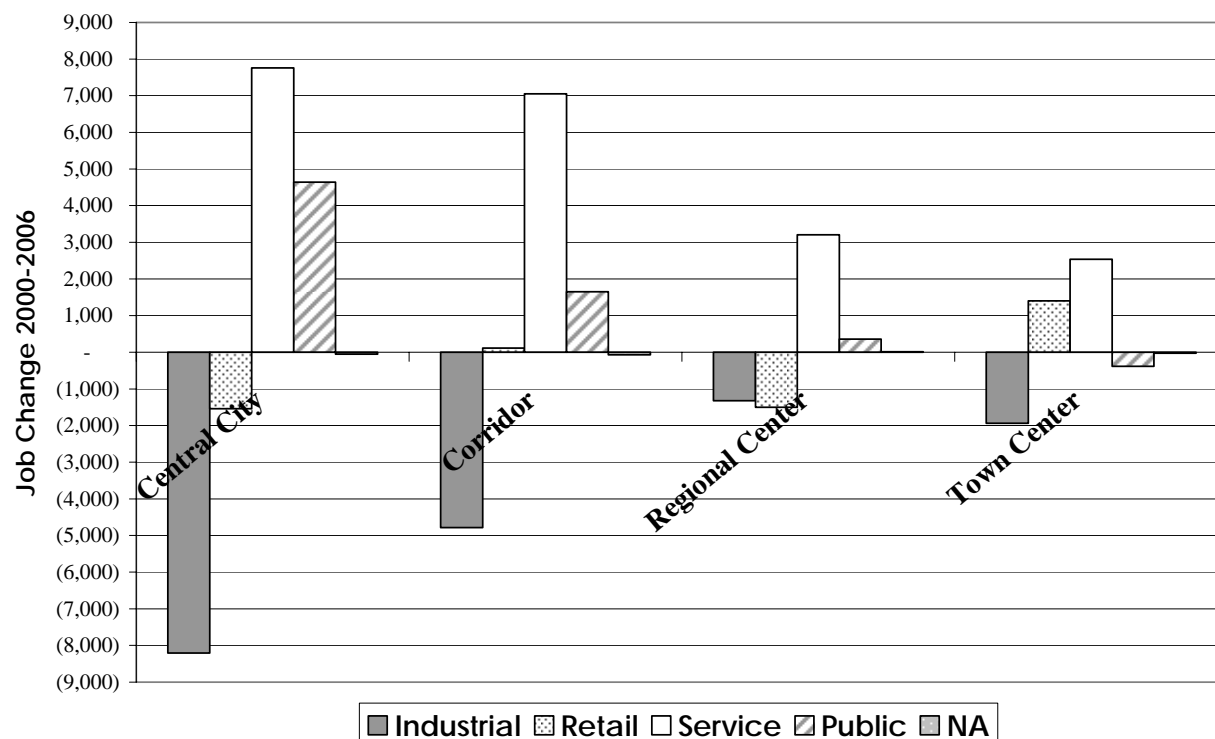
- The Central City (-8,300)
- Outer I-5/205 (-1,600)
- Inner Westside Regional Centers (-1,300)
- Inner I-5 Town Centers (-600)
- Inner North and Northeast Regional and Town Centers (-250 each)

Inner Westside Town Centers were the only Design Type to add more than 50 jobs over this time period.

Retail also is indicated as a declining job sector the Central City and within Regional Centers, with widespread losses in all subareas but Outer I-5/205 (+300) and East Multnomah County (+200).

Service jobs exhibited the greatest growth, increasing at average annualized rates between 1% and 2% across all the urban Design Types (2-3 times the regional total job growth rate). Public sector employment increased for all Design Types but Town Centers, but most significantly in the Central City (+4,650 jobs).

Figure 12. Sectoral Trends within Urban Design Types



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

Job growth with Title 4 Areas has been more varied, as depicted by the above chart. Within the Regionally Significant Industrial Areas (RSIAs), net job losses are primarily attributed to industrial job loss within the Central subarea (-3,100) and Inner North and Northeast (-5,700). Jobs classified as retail also declined within RSIAs, in every subarea by East Multnomah. The Central and Inner Clackamas RSIAs report a loss of more than 1,000 retail jobs each.

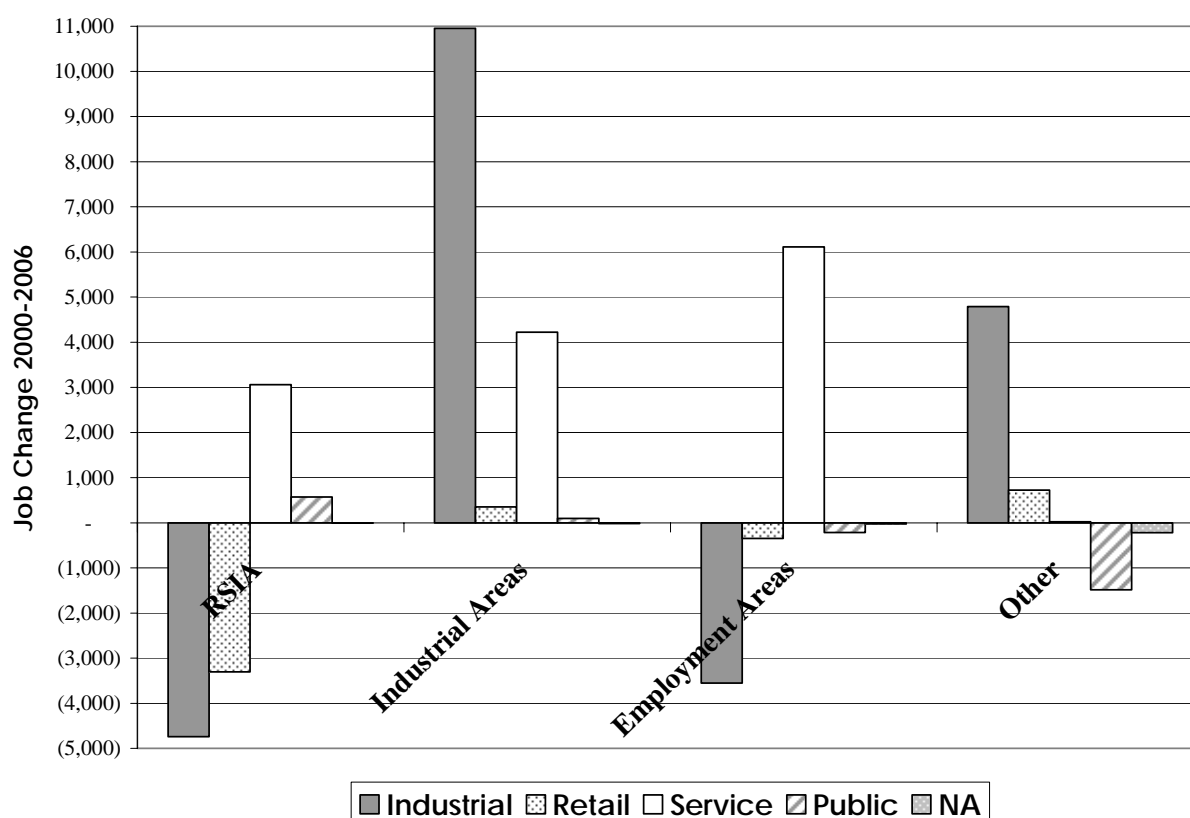
RSIA industrial and retail losses were partially offset by service sector gains, or shifts towards service sector functions: the Central City RSIA reported an increase of 2,000 service sector jobs, and Inner North and Northeast RSIAs reported +500 service jobs. Region-wide, RSIAs added 3,600 service jobs. Again, this in part reflects the changing description of employment: in 2000, Tri-met described its 2,900 Central subarea RSIA jobs as within the transportation sector; in the year 2006 at the same location it reported a decline of jobs – to 900 – now classified within various service sectors.

Employment Areas reported an over-all annual growth just below the regional average. This was despite a reported net decline in industrial sector jobs of -3,500 (all associated with Central and Inner Ring subareas). Service sector growth outweighed this loss: a net regional gain of 5,900 jobs was fueled by growth within the Central subarea (+2,000), Inner I-5 (+3,800), Outer I-5/205 (+1,000) and the Outer Westside (+850). Retail jobs gains and losses were less pronounced and displayed no clear trends.

In contrast to RISA and Employment Areas, Title 4 Industrial Areas report significant net industrial job gains of close to 11,000. Again, the Central subarea Industrial Areas (primarily the Central Eastside and Lower Albina) sustained significant industrial losses of close to 1,900, and Inner North and Northeast reported minor Industrial Area industrial job losses, but all other subareas reported Industrial Area industrial job gains. The outer ring subareas host 85% of the region's Industrial Areas and also dominated Industrial Area job gains, with the Outer Westside reporting growth of 7,700 Industrial Area industrial jobs, and East Multnomah and Outer I-5/205 reporting a gain of more than 2,000 Industrial Area industrial jobs each.

Service employment also grew within Industrial Areas, but far less dramatically: the Central, Inner Clackamas, Each Multnomah, Inner Westside and Outer Westside each added more than 500 Industrial Area service jobs for a regional gain of 4,300 Industrial Area service jobs (28% of total Industrial Area job gain).

**Figure 13. Sectoral Trends within Title 4 Areas**



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

‘Other Areas’ (not labeled as Title 4 or Design Type) also reported a strong shift towards industrial employment (+4,800 jobs, primarily within wholesale trade and construction). Manufacturing jobs declined within ‘Other Areas’ by close to 800 jobs.

In summary, both the Employment Areas and RSIA appear to be experiencing a significant shift in the composition of their employment bases, away from industrial and toward service sector

employment. Both areas are well represented within the Central and Inner Ring subareas (42% and 76% of all acreage, respectively). In contrast, strong industrial job growth is associated with Industrial Areas and within land not designated by a Design Type ('Other Areas'). Further research is required to inform whether this divergence in the employment mix of Title 4 lands reflects shared characteristics of land within these designations (such as simply its location within the region's inner or outer ring), or the particular characteristics of diverse businesses located on land that was largely designated after its initial development and utilization.



## II. DEVELOPMENT TRENDS

Employment growth typically affects land use in the form of industrial and commercial real estate development, the buildings in which jobs are housed. However, the relationship is not necessarily 1:1 as there are a number of factors beyond job growth that influence how jobs are translated in building form and associated land needs.

This chapter provides a review of real estate development trends, reporting sectors and metrics as typically tracked within the industrial and commercial real estate industry. Real estate sectors differ from job sectors in that they are far more generalized. The primary commercial real estate classifications used within the commercial real estate industry are:

- Office (Class A, B, C)
- Retail (by center type or ‘other’; roughly defined by size)
- Industrial (distributing/warehouse/general manufacturing)
- Flex (typically with a mix of at least 50% office space and the remainder as industrial/distribution).

To complicate matters, there is little uniformity within real estate professionals as to how product is categorized (for instance, are business parks an industrial, office or flex product?). This report at times compares growth within job sectors to growth within commercial real estate sectors, but acknowledges there is not necessarily a one to one relationship between how jobs and buildings are described or between the kinds of buildings in which a certain job sector is housed. For instance, a service sector job may be housed in an office structure, retail center or industrial building.

In the chapter following this review of development trends, additional demand factors and trends of note are explored that affect the ways in which building development and land needs respond to and influence tri-county employment.

This chapter provides additional context to inform assumptions regarding the extent and form of future employment-related development and how this will vary across the region. Primary sources of data are tax assessment data as packaged via Metro’s RLIS geocoded data set, and CoStar, a proprietary commercial real estate data base increasingly used by real estate professionals throughout this and other metro regions of the U.S. *Each data set is subject to limitations, as discussed below, but provides insight into both broad trends and subregional variations.*

Thos built environment analysis consists of two primary components, covering:

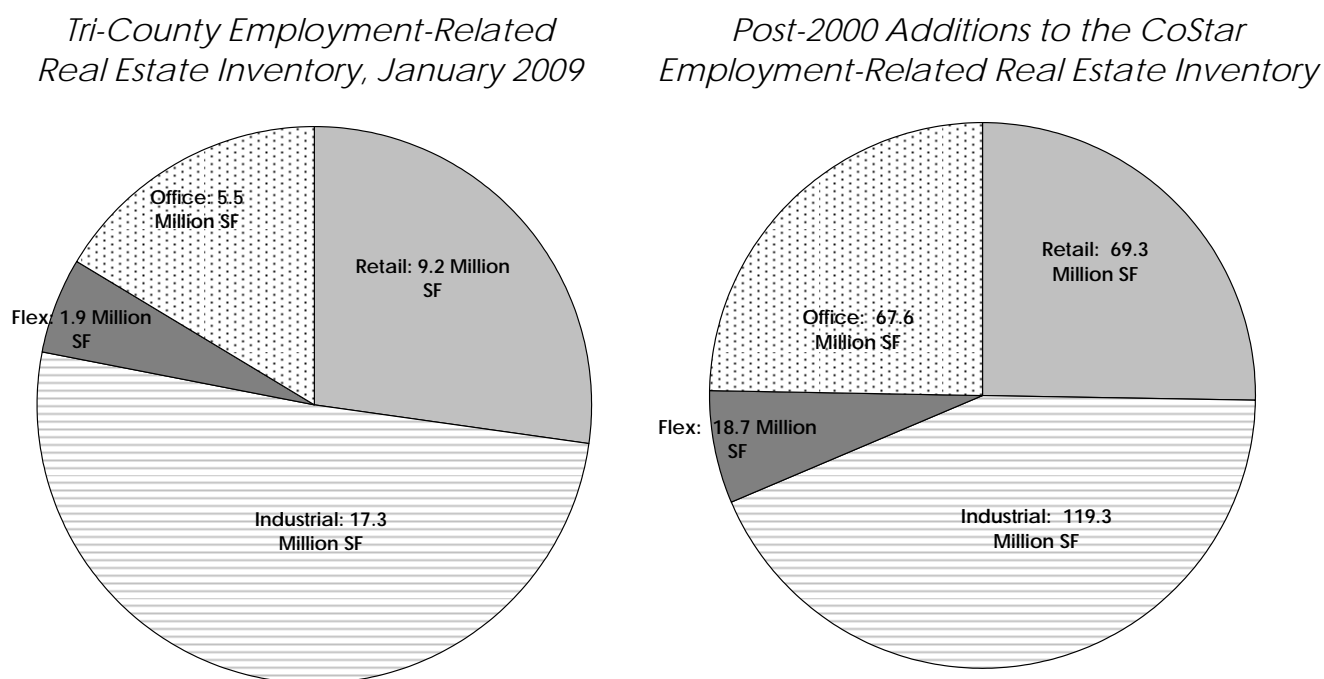
- Industrial & Commercial Broad Development Trends
- Intensity of Employment-Related Development

## INDUSTRIAL & COMMERCIAL BROAD DEVELOPMENT TRENDS

Development trend data is derived from Costar, a proprietary database primarily used by commercial brokers that has been inventorying Portland real estate (new and existing) over approximately the past five years. This is the most comprehensive industry database on the region's building stock currently available, but has been focused on multi-tenant properties. While the data base is becoming increasingly inclusive, it tends to under-represent free-standing, smaller, and older properties, including some owner-occupied industrial and neighborhood retail properties.

Data tables are provided as an appendix to this report. The tables summarize development characteristics between and within subareas. The following is summary observations for each of the four employment real estate product types considered.

**Figure 14. 2009 and Post-2000 Commercial Real Estate Inventory**



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

### *Industrial Development*

- The Costar inventory includes 120 million square feet of industrial space in the tri-county region (excluding flex space, discussed separately below). Over 17 million square feet of this inventory is reported to have been developed since 2000, contrasting strongly with the net regional industrial job loss reported.
- The inner ring still contains the largest share of the region's industrial space (54%), but the outer ring has captured over 60% of the tri-county's post-2000 industrial development (10.5 million square feet). If the relative growth rates of the inner and outer rings

continue, the outer ring would account for the majority of the region's industrial space by 2028.

- The vast majority of both historic and recently developed industrial space is classified as distribution or warehouse. While Costar's classification system is not fully populated, it does indicate a bent, both historic and current.
- Inner North and Northeast (which houses three times the acreage of Title 4 land of any other subarea) reported the greatest volume of recent industrial construction with over 5 million new square feet. The vast majority of this space is described as distribution/warehousing.
- Other high growth subareas are in the outer ring: East Multnomah (5 million, about 10% manufacturing) and Outer I-5/205 (2.7 million square feet, close to 20% manufacturing). Virtually no industrial space has been built in the Central subarea since 2000.
- Clark County, while beyond the purview of this analysis, is an important geography within the region's economy. Clark County added 3 million square feet of industrial space since 2000; as a subarea this would be third in total square footage inventory after Inner North and Northeast and Outer I-5/205. The bulk of Clark County product was within a business park environment in 'outlying' portions of the County.
- The Outer Westside is the one market subarea with a significant amount of recent industrial product developed more than one story in height. This is largely due to the Intel Ronler Acres site on NW 229<sup>th</sup>, close to one million square feet in four stories. Ronler Acres is also the only known recent industrial development with structured parking, and is roughly half office space and half microprocessor fabrication.
- Other subareas also have examples of multi-story industrial development: Outer Clackamas reports two recent two-story warehouse and distributing buildings, about 20,000 square feet each. Outer I-5/205 most significantly reports an I-5 industrial park with 165,000 square feet of newly developed two-story space that includes clean rooms. East Multnomah reports a recently developed 181,000 square feet paper warehouse and a 56,000 square feet food processing plant. The remaining subareas report extremely limited two-story industrial square footage outside of older industrial building stock, which is primarily located in the Central and Inner Ring subareas.
- Industrial parking ratios vary widely between 1.8 and 3.8 per 1,000 square feet of building space region-wide, although parking ratio is a poorly populated field within the industrial inventory. There were no clear trends relating parking densities to types of industrial uses or subareas.

### *Flex Development*

- Flex space differs from industrial in its higher office component (defined by Costar as comprising at least 50% of building space). The Costar inventory includes 19 million square feet of flex space, equal to only 16% of the square footage within the total industrial market.
- Close to 2 million square feet of flex space is reported to have developed since 2000. This represents a slower growth than was reported for traditional industrial space, in large part due to continuing high flex space vacancies within the Inner and Outer Westside subareas of the metro region.

- Close to half of the region's flex inventory is located within the Inner Westside subarea and continues to locate in this subarea. More recent development has also favored the Outer I-5/205 and Outer Westside subareas. No other subarea has developed more than about 100,000 square feet of flex space since 2000.
- Clark County has developed close to 300,000 square feet of flex space since 2000, mostly in the Cascade Park area east of I-205. As a subarea, this would rank 4<sup>th</sup> behind all Westside subareas except Inner I-5.
- Flex space tends to be in business or related campus park settings: in the Inner Westside subarea, about 81% of flex space is within a corporate park, versus 65% of industrial square footage.
- Recent development has been spread evenly across buildings, with buildings averaging 35,000 – 40,000 square feet in the three subareas in which this product type clusters.
- A greater share of flex product has been constructed in a multi-level format than is true for other industrial: about 30% of post-2000 development in the Inner Westside and Outer I-5/205 subareas. In the three subareas in which this product type clusters, however, the share of multi-story product actually decreased for buildings constructed after 2000 (pre-2000, the share of multi-story buildings was closer to 40%). This decrease in density may correspond to continuing high vacancies and resulting targeting of other more rate-sensitive sectors other than high-tech following the 2002 recession.
- In the subareas with the most flex product, flex parking ratios are above 3.0 per 1,000 square feet of building area but still slightly below office parking ratios.

### *Office Development*

- There is 68 million square feet of competitive office product within the Costar inventory, with over 9 million reported as developed since 2000. Growth within the office inventory was in line with industrial and retail growth trends.
- The Central subarea continues to support a slight majority of the region's office inventory (52%). Since 2000, however, the Central subarea has captured only 26% of the 9.5 million square feet of new office space developed in the tri-county region. In contrast, 41% of new development has located within the inner-ring (and 33% in the outer ring).
- Clark County added a significant 2.2 million square feet of office space since 2000, more than any single tri-county outer ring subarea (despite a job growth rate below that of the East Multnomah, Outer I-5/205 and Outer Westside subareas). The bulk of Clark County's new office space is considered Class B. For contrast, within the three Metro jurisdiction counties, outer ring subareas added 3.1 million square feet combined, with the bulk within the Outer Westside (2.0 million square feet of primarily Class A space).
- For Class A buildings, the Central subarea has better retained its advantage, with 58% of total Class A product. Since 2000, however, new Class A office development (totaling 5.5 million square feet) has been fairly evenly distributed, ranging from 31%-35% capture in each of the Central, Inner and Outer rings of the region.
- Subareas with the greatest proportions of Class A (as a % of all subarea office space) are Outer Westside (63%), Inner Westside (47%), Inner I-5 (42%), and Central (40%). In terms of square feet of Class A space, however, Central dwarfs all other subareas with

more than twice the square footage of the entire inner ring and seven times the square footage of the outer ring.

- Very little new office product is being developed anywhere in the region at just one story, with the exception of Outer Clackamas. In all other subareas, at least 85% of office square footage development after 2000 has been higher than one story. Region-wide, the percentage of office square footage within one-story buildings was 13% pre-2000 and decreased to 6% for post-2000 development. Lower cost and lower density office space is in part moving to the retail inventory (e.g. within neighborhood and community retail centers, where services also locate).
- After 2000, buildings of four or more stories increased from 51% to 56% of total office square footage. Seven of the region's nine subareas report post-2000 office development over four stories: Central (81%), Outer Westside (60%), Inner Westside (54%), Inner North & Northeast (48%), Inner I-5 (46%), Inner Clackamas (39%) and Outer I-5/205 (36%). However, only four of these subareas developed more than one million square feet of office space in this time period (Central, Inner I-5, Inner Westside and Outer Westside).
- Only the Central subareas reported office parking ratios below 3.0 for recent development; other subareas range between 3.0 and 4.0. This reflects properties only that report dedicated parking spaces; some historic office product may have no associated parking and thus are not reflected within this average.
- Structured parking for office product remains limited to a few specific geographies within the region. Outside of the Central City, office buildings within Washington Square regional center (mostly within the Inner I-5 submarket) and Kruse Way (also Inner I-5) have developed some structured parking without public subsidy. Medical institutions and smaller medical office buildings are another example; this user type is perhaps the dominant sponsor of structured parking in Inner Ring and the Outer Westside subareas.
- The region's corporate campuses have also moved towards structured parking in the last ten years, with garages on the Nike and Adidas campuses (Inner Ring) and Intel's Ronler Acres (Outer Westside). Other identified examples of structured parking are municipal sponsored, either serving city offices (Hillsboro) or a private development supported by public subsidy (for instance, the Beaverton Round).

### ***Retail Development***

- There are 69 million square feet of retail product within the Costar inventory. Over 9 million square feet has been developed since 2000, despite a net reduction regionally in retail jobs. One (of many possible) disconnects between these data sources is that dining often falls within a retail building product but is now considered a service sector job (with the NAICS classification system). Of the product types covered by brokerage data such as Costar, retail may be the least well documented – particularly smaller, freestanding storefront and urban street retail within older properties.
- The majority of the tri-county region's retail space lies within the inner ring subareas. The Central subarea represents 18%; the outer rings represent 26% of the region's inventory. Inner North & East is the largest single subarea accounting for 25% of the region's inventory.

- Within the tri counties, stand alone, large format retail represents a fairly even share of each rings' building inventory (ranging from 11-15%).
- Small centers and main street retail dominate the Central and inner ring subareas, whereas centers of more than 35,000 square feet (and ranging up to 1+ million square feet) dominate the outer ring retail inventory.
- Region-wide, development since 2000 has favored larger format stores, which increased from 15% of the pre-2000 building stock to 21% of the post-2000 building stock. Centers have maintained a constant share of the region's retail inventory, while 'other' or main street retail has declined as a share of the reported regional total.
- Clark County developed a remarkable 3.8 million square feet of retail space since 2000, about 40% of the post-2000 development inventoried for Oregon counties. This represents very rapid growth for a county that has historically experienced substantial retail sales leakage to the Oregon side of the Columbia River. Post-2000 Clark County retail development has favored large retail centers (45%) and smaller format stores (32%).
- Predictably, the Central submarket reports the highest share of recently developed retail buildings more than one story (84%, including both all-commercial and mixed-use buildings). The Inner North & Northeast and Inner I-5 submarkets also report denser trends, with 46% and 44% respectively of post-2000 retail development in buildings with more than one story. The Inner Westside reports 25%. All other subareas report 11% or less. Outer Clackamas and Outer Westside report especially low density in recent retail development.
- In most subareas, the proportion of retail being developed within multi-story structures increased after 2000. The exceptions are Inner and Outer Clackamas and Outer Westside. Region-wide, the percentage of retail more than one story decreased from 27% in the pre-2000 inventory to 26% in the post-2000 inventory. When the three outlier subareas are removed, the percentage within the remaining six subareas increases from 23% to 25%.
- Parking ratios are the lowest within the Central subarea (below 2.0 spaces per 1,000 square feet in post-2000 development) and in East Multnomah County (2.85). A standard range of between 3.0 and 4.0 is reported for all other subareas both pre- and post-2000. Again, this average only reflects properties that report dedicated parking spaces; historic and urban streetfront retail very often have limited or no associated parking and do not report parking ratios.
- Structured parking is associated with retail development in numerous subareas beyond the Central subarea via regional malls: Lloyd District (Inner North & Northeast), Clackamas Town Center (Inner Clackamas), Washington Square (Inner I-5), Street of Tanasbourne (Outer Westside) and Bridgeport Village (Inner Westside). Beyond Outer Westside, the outer ring subareas have yet to develop retail-associated structured parking or with other center types.

## INTENSITY OF EMPLOYMENT-RELATED DEVELOPMENT

Considerable attention has been to the density of residential development across the tri-county region. Less attention has been given to density (or intensity) of employment development, with most analyses focusing on employment per unit of land area.<sup>12</sup> In contrast, this trends analysis focuses on the relationship between industrial/commercial buildings and land area as measured by floor area ratios (FARs).

Floor area ratios describe the density of building development by comparing total building square feet to land square feet. An FAR of 0.5 indicates that total building square feet is equal to 50% of land area (for instance, a single story building with 50% lot coverage). An FAR above this often – although not always – indicates a multi-story building with some form of structured parking or below average parking ratios, as a substantial portion of site area is typically also required for on-site parking, landscaping, setbacks, etc.

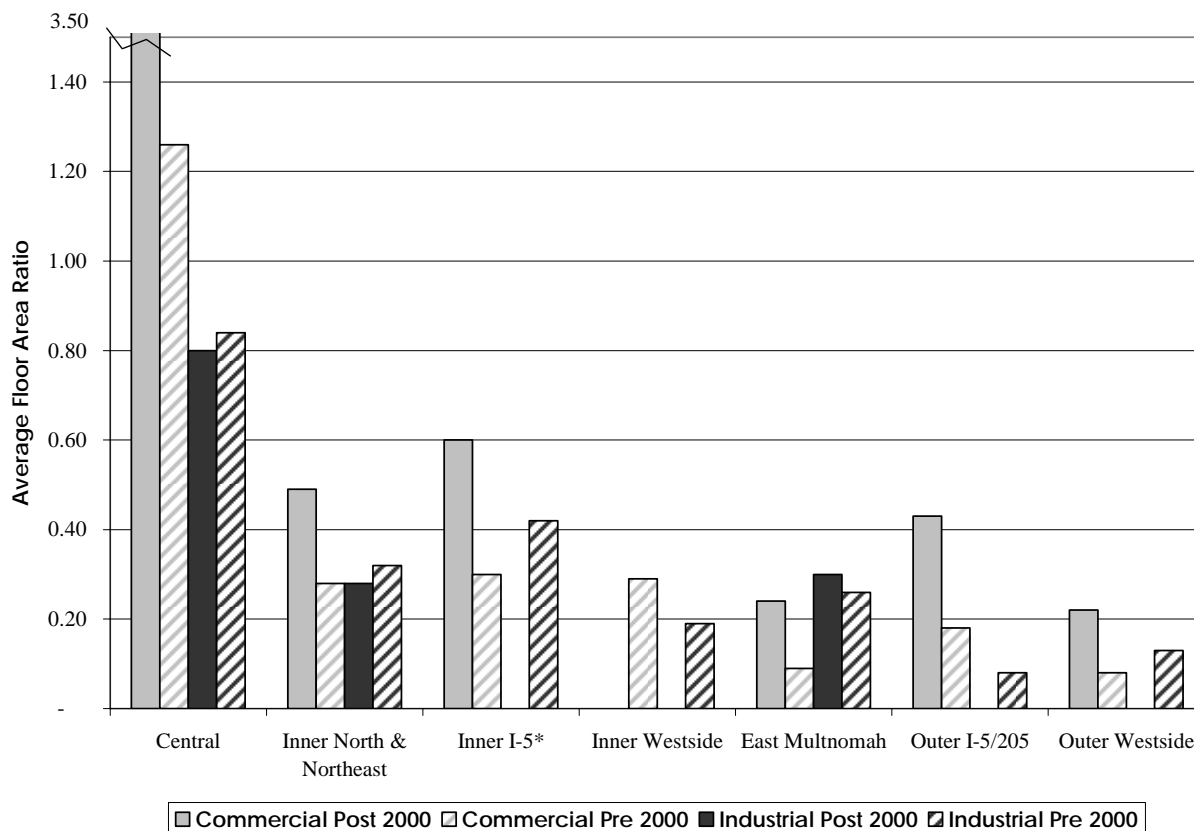
**Methodology.** FARs have been calculated for each subarea and design type for development occurring both before and after 2000. For subareas, reported FAR describes land developed in commercial or industrial use (according to tax assessor data). Vacant lots and lots not developed in commercial or industrial use were excluded from the FAR calculations. *This approach describes existing employment-related development, rather than the landscape as a whole.*

**FARs by Subarea.** Density of commercial development appears to be substantially greater post-2000 than what was on the ground pre-2000. This is the case for the six subareas for which comparable pre/post-2000 data is available.

---

<sup>12</sup> Employment densities vary by product type (for instance, new industrial space may be warehouse space with relatively low densities of employment). It is noted that real estate product types do not neatly correspond to job classifications. For instance, an undetermined portion of service sector jobs are likely located in buildings classified as industrial.

**Figure 15. Subarea Floor Area Ratios (pre & post 2000)**



\*Note: Excludes Clackamas County lots.

Source: Metro RLIS (Nov 08), E.D. Hovee & Company, LLC.<sup>13</sup>

Pre and post-2000 data is available for industrial development in only the three Multnomah County subareas. In two of these areas (Central and Inner North and Northeast), average FAR fell for post-2000 development. This is likely related to older, two-story industrial stock that is no longer being built for modern industrial uses but rather slowly converting to office uses.

A strong caveat to the above data is that limited square footage data is available for lots in Washington County, and no data is available for Clackamas County lots. The following table lists the total building square footage from which the above chart derives. It illustrates the uneven nature of the data: far more data is available for Multnomah County development.

<sup>13</sup> In addition to limited parcels with reported square footage data, an added limitation of assessors data is that it relies upon tax data to identify current property use, which is not always accurate. There is a risk of over-stating FARs for larger development that may encompass more than one parcel (For instance, regional malls or developments that may involve parking on one taxlot and a building on an adjacent lot. In this case, a parcel in surface parking use would be described as vacant and not included in the FAR tally). However, this is an issue that would affect both pre- and post-2000 conditions and so should not affect the relative changes between these time periods.



**Figure 16. Building Square Footage Data Available by Subarea**

Building Square Feet	Central	Inner North & Northeast	Inner I-5*	Inner Westside	East Multnomah	Outer I-5/205	Outer Westside
Post 2000	5,028,000	9,407,000	372,000		6,740,000	92,000	84,000
Pre 2000	77,774,000	110,592,000	9,390,000	9,814,000	24,027,000	2,088,000	5,486,000

Source: Metro RLIS (Nov 08), E.D. Hovee & Company, LLC.

As would be expected, the Central subarea reports the highest FARs for employment land and the only FARs in the region averaging more than 1.0. Post 2000 development is associated with a substantial FAR jump, from 1.26 to 3.51 for commercial uses (office and retail) within Portland's Central subarea. All other subareas for which data is available also report substantial post-2000 commercial FAR increases ranging between 80% and 170% compared to development on the ground pre-2000.

For the two Inner ring subareas with sufficient data, post -2000 commercial FARs range from 0.50 to 0.60, increases from pre-2000 development.<sup>14</sup> Industrial FARs, on the other hand, indicate slightly declining FARs for the two subareas with sufficiently populated tax data. Inner North and Northeast reports post-2000 industrial FARs about 70% below commercial FARs.<sup>15</sup>

*Outer ring* subareas report a substantially less dense pre-2000 building stock for employment lands, but post-2000 commercial FARs that appears to approach those of the inner ring subareas (ranging from 0.22 to 0.43). Increases in density of commercial development have been particularly dramatic for outer ring subareas for which data is available – with the Outer I-5/205 subarea indicating a more than three-fold increase in commercial FAR.<sup>16</sup>

***FARs by Design Type.*** A similar exercise has been undertaken to evaluate FAR by Design Type including Title 4 land. For each of six Design Types (excluding Central City), FAR was calculated for the following

1. Parcels exclusively in commercial or industrial use, and
2. All mixed use center development within the design type (including residential use).<sup>17</sup>

<sup>14</sup> Square footage data is substantially more complete for Multnomah County development than for Clackamas and Washington County, rendering FAR calculations more reliable for the Central, Inner North and East and East Multnomah subareas. No square footage data was available for Clackamas County (within Metro's geocoded taxlot data set); this impacts the Inner I-5 and Outer I-5/205 subareas as well as the two Clackamas County subareas. FARs for these subareas reflect non-Clackamas County lots only.

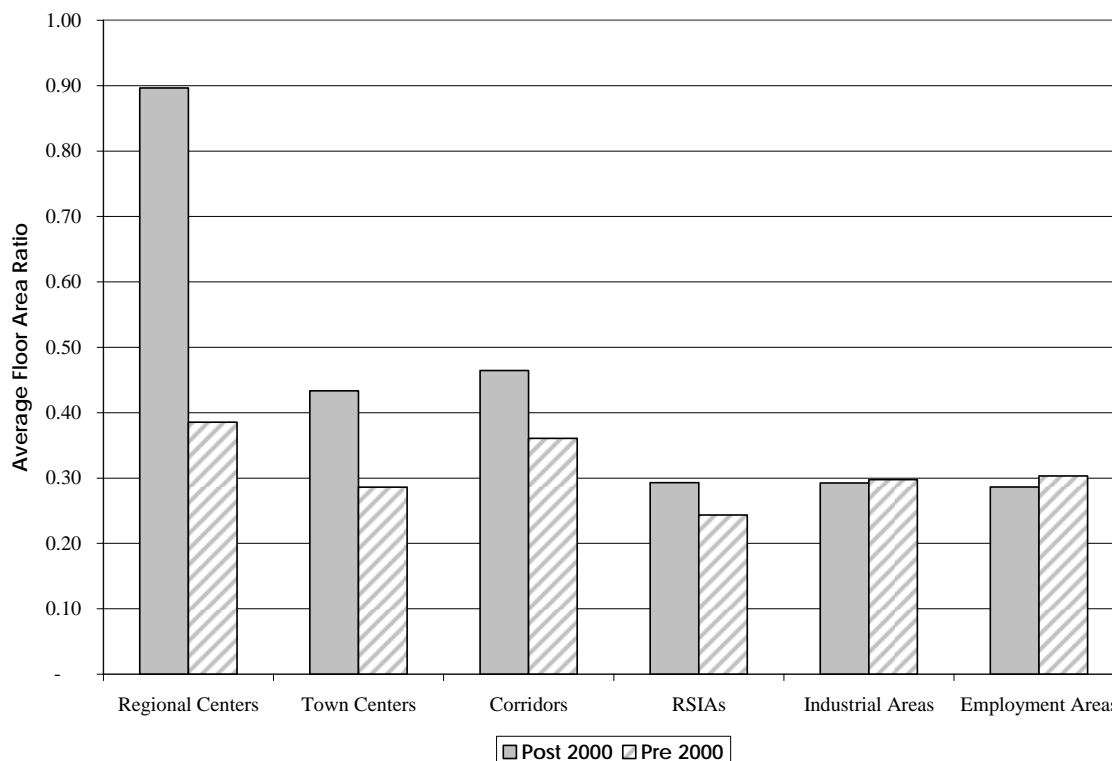
<sup>15</sup> With less than 12,000 square feet reported in the tax assessor data, Inner Westside post-2000 data was deemed insufficient from which to draw FAR conclusions.

<sup>16</sup> Square footage data is extremely limited for Washington County subareas and FAR calculations reflect only those parcels with reported building square footage.

<sup>17</sup> Lots identified as resource, agricultural, open space, vacant or public facilities or other were excluded from the analysis. Also noted is that the FARs reported for employment land likely miss the commercial component within mixed-use buildings.

An increase in FAR is indicated across all of the urban (non-Title 4) design types with post-2000 development compared with pre-2000 conditions.

**Figure 17. Design Type Floor Area Ratios (Employment-related Development)**



Source: Metro RLIS (Nov 08), E.D. Hovee & Company, LLC.

It is important to note that the Design Type FAR conclusions reflect primarily Multnomah County and some Washington County taxlots, and exclude Clackamas County entirely (due to the limited tax assessor data available for those counties).

Regional centers reported the highest average FAR at 0.90, increasing to 1.07 when residential properties are included. Regional centers are also associated with greater increases in FAR than Town Centers or Corridors.

Across all the urban design types, post-2000 FARs increased when residential development was included. This indicates that recent residential development is on average now denser than recent commercial development. Just the opposite conditions prevailed for development on the ground pre-2000 development; data indicates that residential buildings were less dense than commercial development within the design types before 2000.

Title 4 industrial areas report less variation in pre-2000 and post-2000 FARs: FARs tend to cluster around 0.3. Regionally Significant Industrial Areas are the exception; pre-2000 FARs are somewhat lower pre-2000 (0.24), whereas post-2000 FARs are in line with other Industrial and Employment Areas at 0.29. While there is residential development within these areas, a 'with

residential' FAR was not calculated because residential generally represents a non-conforming use within Title 4 that is now discouraged by regional land use policies.

The following table reports building square feet from which FARs were derived, and reports urban Design Type FARs both including and excluding residential buildings.

**Figure 18. FARs by Design Type Detail**

	Land SF	Building SF	FAR
<b>Regional Centers</b>			
Post 2000			
Commercial/industrial	1,975,000	1,771,000	0.90
With MFR/SFR	3,425,395	3,665,000	1.07
Pre 2000			
Commercial/industrial	24,815,000	9,564,000	0.39
With MFR/SFR	48,630,000	15,295,000	0.31
<b>Town Centers</b>			
Post 2000			
Commercial/industrial	2,011,000	871,000	0.43
With MFR/SFR	9,452,000	6,856,000	0.73
Pre 2000			
Commercial/industrial	27,581,000	7,895,000	0.29
With MFR/SFR	85,053,000	21,648,000	0.25
<b>Corridors</b>			
Post 2000			
Commercial/industrial	6,278,000	2,916,000	0.46
With MFR/SFR	27,750,000	18,504,000	0.67
Pre 2000			
Commercial/industrial	108,843,000	39,268,000	0.36
With MFR/SFR	346,639,000	103,207,000	0.30
<b>Employment Areas</b>			
Post 2000			
Commercial/industrial	6,116,000	1,751,000	0.29
Pre 2000			
Commercial/industrial	57,330,000	17,397,000	0.30
<b>Industrial Areas</b>			
Post 2000			
Commercial/industrial	10,153,000	2,968,000	0.29
Pre 2000			
Commercial/industrial	70,066,000	20,851,000	0.30
<b>Regional Significant Industrial Areas</b>			
Post 2000			
Commercial/industrial	23,402,000	6,855,000	0.29
Pre 2000			
Commercial/industrial	208,984,000	50,938,000	0.24

Note: The Central City design type has been excluded from this table due to data errors associated with residential condominiums and the prevalence of this building type within the Central City.

Source: Metro RLIS (Nov 08), E.D. Hovee & Company, LLC.

### III. DEMAND FACTORS

This chapter considers four topics of special interest in allocating expected job growth to the region's land supply. These include:

- *Redevelopment rates:* to what extent is development occurring on vacant land versus land that is already in (potentially low value) use?
- *Consumer demand as a retail driver:* to what extent is the tri-county sufficiently served by retailers, and will retail continue to cluster in certain higher income subareas rather than evenly distribute throughout the region?
- *Institutional growth:* how much job growth will occur within institutional settings? How do institution's land use patterns vary from other users?
- *Land use within industrial sectors:* to what extent have industrial users intensified, as has been observed within the office sectors? To what extent might this occur in the future?
- *Employees per square foot:* assumptions are reported that will serve as a starting point to be combined with FAR inputs – translating job growth to site/land consumption.

#### EMPLOYMENT ON VACANT VS. REDEVELOPED LANDS

A major factor in estimating the land needs associated with future employment growth is the extent to which building development locates on vacant (greenfield) parcels versus parcels on which some existing – likely low valued – development is located, so that the new building represents land redevelopment.

To quantify this issue, parcels that tax data indicated had developed post-2000 were matched with the same property tax ID numbers from a 1999 taxlot database. The characteristics of the taxlot in 1999 were then noted, including whether the parcel had any improvements (indicated by improvement value and/or building square footage).<sup>18</sup>

The required data was available for about 450 taxlots region-wide, a very limited sample of the taxlots on which post-2000 development occurred and again disproportionately weighted towards Multnomah County taxlots. Within this sample, 53% were properties on which some amount of development was located prior to the current building (with at least 200 square feet and a value of at least \$5,000). Forty-seven percent of these taxlots were vacant prior to their post-2000 development.

---

<sup>18</sup> This query relied upon year built and square footage data, which again were poorly populated for Clackamas and Washington County taxlots. It also only captures those taxlots that remained consistent within this timeframe, as opposed to taxlots that were split or aggregated in the redevelopment process.

**Figure 19. Former Use of Parcels that Developed Post-2000 for Employment Uses**

Geography	Number of Parcels by Improvement: Land Value Ratio*						1999 Status	
	Total	< 0.5	0.5 - 1	>1	No data	Vacant	Improved	Vacant
Central	52	20	5	7	2	18	65%	35%
Inner Ring	265	59	29	51	17	109	59%	41%
Outer Ring	129	18	6	17	5	83	36%	64%

\*Note: Improvement to land value ratio describes the relationship between the value of land improvement (building) to the value of land.

Source: RLIS (November 2008), E.D. Hovee & Company, LLC.

Taxlots were also analyzed by subarea and by ring. Predictably, given the greater building stock and developed parcels with the central and inner ring – and the longer time period over which they have developed – redevelopment rates were higher for these two geographies.

The Central subarea reported the highest redevelopment rate among the ring geographies at 65%, which corresponds to its relatively high land values. The inner ring reported a similarly high redevelopment rate at 59%. The outer ring, which supports the bulk of the region's vacant parcels, reported a redevelopment rate of just 36%.

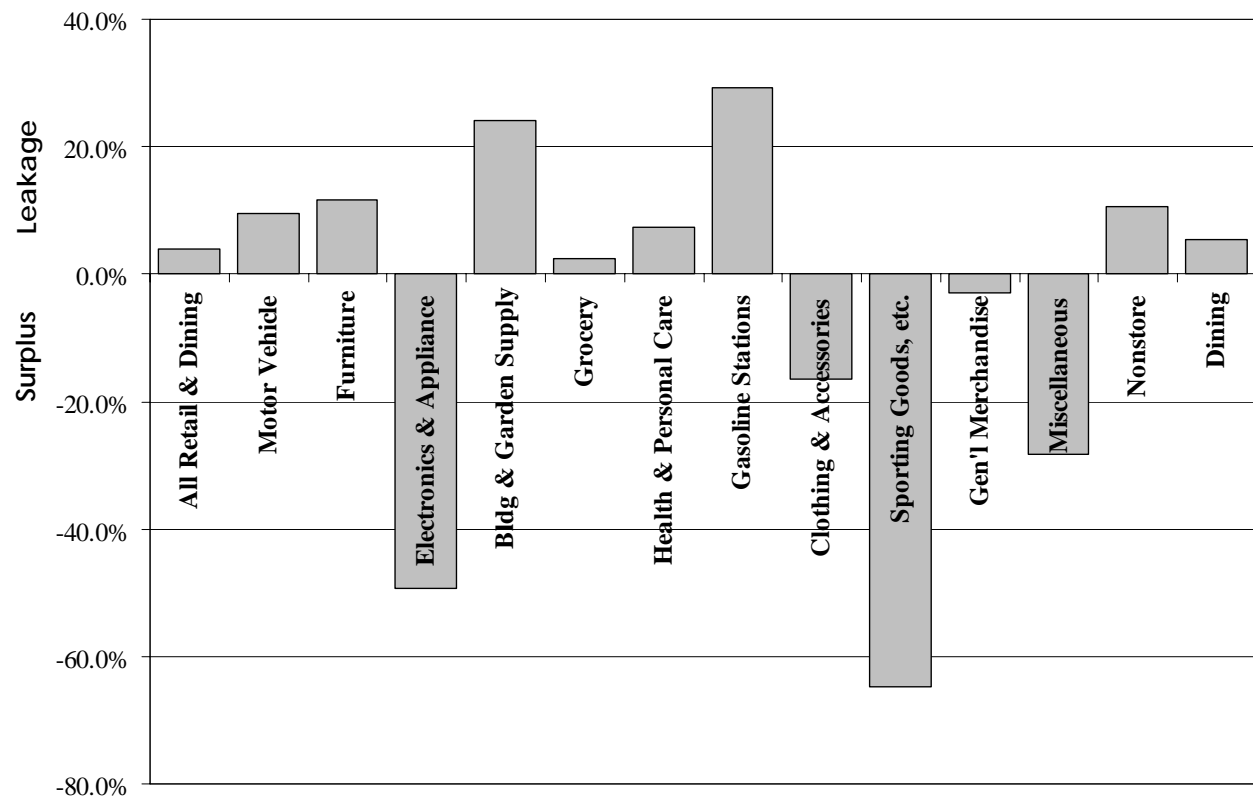
## CONSUMER EXPENDITURES AS RETAIL DRIVER

As a real estate product, retail development is unique in its responsiveness to household consumer demand, primarily measured through housing densities and incomes. For this discussion, consumer retail expenditures are considered at the macro (regional) level of the Portland tri-county area plus Clark County, given Clark County's major influence on regional retail activity (its historic propensity to shop in retail tax-free Oregon).

As of 2008, an estimated \$24+ billion in consumer spending potential is estimated for the four-county metropolitan area. This estimate is based on household disposable income for the region and typical buying patterns exhibited throughout the U.S. In 2008, metro area retailers collected an estimated \$23 billion in sales, meaning that the remaining \$1 billion could be viewed as retail leakage, with consumers traveling elsewhere to shop (or shopping online). However, this relatively minor leakage (4%) could also simply indicate different consumer spending priorities in the Portland metro area.

As a percentage of total demand, the leakage is relatively modest – only 4% of total spending potential (retail demand). It also appears to be influenced by lifestyle and planning choices that, to some degree, set this metro area apart from the rest of the country. This becomes more evident with the following graphic depicting levels of sales leakage (or surplus) by major merchandise category.

**Figure 20. Retail Sales Leakage as % of Demand – By Merchandise Type (2008)**



Source: ESRI Business Information Solutions, E. D. Hovee & Company, LLC.

While total sales are very close to total estimated spending, sales within each retail category diverge (sometimes significantly) from the national norms. According to U.S. averages, the Portland region appears to spend less on motor vehicle sales, furniture and home furnishings, building materials and garden supply, grocery, health and personal care, gasoline stations, non-store retailers and dining. In contrast, retail sales are higher than would be expected in electronics/appliance stores, apparel, general merchandise, and a variety of specialty merchandise categories. These variances from the national norms could indicate tourism/destination spending (in 'over supplied' categories), shifts between categories (for instance, residents appear to be under-served with furniture stores but are more than amply served by home furnishings stores), and also retailers and their merchandise not neatly falling within the categories created by industry analysts.

This overview suggests four summary observations:

1. By and large, retail potential and actual spending appear to be roughly in balance in the Portland metro area (including Clark County). While there are potential imbalances within specific merchandise categories, these may be more the result of different consumer spending priorities and development patterns in the Portland metro area, rather than indications of actual sales leakage.

2. Consequently, further retail development over the longer term is dependent primarily on some combination of population growth and destination tourism activity (aided by Oregon's lack of retail sales tax).
3. The geographic distribution of retail sales could change between subareas within the region. However, in the absence of population and/or tourism growth, this shifting would be a zero-sum game, with some subareas gaining at the expense of others.
4. As the region grows, an appropriate planning and market question is whether the distribution of retail will or should continue to be strongly focused on the Central and Inner Ring areas or more dispersed to Outer Ring subareas to better serve local residents closer to home.

## INSTITUTIONAL UTILIZATION

Institutional uses warrant special consideration as an employment generator and land consumer because their land use patterns are distinct from other employers. Institutions including health care, education and public agencies often tend to cluster employment, requiring larger parcels or aggregations of parcels, developing land more intensively (e.g. with structured parking) and locating in a variety of zones other than commercial (such as residential).

Metro's 2035 employment forecast (created in 2000) projects that a significant 20% of net new employment will be within the health and education sectors: a total of 126,000 new health care jobs and 31,300 new education jobs. Pro-rated, assuming constant annual growth, this equates to 97,600 health care jobs and 24,100 education jobs that might be expected between 2008 and 2035. Many of these jobs will locate outside of land designated for employment uses.

A review of 2006 health care and education employment sectors indicates that the bulk of employment sites (rather than employers, which may maintain more than one site) supports more than 50 employees: within education, more than 80% of employment is at sites with more than 50 employees; within health care, more than 60% of employment is at sites with more than 50 employees.

**Figure 21. 2006 Education and Health Care Employment by Employees per Site**

Employees per Site	Education		Health Care	
	Total	Percent	Total	Percent
Less than 10	1,500	2%	13,200	15%
10-50	11,400	17%	19,700	22%
50-100	12,100	18%	10,500	12%
101-500	15,300	23%	17,600	20%
500+	25,200	38%	29,000	32%
Total	65,500	100%	90,000	100%

Source: ES 202, Metro, E.D. Hovee & Company, LLC.

If these trends continue in the future, employment growth 2008- 2035 within these sectors would be distributed approximately as follows:

**Figure 22. Projected Employment Growth 2008 – 2035 by Employees per Site**

<b>Employees per Site</b>	<b>Education</b>	<b>Health Care</b>
Less than 10	600	14,300
10-50	4,200	21,400
50-100	4,500	11,400
101-500	5,600	19,100
500+	9,300	31,500
Total	24,200	97,700

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

In focus groups conducted as a part of Task 6 for this employment and economic trends analysis work program, institutional land users report somewhat conflicting priorities:

- Dense (multi-story) development fits well for administrative and non-patient functions. On the other hand, mid-rise development best maintains accessibility, keeps cost low and avoids neighborhood conflicts.
- Especially given the challenges of building in an often residential environment, institutional preference is to expand on-site (where existing agreements are in place) rather than to acquire new land on which to expand.
- Institutions value both easy auto accessibility (as most clients access institutions via cars) and good transit service, primarily to serve their workforce.
- Space needs are impacted by both an aging population (with greater health care needs and thus space needs) and reduced on-site visits and fewer over-night stays (which reduce space needs).

With the exception of major research and administrative functions, institutions generally appear oriented to decentralize and bring services closer to where people live. Given that the bulk of the region's population growth is projected for the outer ring, institutional employment growth is expected to follow suit and favor outer ring and other locations anticipated for substantial household growth.

## **INDUSTRIAL BUILDING & SITE UTILIZATION**

A final topic of special interest that impacts regional land demand is how land utilization has changed and will change within the industrial sectors. Office uses are generally understood to increase in density as land prices increase, adding both building stories and structured parking. Given their emphasis on housing machinery and goods (rather than employees and clients), industrial uses have historically lacked the financial incentive to build at higher densities. To what extent have industrial uses densified in this region? How do broader industrial trends influence this – for instance, continued or accelerated growth in land-intensive warehousing and distributing uses?

To date, this analysis reveals relatively few clear trends indicating substantial changes with industrial land use and building development. Summary comments are listed below.



- Close to 30% of post-2000 flex space development in the Inner Westside and Outer I-5/205 subareas (where the bulk of new flex has located) has comprised 2+ story development since 2000. While reportedly a small component of new industrial sector development, flex is generally willing to develop at higher densities given its heavier emphasis on office.
- In two of nine subareas, 2+ level industrial development accounted for the majority of new space constructed – the Inner I-5 at 52% and Outer Westside at 61%. For the other seven market subareas, multi-level industrial accounted for at most 15% of new development.
- A few notable industrial buildings comprise much of the 2+ level industrial structures constructed since 2000. Examples include recent two-story warehouse and distributing buildings (of about 20,000 square feet each within Outer Clackamas) and an Outer I-5/205 industrial park with 165,000 square feet of newly developed flex two-story space that includes clean rooms). East Multnomah reports one recently developed 181,000 square feet paper warehouse and a 56,000 square feet food processing plant.
- The region's prime example of higher density developed industrial space is Intel's Ronler Acres site in the Outer Westside subarea. At four stories and with about 50% office use, this building fits within the traditional definition of flex (vs. industrial) space. The building is associated with structured parking, but retains a campus-style environment with significant green space surrounding the building. Due to this green space, the development's ultimate FAR may be low despite the multi-story and structured parking elements.
- With the exception of RSIA's, over-all average industrial FARs appear to have changed very little, and if anything are decreasing. Decreasing FARs are likely related to the historic stock of multi-story warehouse space; such space is largely considered dysfunctional for modern warehouse uses and is not being replicated in newer buildings. For the most part, multi-story warehouse space is gradually leaving the industrial building inventory with industrial users migrating to new and lower profile construction. This is happening, for example, with office conversions in Portland's Central Eastside district (initially developed pre-1950).
- Metro's 2035 employment projections call for wholesale trade, warehousing and distributing to comprise 45% of net new industrial sector job growth, or a pro-rated 58,000 new jobs by 2035. Data indicates that warehouse buildings support fewer jobs per square feet than other types of industrial uses. Of the remaining industrial sector jobs projected, high tech accounts for 45% and construction accounts for 39%; neither of these are 'traditional' industrial sector land users (high tech tends to have a higher office component and construction requires more land for equipment storage than building square feet). Manufacturing jobs are projected to account for only 4% of non-distributing industrial job growth – a total of just 3,000 new jobs between 2008 and 2035. Again, it should be noted that job sectors locate in various types of commercial space, which are only broadly classified as industrial, flex, office or retail.

Based on focus group results, the best opportunities for increased density of distribution related development may relate more to opportunities for high-cube space (with higher ceilings for more rack storage) than to multi-story development. Most manufacturing space is also expected to

remain at one and in some cases two stories, albeit with high ceiling space requirements for some processes and with 2+ stories more possible for office, administrative and some R&D components of the structure.

Opportunities for multi-level development may also be greater for flex buildings with a higher component of office space, especially within high demand market subareas. For existing land constrained industrial uses, transition from at-grade to structured parking also may be considered in some cases.

## BUILDING SQUARE FEET PER EMPLOYEE

Beyond building type and density, the final piece of data required to translate jobs into land needs is the number of building square feet required per employee. The following table lists a range of inputs that will be considered within Task 3 modeling for this Employment Demand Analysis project.

**Figure 23. Square Feet per Employee**

Employment Type	1999 Metro Study	2008 MetroScope Range
Manufacturing		500 – 1,100
Chemicals, petroleum, rubber, leather	720	
Primary & fabricated metals	320	
Machinery equipment	300	
Electrical machinery, equipment	400	
Transportation and Warehousing	3,290	
Communications and Public Utilities	460	
Wholesale Trade	1,390	
Retail	470	320-450
Services		320-450
Finance, Insurance	370	
Health services	350	500 – 1,100
Education, social, membership services	530	500 – 1,100

Source: 1999 Employment Density Study, Metro; E.D. Hovee & Company, LLC.

Obtaining updated real-world information requires a survey of employers. This was last completed in 1999 for Metro’s Employment Density Study. Results available by job sector are reported in the second column. The third column reports simulated employment densities generated from the MetroScope employment model (which vary by Census Tract) that will also be considered with the Task 3 demand paradigm and employment allocations.

Few studies have been conducted that can provide *apples to apples* comparisons of employment density in a consistent manner across a multi-year time frame. Analysis that has been reviewed

does not always indicate a clear trend over time, nor does it reflect prospects for changing patterns that could yet emerge over the next 20-50 years.<sup>19</sup>

Examples of changes that could influence job densities in ways not experienced to date include increased property costs, business cost reductions, increased part-time and shared job positions, office hoteling (or space sharing), and automation. These or other variations may be modeled within a Task 3 demand scenario, as outlined in the following section.

---

<sup>19</sup> As an example, data compiled by the national Building Owners and Managers Association for office space indicates that employment per square foot of office space generally declined for *private* downtown and suburban uses from 1985 to 1990, then increased somewhat from 1995-2003 (but not back to 1985 levels. With *government* office space, the reverse pattern is noted. Workers square feet increased from 1985-1995, then declined from 1995-2003. As cited by the Urban Land Institute (ULI) publication, *Shared Parking*, 2005.

## IMPLICATIONS FOR NEW EMPLOYMENT DEMAND PARADIGM

As noted at the outset of this report, the results of this Task 1 analysis (together with Task 2 location variables trends research) will inform subregional employment forecasting within Task 3. Regional employment totals are expected to be consistent with Metro's already completed *2005-2060 Regional Population and Employment Forecast for the Portland-Beaverton-Vancouver OR-WA Primary Metropolitan Statistical Area (PMSA)*.

The New Demand Paradigm associated with Task 3 will allocate this employment to the tri-county portion of the larger metro area by industry sector, subarea geography and design types using a range rather than point estimate approach. Based on research completed with Tasks 1 and 2 of this Employment and Economic Trends research, the following implications are noted for the Task 3 demand allocation process.

8. The 2002 *Urban Growth Report* projected that the tri-county UGB would capture 75% of future job growth; this employment analysis indicates that the tri-county area captured 83% of 2006 employment. Task 3 forecast allocation scenarios may be varied to reflect this more recent experience and/or land capacity constraints within certain job sector or land use design types.
9. The Metro 2060 forecast provides a range rather than point estimate of future total employment but without detailed employment sector (or industry-specific) projections. This approach reflects the increasingly dynamic nature of the national and metro area economy and is proposed to be continued with the forecast allocation process – placing primary emphasis on subarea geography and design type categories rather than sector specific projections.
10. A baseline forecast allocation is expected to reflect the continued trend of job movement towards the outer rings of the metro region – especially for job sectors seeking Title 4 land and population-driven components of retail and institutional (service) growth. An alternative scenario may reflect growth patterns possible if urban-focused design types (centers and corridors) successfully compete for higher shares of regional employment growth.
11. Prior forecast allocations have translated employment growth to land demand with use of employment density factors (measured in terms of *jobs per acre*). In contrast, this planned allocation modeling process will pursue a two-step approach, similar to the prior Regional Industrial Land Study (RILS) approach:
  - Application of *employment per square foot of building area* standards based on Metro and other research which generally are not expected to change materially over the forecast periods (of 5, 20 and 50 years) – at least in base case scenario.
  - Variation of *building to site area (or FAR)* standards reflecting both recent experience and regional policy objectives. FAR variations are seen as the primary means of influencing the future land footprint associated with regional employment growth.

12. Commercial office, retail and institutional uses have begun to transition to higher FARs, a trend that is forecast to continue albeit with higher FARs expected for the central and inner ring than the outer ring of the tri-county region. At FARs in the range of 0.50+/- (depending on use), transition from at-grade to structured parking and lowered parking ratios with active transit access would also be anticipated.
13. With the exception of RSIA's, industrial FARs do not yet appear to be increasing within the tri-county region but are maxing out at about 0.30. A baseline forecast scenario can be expected to maintain this cap for the foreseeable future. Alternative scenarios may reflect other industrial development patterns with reduced development footprint – including transition to higher cube distribution, structured parking for some major employers at site constrained facilities, and/or reduced tri-county capture for uses with lower ratios of employment per square foot of building area.
14. Information from this analysis suggests consideration of adjusting refill rates (currently assumed at 50% for commercial use and industrial at 35%) by location as well as by land use. Higher refill rates would be indicated for central and inner ring than for outer ring subareas. More information is needed – likely anecdotal – to support varying these rates by land use.

As Metro and local jurisdictions explore this new demand paradigm, additional data resources may be needed above and beyond what is currently available across the region. Important data-related tools to maintain and improve upon our ability to track the relationship between job and development trends include accurately geocoded ES-202 job data (potentially to the taxlot level of accuracy) and better populated tax assessor's databases for current land use, building square footage and year built (with best coverage currently available for Multnomah County).<sup>20</sup>

---

<sup>20</sup> Also noted as a related data need will be GIS algorithms to better associate vacant and unimproved lots (particularly parking areas) with adjoining employment uses and buildings under common ownerships.

## APPENDIX. DETAILED DEVELOPMENT DATA TABLES

Tables included in this appendix describe the region's (non-residential) built environment, as reflected in the CoStar commercial real estate inventory. Tables included are:

### *Summary Tables:*

- Industrial, Flex, Office Trends by Subarea
- Summary table: Retail Trends by Subarea

### *Detailed Subarea Tables:*

- Central Subarea
- Inner North & East
- Inner Clackamas
- Inner I-5
- Inner Westside
- Outer Multnomah County
- Outer Clackamas
- Outer I-5/205
- Outer Westside

## Industrial, Flex, Office Trends by Subarea

	Central	Inner Ring	Outer Ring	Inner N/NE	Inner Clackamas	Inner I-5	Inner Westside	East Multnumah	Outer Clackamas	Outer I-5/205	Outer Westside	Total
<b>Industrial</b>												
Pre 2000	9,735,000	57,902,000	34,398,000	37,152,000	11,559,000	2,564,000	6,627,000	9,465,000	1,068,000	13,477,000	10,388,000	102,035,000
Post 2000	14,000	6,794,000	10,455,000	5,055,000	1,356,000	114,000	269,000	4,919,000	317,000	3,653,000	1,566,000	17,263,000
Total Industrial	9,749,000	64,696,000	44,853,000	42,207,000	12,915,000	2,678,000	6,896,000	14,384,000	1,385,000	17,130,000	11,954,000	119,298,000
% of Total	8%	54%	38%	35%	11%	2%	6%	12%	1%	14%	10%	100%
% of Post 2000	0%	39%	61%	29%	8%	1%	2%	28%	2%	21%	9%	100%
<b>Flex (50% office)</b>												
Pre 2000	911,000	12,349,000	3,578,000	1,204,000	495,000	2,564,000	8,086,000	231,000	104,000	1,523,000	1,720,000	16,838,000
Post 2000	-	1,010,000	879,000	18,000	-	114,000	878,000	103,000	12,000	447,000	317,000	1,889,000
Total Flex	911,000	13,359,000	4,457,000	1,222,000	495,000	2,678,000	8,964,000	334,000	116,000	1,970,000	2,037,000	18,727,000
% of Total	5%	71%	24%	7%	3%	14%	48%	2%	1%	11%	11%	100%
% of Post 2000	0%	53%	47%	1%	0%	6%	46%	5%	1%	24%	17%	100%
<b>All Office</b>												
Pre 2000	32,934,000	18,239,000	6,953,000	6,836,000	1,479,000	6,054,000	3,870,000	1,224,000	272,000	2,764,000	2,693,000	58,126,000
Post 2000	2,486,000	3,911,000	3,125,000	659,000	702,000	1,428,000	1,122,000	303,000	27,000	826,000	1,969,000	9,522,000
Total Office	35,420,000	22,150,000	10,078,000	7,495,000	2,181,000	7,482,000	4,992,000	1,527,000	299,000	3,590,000	4,662,000	67,648,000
% of Total	52%	33%	15%	11%	3%	11%	7%	2%	0%	5%	7%	100%
% of Post 2000	26%	41%	33%	7%	7%	15%	12%	3%	0%	9%	21%	100%
<b>Class A Office</b>												
Pre 2000	12,134,000	4,953,000	1,635,000	342,000	289,000	2,499,000	1,823,000	-	-	164,000	1,471,000	18,722,000
Post 2000	1,890,000	1,703,000	1,930,000	195,000	341,000	662,000	505,000	-	-	457,000	1,473,000	5,523,000
Total Class A	14,024,000	6,656,000	3,565,000	537,000	630,000	3,161,000	2,328,000	-	-	621,000	2,944,000	24,245,000
% of Total	58%	27%	15%	2%	3%	13%	10%	0%	0%	3%	12%	100%
% of Post 2000	34%	31%	35%	4%	6%	12%	9%	0%	0%	8%	27%	100%
<b>Office Distribution</b>												
Class A	40%	30%	35%	7%	29%	42%	47%	0%	0%	17%	63%	36%
Class B	37%	44%	47%	45%	48%	43%	44%	67%	45%	62%	29%	41%
Class C - F	23%	26%	18%	48%	23%	15%	10%	33%	55%	20%	8%	23%

Source: Costar (January 2009), E.D. Hovee & Company, LLC.

## Retail Trends by Subarea

	Central	Inner Ring	Outer Ring	Inner N/NE	Inner Clackamas	Inner I-5	Inner Westside	East Multnumah	Outer Clackamas	Outer I-5/205	Outer Westside	Total
<b>All Retail</b>												
Pre 2000	11,716,000	34,813,000	13,526,000	15,305,000	5,906,000	5731000	7,871,000	4,418,000	1,614,000	4,147,000	3,347,000	60,055,000
Post 2000	909,000	3,815,000	4,525,000	1,732,000	500,000	265000	1,318,000	1,337,000	172,000	1,524,000	1,492,000	9,249,000
Total Retail	12,625,000	38,628,000	18,051,000	17,037,000	6,406,000	5996000	9,189,000	5,755,000	1,786,000	5,671,000	4,839,000	69,304,000
% of Total	18%	56%	26%	25%	9%	9%	13%	8%	3%	8%	7%	100%
% of Post 2000	10%	41%	49%	19%	5%	3%	14%	14%	2%	16%	16%	100%
<b>Large Format</b>												
Pre 2000	1,911,000	5,267,000	1,615,000	2,026,000	1,246,000	1,177,000	818,000	706,000	136,000	475,000	298,000	8,793,000
Post 2000	-	1,062,000	871,000	587,000	171,000	-	304,000	192,000	-	198,000	481,000	1,933,000
All Large Format	1,911,000	6,329,000	2,486,000	2,613,000	1,417,000	1,177,000	1,122,000	898,000	136,000	673,000	779,000	10,726,000
% of Total	18%	59%	23%	24%	13%	11%	10%	8%	1%	6%	7%	100%
% of Post 2000	0%	55%	45%	30%	9%	0%	16%	10%	0%	10%	25%	100%
<b>Centers &gt;35,000 SF</b>												
Pre 2000	3,669,000	15,266,000	7,150,000	4,371,000	3,110,000	3,031,000	4,754,000	2,292,000	851,000	2,391,000	1,616,000	26,085,000
Post 2000	335,000	1,135,000	2,467,000	467,000	83,000	125,000	460,000	763,000	50,000	938,000	716,000	3,937,000
All Centers	4,004,000	16,401,000	9,617,000	4,838,000	3,193,000	3,156,000	5,214,000	3,055,000	901,000	3,329,000	2,332,000	30,022,000
% of Total	13%	55%	32%	16%	11%	11%	17%	10%	3%	11%	8%	100%
% of Post 2000	9%	29%	63%	12%	2%	3%	12%	19%	1%	24%	18%	100%
<b>Other</b>												
Pre 2000	6,136,000	14,280,000	4,761,000	8,908,000	1,550,000	1,523,000	2,299,000	1,420,000	627,000	1,281,000	1,433,000	25,177,000
Post 2000	574,000	1,618,000	1,187,000	678,000	246,000	140,000	554,000	382,000	122,000	388,000	295,000	3,379,000
All Other	6,710,000	15,898,000	5,948,000	9,586,000	1,796,000	1,663,000	2,853,000	1,802,000	749,000	1,669,000	1,728,000	28,556,000
% of Total	23%	56%	21%	34%	6%	6%	10%	6%	3%	6%	6%	100%
% of Post 2000	17%	48%	35%	20%	7%	4%	16%	11%	4%	11%	9%	100%
<b>Distribution</b>												
Large Format	15%	16%	14%	15%	22%	20%	12%	16%	8%	12%	16%	15%
Centers	32%	42%	53%	28%	50%	53%	57%	53%	50%	59%	48%	43%
Other	53%	41%	33%	56%	28%	28%	31%	31%	42%	29%	36%	41%

Source: Costar (January 2009), E.D. Hovee & Company, LLC.



## Central Subarea

### DEMOGRAPHICS

2008 Households	47,630	Median Income	\$44,300	Median Age	37.1
2008 Population	83,100	Average Income	\$70,700	Percent Non-White	20%
Average Household Size	1.65			Percent Hispanic	6%

### RETAIL

Year Built	Retail Types Centers			Total SF	Built Environment		Rents	
	Large Format	>35,000 SF	Other		>1 Story	Parking Ratio	Range	Average
Pre 2000	1,911,000	3,669,000	6,136,000	11,716,000	66%	2.76	\$4-\$40	\$19.09
Post 2000	-	335,000	574,000	909,000	84%	1.73	\$19-\$35	\$26.37
All Years	1,911,000	4,004,000	6,710,000	12,625,000	68%	2.67	\$4-\$40	\$19.93
Avg Rent/SF	\$11.00	\$19.78	\$20.06	\$19.93	(blank)			

### OFFICE

Year Built	Square Feet by Building Class				Built Environment			Rents	
	A	B	C	Total	2-3 Stories	4+ Stories	Parking	Range	Average
Pre 2000	12,134,000	12,500,000	8,300,000	32,933,000	24%	72%	2.17	\$8-\$54	\$18.93
Post 2000	1,890,000	595,000	1,000	2,485,000	17%	81%	2.46	\$17-\$29	\$22.63
All Years	14,024,000	13,095,000	8,301,000	35,418,000	23%	73%	2.18	\$8-\$54	\$19.20
Avg Rent/SF	\$23.58	\$19.36	\$17.04	\$19.20	(blank)				

### FLEX (50% office)

Year Built	SF	2+ Stories	Parking	Rents	
			Ratio	Range	Average
Pre 2000	911,000	29%	3.04	\$5-\$14	\$10.07
Post 2000	-	0%	-	-	-
All Years	911,000	29%	3.04	\$5-\$14	\$10.07

### INDUSTRIAL

Year Built	SF	2+ Stories	Parking	Rents	
			Ratio	Range	Average
Pre 2000	9,735,000	31%	1.23	\$3-\$20	\$9.83
Post 2000	14,000	0%	-	-	-
All Years	9,749,000	30%	1.23	\$3-\$20	\$9.83

## Inner North & Northeast

### DEMOGRAPHICS

2008 Households	169,810	Median Income	\$74,600	Median Age	40.5
2008 Population	424,720	Average Income	\$106,800	Percent Non-White	13%
Average Household Size	2.37			Percent Hispanic	7%

### RETAIL

Year Built	Retail Types Centers			Total SF	Built Environment		Rents	
	Large Format	>35,000 SF	Other		>1 Story	Parking Ratio	Range	Average
Pre 2000	2,026,000	4,371,000	8,908,000	15,305,000	19%	3.42	\$2-\$54	\$15.88
Post 2000	587,000	467,000	678,000	1,732,000	46%	3.26	\$11-\$34	\$20.42
All Years	2,613,000	4,838,000	9,586,000	17,037,000	21%	3.41	\$2-\$54	\$16.81
Avg Rent/SF	\$14.56	\$17.86	\$16.79	\$16.81	(blank)			

### OFFICE

Year Built	Square Feet by Building Class				Built Environment		Rents	
	A	B	C	Total	2-3 Stories	4+ Stories	Parking	Range Average
Pre 2000	342,000	2,931,000	3,563,000	6,836,000	56%	17%	3.40	\$7-\$53 \$16.95
Post 2000	195,000	417,000	47,000	659,000	37%	48%	3.22	\$13-\$26 \$18.84
All Years	537,000	3,348,000	3,610,000	7,495,000	55%	19%	3.39	\$7-\$53 \$17.12
Avg Rent/SF	\$36.76	\$17.19	\$16.34	\$17.12	(blank)			

### FLEX (50% office)

Year Built	SF	2+ Stories	Parking	Rents	
			Ratio	Range	Average
Pre 2000	1,204,000	18%	2.22	\$11-\$12	\$11.91
Post 2000	18,000	0%	-	-	-
All Years	1,222,000	18%	2.22	\$11-\$12	\$11.91

### INDUSTRIAL

Year Built	SF	2+ Stories	Parking	Rents	
			Ratio	Range	Average
Pre 2000	37,152,000	6%	1.66	\$3-\$23	\$7.03
Post 2000	5,055,000	0%	1.24	\$4-\$8	7.03
All Years	42,207,000	5%	1.65	\$3-\$23	\$6.89

## Inner Clackamas

### DEMOGRAPHICS

2008 Households	48,700	Median Income	\$61,600	Median Age	38
2008 Population	125,500	Average Income	\$77,400	Percent Non-White	14%
Average Household Size	2.56			Percent Hispanic	8%

### RETAIL

Year Built	Retail Types Centers			Total SF	Built Environment		Rents	
	Large Format	>35,000 SF	Other		> 1 Story	Parking Ratio	Range	Average
Pre 2000	1,246,000	3,110,000	1,550,000	5,906,000	23%	4.29	\$7-\$38	\$17.46
Post 2000	171,000	83,000	246,000	500,000	8%	3.84	\$15-\$33	\$19.92
All Years	1,417,000	3,193,000	1,796,000	6,406,000	21%	4.22	\$7-\$38	\$17.81
Avg Rent/SF	\$30.48	\$18.32	\$16.99	\$17.81	(blank)			

### OFFICE

Year Built	Square Feet by Building Class				Built Environment			Rents	
	A	B	C	Total	2-3 Stories	4+ Stories	Parking	Range	Average
Pre 2000	289,000	717,000	473,000	1,479,000	61%	15%	4.09	\$1-\$24	\$16.33
Post 2000	341,000	340,000	21,000	702,000	57%	39%	3.95	\$15-\$30	\$22.90
All Years	630,000	1,057,000	494,000	2,181,000	60%	23%	4.07	\$1-\$30	\$17.34
Avg Rent/SF	\$24.36	\$19.18	\$12.54	\$17.34	(blank)				

### FLEX (50% office)

Year Built	SF	2+ Stories	Parking	Rents	
			Ratio	Range	Average
Pre 2000	495,000	23%	2.88	\$5-\$31	\$12.18
Post 2000	-	0%	-	-	-
All Years	495,000	23%	2.88	\$5-\$31	\$12.18

### INDUSTRIAL

Year Built	SF	2+ Stories	Parking	Rents	
			Ratio	Range	Average
Pre 2000	11,559,000	7%	2.03	\$3-\$20	\$7.16
Post 2000	1,356,000	4%	1.36	\$5-\$7	5.26
All Years	12,915,000	7%	1.92	\$3-\$20	\$6.89

## Inner I-5

### DEMOGRAPHICS

2008 Households	41,490	Median Income	\$74,600	Median Age	40.5
2008 Population	99,700	Average Income	\$106,800	Percent Non-White	13%
Average Household Size	2.37			Percent Hispanic	7%

### RETAIL

Year Built	Retail Types Centers			Total SF	Built Environment		Rents	
	Large Format	>35,000 SF	Other		> 1 Story	Parking Ratio	Range	Average
Pre 2000	1,177,000	3,031,000	1,523,000	5,731,000	38%	5.6	\$26-\$32	\$17.26
Post 2000	-	125,000	140,000	265,000	44%	4.4	\$10-\$32	\$28.07
All Years	1,177,000	3,156,000	1,663,000	5,996,000	38%	5.5	\$10-\$32	\$18.09
Avg Rent/SF	17.33	17.00	18.39	18.09		(blank)		

### OFFICE

Year Built	Square Feet by Building Class				Built Environment		Rents	
	A	B	C	Total	2-3 Stories	4+ Stories	Parking	Range Average
Pre 2000	2,499,000	2,474,000	1,081,000	6,054,000	47%	43%	3.57	\$7-\$49 \$20.46
Post 2000	662,000	758,000	8,000	1,428,000	45%	46%	3.64	\$14-\$35 \$23.71
All Years	3,161,000	3,232,000	1,089,000	7,482,000	47%	44%	3.58	\$7-\$49 \$21.07
Avg Rent/SF	\$25.50	\$21.51	\$15.25	\$21.07			(blank)	

### FLEX (50% office)

Year Built	SF	2+ Stories	Parking	Rents	
			Ratio	Range	Average
Pre 2000	2,564,000	5%	3.15	\$10-\$15	\$12.39
Post 2000	114,000	0%	-	-	-
All Years	2,678,000	5%	3.15	\$10-\$15	\$12.39

### INDUSTRIAL

Year Built	SF	2+ Stories	Parking	Rents	
			Ratio	Range	Average
Pre 2000	2,564,000	2%	1.81	\$4-\$9	\$5.82
Post 2000	114,000	52%	3.00	-	-
All Years	2,678,000	4%	1.87	\$4-\$9	\$5.82

## Inner Westside

### DEMOGRAPHICS

2008 Households	129,140	Median Income	\$67,200	Median Age	34.9
2008 Population	332,140	Average Income	\$88,100	Percent Non-White	22%
Average Household Size	2.56			Percent Hispanic	12%

### RETAIL

Year Built	Retail Types Centers			Total SF	Built Environment		Rents	
	Large Format	>35,000 SF	Other		> 1 Story	Parking Ratio	Range	Average
Pre 2000	818,000	4,754,000	2,299,000	7,871,000	9%	4.07	\$10-\$38	\$19.47
Post 2000	304,000	460,000	554,000	1,318,000	25%	4.07	\$18-\$43	\$27.97
All Years	1,122,000	5,214,000	2,853,000	9,189,000	11%	4.07	\$10-\$43	\$21.28
Avg Rent/SF	\$25.18	\$20.63	\$21.41	\$21.28		(blank)		

### OFFICE

Year Built	Square Feet by Building Class				Built Environment		Rents	
	A	B	C	Total	2-3 Stories	4+ Stories	Parking	Range Average
Pre 2000	1,822,863	1,566,429	480,296	3,869,588	64%	25%	4.10	\$10-\$108 \$20.91
Post 2000	505,266	607,174	10,000	1,122,440	42%	54%	3.87	\$16-\$31 \$23.46
All Years	2,328,129	2,173,603	490,296	4,992,028	59%	32%	4.06	\$10-\$108 \$21.56
Avg Rent/SF	\$23.23	\$24.89	\$15.44	\$21.56		(blank)		

### FLEX (50% office)

Year Built	SF	2+ Stories	Parking	Rents	
			Ratio	Range	Average
Pre 2000	8,086,000	48%	3.76	\$5-\$22	\$11.29
Post 2000	878,000	29%	3.68	\$7-\$11	9.86
All Years	8,964,000	46%	3.75	\$5-\$22	\$11.13

### INDUSTRIAL

Year Built	SF	2+ Stories	Parking	Rents	
			Ratio	Range	Average
Pre 2000	6,627,000	6%	2.44	\$4-\$26	\$8.30
Post 2000	269,000	0%	2.57	\$5-\$16	10.68
All Years	6,896,000	6%	2.45	\$4-\$26	\$8.42

## Outer Multnomah County

### DEMOGRAPHICS

2008 Households	53,080	Median Income	\$60,300	Median Age	34
2008 Population	145,210	Average Income	\$69,800	Percent Non-White	20%
Average Household Size	2.70			Percent Hispanic	14%

### RETAIL

Year Built	Retail Types				Built Environment		Rents	
	Large Format	Centers >35,000 SF	Other	Total SF	>1 Story	Parking Ratio	Range	Average
Pre 2000	706,000	2,292,000	1,420,000	4,418,000	6%	4.09	\$8-\$34	\$14.35
Post 2000	192,000	763,000	382,000	1,337,000	10%	3.86	\$11-\$28	\$21.23
All Years	898,000	3,055,000	1,802,000	5,755,000	7%	4.05	\$8-\$34	\$16.41
Avg Rent/SF	\$9.90	\$17.09	\$16.50	\$16.41	(blank)			

### OFFICE

Year Built	Square Feet by Building Class				Built Environment			Rents		
	A	B	C	F	Total	2-3 Stories	4+ Stories	Parking	Range	Average
Pre 2000	-	737,000	484,000	3,000	1,224,000	81%	0%	4.28	\$6-\$28	\$14.60
Post 2000	-	290,000	13,000	-	303,000	87%	0%	2.85	\$16-\$26	\$21.69
All Years	-	1,027,000	497,000	3,000	1,527,000	82%	0%	4.21	\$6-\$28	\$15.42
Avg Rent/SF	\$0.00	\$16.67	\$14.16	\$0.00	\$0.00		(blank)			

### FLEX (50% office)

Year Built	SF	2+ Stories	Parking	Rents	
			Ratio	Range	Average
Pre 2000	231,000	0%	3.00	\$8-\$9	\$8.33
Post 2000	103,000	0%	2.56	\$10-\$11	\$10.90
All Years	334,000	0%	2.75	\$8-\$11	\$9.19

### INDUSTRIAL

Year Built	SF	2+ Stories	Parking	Rents	
			Ratio	Range	Average
Pre 2000	9,465,000	2%	1.81	\$4-\$10	\$6.94
Post 2000	4,919,000	6%	1.23	\$5-\$8	\$5.71
All Years	14,384,000	3%	1.63	\$4-\$10	\$6.27

## Outer Clackamas

### DEMOGRAPHICS

2008 Households	41,880	Median Income	\$65,800	Median Age	40.3
2008 Population	119,600	Average Income	\$79,400	Percent Non-White	9%
Average Household Size	2.84			Percent Hispanic	8%

### RETAIL

Year Built	Retail Types			Built Environment		Rents		
	Large Format	Centers >35,000 SF	Other	Total SF	> 1 Story	Parking Ratio	Range	Average
Pre 2000	136,000	851,000	627,000	1,614,000	11%	3.53	\$7-\$22	\$14.30
Post 2000	-	50,000	122,000	172,000	0%	4.93	\$14-\$25	\$20.60
All Years	136,000	901,000	749,000	1,786,000	10%	3.79	\$7-\$25	\$16.29
Avg Rent/SF	\$0.00	\$17.91	\$15.86	\$16.29		(blank)		

### OFFICE

Year Built	Square Feet by Building Class			Built Environment		Rents		
	A	B	C	Total	2-3 Stories	4+ Stories	Parking	Range Average
Pre 2000	-	108,000	164,000	272,000	0	0%	314%	\$12-\$21 15.75
Post 2000	-	27,000	-	27,000	0	0%	425%	\$11-\$28 25.75
All Years	-	135,000	164,000	299,000	0	0%	326%	\$12-\$26 17.75
Avg Rent/SF	\$0.00	\$20.49	\$15.93	\$17.75	(blank)			

### FLEX (50% office)

Year Built	SF	2+ Stories	Parking		Rents	
			Ratio		Range	Average
Pre 2000	104,000	11%	1.82		\$11-\$12	\$11.16
Post 2000	12,000	0%	2.32		0	\$0.00
All Years	116,000	9%	2.15		\$11-\$12	\$11.16

### INDUSTRIAL

Year Built	SF	2+ Stories	Parking		Rents	
			Ratio		Range	Average
Pre 2000	1,068,000	6%	2.19		\$1-\$20	\$12.28
Post 2000	317,000	13%	2.08		\$5-\$7	\$6.43
All Years	1,385,000	7%	2.17		\$1-\$20	\$10.98

## Outer I-5/205

### DEMOGRAPHICS

2008 Households	52,110	Median Income	\$73,100	Median Age	37.2
2008 Population	140,690	Average Income	\$98,800	Percent Non-White	10%
Average Household Size	2.67			Percent Hispanic	8%

### RETAIL

Year Built	Large Format	Retail Types		Total SF	Built Environment		Rents	
		>35,000 SF	Other		>1 Story	Avg Parking Ratio	Range	Average
Pre 2000	475,000	2,391,000	1,281,000	4,147,000	9%	3.72	\$8-\$32	\$19.04
Post 2000	198,000	938,000	388,000	1,524,000	11%	4.37	\$19-\$32	\$27.28
All Years	673,000	3,329,000	1,669,000	5,671,000	10%	3.93	\$8-\$32	\$21.03
Avg Rent/SF	\$28.39	\$22.70	\$20.31	\$21.03		(blank)		

### OFFICE

Year Built	Square Feet by Building Class				Built Environment			Rents	
	A	B	C	F	Total	2-3 Stories	4+ Stories	Parking	Range Average
Pre 2000	164,000	1,890,000	707,000	3,000	2,764,000	44%	20%	3.91	\$4-\$63 \$18.54
Post 2000	457,000	351,000	18,000	-	826,000	58%	36%	3.91	\$11-\$32 \$23.99
All Years	621,000	2,241,000	725,000	3,000	3,590,000	47%	24%	3.91	\$4-\$63 \$19.78
Avg Rent/SF	\$27.59	\$20.90	\$16.67	\$0.00	\$19.78		(blank)		

### FLEX (50% office)

Year Built	SF	2+ Stories	Parking	Rents	
			Ratio	Range	Average
Pre 2000	1,523,000	40%	2.90	\$5-\$15	\$8.82
Post 2000	447,000	28%	2.75	\$5-\$11	\$8.72
All Years	1,970,000	37%	2.89	\$5-\$15	\$8.80

### INDUSTRIAL

Year Built	SF	2+ Stories	Parking	Rents	
			Ratio	Rents	Average
Pre 2000	13,477,000	2%	1.79	\$5-\$20	\$7.09
Post 2000	3,653,000	6%	2.31	\$5-\$8	\$6.13
All Years	17,130,000	3%	1.89	\$5-\$20	\$6.86



## Outer Westside

### DEMOGRAPHICS

2008 Households	52,110	Median Income	\$73,100	Median Age	37.2
2008 Population	140,690	Average Income	\$98,800	Percent Non-White	10%
Average Household Size	2.67			Percent Hispanic	8%

### RETAIL

Year Built	Retail Types			Built Environment		Rents		
	Large Format	Centers >35,000 SF	Other	Total SF	>1 Story	Parking Ratio	Range	Average
Pre 2000	298,000	1,616,000	1,433,000	3,347,000	12%	3.75	\$8-\$25	\$18.94
Post 2000	481,000	716,000	295,000	1,492,000	2%	4.48	\$18-\$34	\$23.52
All Years	779,000	2,332,000	1,728,000	4,839,000	9%	3.88	\$8-\$34	\$20.27
Avg Rent/SF	\$14.35	\$18.66	\$20.73	\$20.27	(blank)			

### OFFICE

Year Built	Square Feet by Building Class			Built Environment			Rents		
	A	B	C	Total	2-3 Stories	4+ Stories	Parking	Range	Average
Pre 2000	1,471,000	842,000	380,000	2,693,000	24%	4%	4.06	\$17-\$21	\$14.73
Post 2000	1,473,000	490,000	6,000	1,969,000	35%	60%	3.70	\$11-\$20	\$18.80
All Years	2,944,000	1,332,000	386,000	4,662,000	29%	55%	3.97	\$11-\$21	\$15.74
Avg Rent/SF	\$20.50	\$16.74	\$14.10	\$15.74			(blank)		

### FLEX (50% office)

Year Built	SF	2+ Stories	Parking Ratio	Rents	
				Range	Average
Pre 2000	1,720,000	29%	3.66	\$9-\$12	\$10.61
Post 2000	317,000	2%	3.66	\$5-\$6	\$5.40
All Years	2,037,000	25%	3.46	\$5-\$12	\$10.03

### INDUSTRIAL

Year Built	SF	2+ Stories	Parking Ratio	Rents	
				Range	Average
Pre 2000	10,388,279	3%	2.24	\$4-\$17	\$7.39
Post 2000	1,565,828	61%	2.20	\$7-\$11	\$8.20
All Years	11,954,107	11%	2.41	\$4-\$17	\$7.48

***FINAL DRAFT***

## **MEMORANDUM**

To: Malu Wilkinson

FROM: Bonnie Gee Yosick

DATE: January 23, 2009

SUBJECT: Task 2 Variables Affecting Location Decisions (Final Draft)

---

Metro has contracted with a consultant team headed by E.D. Hovee & Company, LLC to define a new paradigm for evaluating job needs and associated employment land demand for the urban area of the tri-county region. This paradigm is to respond not only to global drivers of what appear to be increasingly diverse if not unprecedented economic cycles, but also support the continued integrity of the region's unique land use structure and its goal of integrating economic, environmental and social objectives.

The employment and economic trends analysis is intended to serve as background for the *Urban Growth Report* Metro will complete in 2009. Other uses include land use and transportation modeling (including the MetroScope model), local jurisdiction information for Goal 9 comprehensive plan updates, and general information for business and economic development organizations throughout the region.

Six tasks have been outlined with this employment and economic trends analysis work program:

- Task 1 – Employment Demand Factors and Trends
- Task 2 – Variables Affecting Location Decisions (this memo)
- Task 3 – New Demand Assessment Paradigm
- Task 4 – New Capacity/Inventory Approach
- Task 5 – Frame Choices for Job Needs
- Task 6 – Focus Groups

As part of this analysis, the goal of Task 2 is to provide a qualitative assessment of regional, national, and global economic development perspectives. This research is aimed to identify existing and emerging factors that affect location decisions by type of business, both between and within metro areas comparable to the Portland-Metropolitan region. The focus of this memo is a targeted national literature survey, using prior results of RILS and GMELS research as a starting point.

While presented as a stand-alone memo for the purpose of discussion, this document supports and is supported by the other documents being produced by the consulting team. In particular, Task 1 sets the stage by providing the quantitative benchmark that serves to drive the analysis. Task 3 crafts the demand-assessment paradigm, Task 4 evaluates the land and building capacity of the region, Task 5 frames the choices, allowing testing of various policy decisions' impact upon the region's land and development patterns, and finally, Task 6 presents the findings of the focus groups described above.

The focus of this literature survey is to identify *emerging drivers* affecting the relationship between changing employment patterns and associated building and site characteristics, including such attributes as parcel size and density of development by type of use and market area location preference. This memo presents findings of the literature survey, organized as follows:

- An overview of key global risks and opportunities to the Portland Metro regional economy,
- Followed by an overview of the commercial and industrial real estate environment for the Portland Metro region, reviewing the commercial and industrial land markets each in turn:
  - Industrial,
  - Office,
  - Retail,
  - Institutional, and
  - Mixed-Use;
- Concluding with an exploration of how these drivers might affect the regional economy and its resulting land use in the short, medium, and long term.

As noted earlier, the quantitative benchmark for the analysis is presented in the Task 1 work product. Data to specific sub-regions is presented in more detail in that memo. As the research presented in this Task-2 product is qualitative in nature, the findings are presented as they apply to the Portland Metropolitan region, referred to generally as the Metro region. Where it may support the findings, some region-wide empirical information is presented where it is available.

## SUMMARY OF FINDINGS

Consumers are being cautious, companies are laying off employees, and businesses are keeping inventories lean. At the same time, baby-boomers are nearing retirement age, distinctions between traditional land uses are blurring, and technology for everything from telecommunications systems, inventory management, and on-line shopping is improving.

This sampling of existing and emerging trends will serve to influence decisions about the capacity of the Metro region to meeting employment needs and support a strong regional economy. This memo explores how these and other observations may affect the outlook for land use and development in the region—over 5-, 20- and even 50-year time horizons.

In the short term (of the next 5 years), lean, slow-moving inventories are resulting in weak demand for warehousing/distribution space. However, despite increasing availability, rents are holding steady and the Portland Metro region's industrial market is continuing to perform well. For the industrial market, the region has a price advantage over other west coast cities and is priced comparably to other similarly-sized cities inland, making it attractive to companies seeking industrial space with good access and a regional location with high-quality amenities and attractions for staff.

As job losses and other cost-cutting measures force employers to re-evaluate space needs, a steady increase in vacancy rates is putting downward pressure on rents, which will slow short-term development activity. As with industrial, the region's office market is faring this recession better than the rest of the nation, with vacancy rates just above those of the best-performing office markets. Though substantial new construction is now underway in Portland's Central Business District (CBD), with increasing vacancies, a slowdown in development is expected.

With relatively little retail space per-capita, the region's retail market is also expected to perform well relative to other regions. Retailers will be well-served to invest in both their physical space and their web presence, developing well-integrated, multichannel (web and stores) operating strategies.

With the exception of Research and Development (R&D) and administrative functions, services—particularly medical-office, education, and workforce training programs—are moving toward more stand-alone locations proximate to population and employment centers. Distinctions among traditional land uses are becoming increasingly blurred.

Over the longer term (of the next 20 years and beyond), employers may have difficulty filling positions as baby boomers retire and leave the already slow-growing labor market. Increased globalization and offshoring of some activities will continue as the wage differential between the domestic and international labor markets is expected to persist. Increasing levels of automation and highly effective supply-chain management enables this trend in industrial and manufacturing, while advanced telecommunications systems threaten traditional office jobs.

However, there may be opportunities to bolster employment growth by encouraging in-migration and strengthening the region's existing comparative advantages. The region has attracted recent attention as a leader in sustainable and renewable energy technologies, with significant industry clusters in apparel, creative services, biosciences, and metals as well. The extent to which the region can leverage its competitive position to augment key industry clusters will help determine its mid- to long-term industrial opportunities. To realize these opportunities, the region's economic potential is increasingly dependent on investing in a solid infrastructure system, securing a world-class presence in higher education linked to R&D, and attracting capital to convert promising new technologies to commercial applications.

## GLOBAL RISKS AND OPPORTUNITIES TO THE PORTLAND METRO ECONOMY

After a surprisingly robust recovery after 9/11, it appears the inevitable economic slowdown has begun. Corrections in the housing and financial markets, combined with high volatility in energy prices, are causing widespread slowing across industries. These global and national factors have taken their toll regionally as well. The slowdown became undeniable midyear when the State of Oregon posted its first job losses in the 2<sup>nd</sup> quarter of 2008 after nearly 20 consecutive quarters of rising employment. The region's economy has also slowed as national and global concerns over credit availability and high energy prices have taken hold.

These and other macroeconomic issues represent risks to the regional economy, and—with it—regional employment and development patterns. Some of the key risks and opportunities are reviewed and discussed below.

***Financial market instability*** is affecting business and consumer confidence, which will affect businesses' capital spending plans. In an attempt to bolster confidence and stimulate the economy, Congress has passed a massive "bailout" plan and the Fed has lowered interest rates. Continued access to credit is vital to putting a "floor" under the downturn and subsequent economic recovery.

Though the immediate credit crunch is currently perceived as primarily a short-term issue, the ramifications (i.e. the industrial makeup of the economy) will also play out through the mid-term of the next 10 to 20 years and possibly beyond. This may occur both as an intergenerational shifting of "repayment" responsibility of the current and continuing bailout into the next generation and to the extent that intensified global competition combines with demographic and geopolitical pressures creating a continually shifting playing field of global winners and losers.

***Housing market:*** While not directly an economic development factor, housing values and credit availability affect household wealth and resulting decisions ranging from consumer purchases to job choices. Lax lending standards and low interest rates resulted in rampant overleveraging in the mortgage market. Home price declines and mortgage equity withdrawal declines have slowed consumer spending and impacted consumer net worth (including retirement funding). Oregon is particularly susceptible to a major housing correction in California and the rest of the nation due to dependence on forest products (more so for the rest of the state than the Portland Metro area).

Growth in employment and personal income will be needed to stabilize consumer spending. Oregon's relative advantage in housing cost is narrowing as prices in California fall faster than in Oregon. Additionally, weak residential building has resulted in a loss of construction employment. With economic recovery, a potential mid-term question is whether pricing will come back to levels needed to support development of urban-scale residential and mixed use projects, or—as experienced in the land-constrained economies in Asia—multi-story industrial development.

The current **fiscal environment** is forcing government to find more cost-effective ways to deliver services. On the revenue side, the economic slowdown, tax limitations, and the political challenge of increasing revenue streams are constraining local government revenues, while expenses related to provision of service—such as health benefits, energy and commodity costs, and pension benefit costs—are growing faster than the tax bases which support them.

**Oregon's tax structure**, with its initiative “reforms” of the 1990s (Measures 5 and 50), relies particularly heavily on the personal income tax. This system seemed to work during the high-tech boom and its resulting prosperity, but that algorithm proved problematic in the dot-com bust several years ago and appears even less sustainable today. Declining employment and personal income will result in declining tax revenues, and state and local governments will need to cut services and infrastructure investment which will affect business and consumer location decisions. For Oregon, this situation is exacerbated by the increasing disparity between economic health of the Portland metro/Willamette Valley area and other traditional resource-dependent regions of the state.

The **decline of the resource-based economy** most directly affects rural Oregon—but with it, the Portland Metro region. Rural parts of the state have experienced a decline as their resource-based economies have shrunk. As a result, downsized employees have—in some cases—retrained and moved to urban areas. Some have adjusted to a longer commute to the urban area, rather than moving outright, and still others have simply dropped out of the workforce altogether. These choices affect the Portland Metro region's labor and housing markets.

### **Global Positioning**

Key manufacturing sectors of the Pacific Northwest economy are increasingly dependent on international markets—as exemplified by high tech, aerospace and machinery. This dependence presents risks as well as opportunities:

- **Volatility of the dollar:** The recent decline of the U.S. dollar has helped the region's economy by making exports more competitive on the international market, while at the same time making imported goods more expensive for consumers. A resurgent dollar lessens the manufacturing competitive advantage. Longer term, continued instability of exchange rates will increase risk to Portland-area companies dependent on staying globally competitive.
- **Global pathway cities:** The Urban Land Institute's (ULI) *Emerging Trends in Real Estate 2009* report concludes that U.S. pathway cities “which have become investor favorites and global business magnets, reinforce their premier standings in the looming market correction.” The report highlights the coastal cities of Seattle, San Francisco, and Los Angeles along the Pacific and New York, Boston, and Washington DC to the east, also noting Chicago, Dallas, and Atlanta as “three key metros in the middle of the country.” Portland is situated between what are currently the two top-ranked U.S. gateways of Seattle and San Francisco. However, without clear economic drivers, the ULI report notes that “Portland prospers in Seattle's shadow, but increasingly plays second fiddle.”

- ***China & emerging economies:*** In recent years, the rapid growth of China and then India created incredible inflationary pressure, especially on basic commodity prices. While perhaps not sustainable as exemplified by the current economic downturn, global recovery could mean a return to increased competition for products ranging from steel and cement to food to oil—all with effects on the Portland metro economy. As India and other countries (including the African continent) become more significant on the global stage, competition for resources becomes more severe—as do potential climate and carbon effects. At the same time, increasing incomes in developing nations increase demand for Oregon's exports. Short term, global economic downturn can be expected to dampen demand for Oregon's manufacturing exports. Longer term, the reality of an increasingly global economy amidst constrained resources places increasing emphasis on sustainability as good business practice—and as perhaps a key source of competitive advantage for years to come.
- ***Outsourcing of manufacturing operations and professional services:*** Recently, the availability of advanced telecommunications networks has allowed the outsourcing of certain manufacturing operations and professional and technical jobs to regions of the world with lower labor costs. With the U.S. as a current leader in design and development, the need for rapid turnaround in terms of development of new product seems to support domestic labor, but the mid- to long-term impact of globalization remains unclear, especially as other countries move quickly up the education and technology curve.

***Going green:*** Beginning as a response to the Great Depression, Portland and the Pacific Northwest have benefited from low-cost hydropower. However, as demand surpasses the available capacity of hydro generation, electric generation has moved to higher-cost sources such as coal and natural gas, resulting in higher energy prices and adverse carbon-footprint impacts, which put the region's transportation sector at risk. On the other hand, higher energy costs may encourage development of smaller and more disparate distribution centers, and the Portland Metro region may be well positioned for this role. On the development side, increasing energy costs and the vogue of green buildings has increased use of technology to control costs. Portland may benefit from its current position as a leader in green building with a concentration of Leadership in Energy and Environmental Design (LEED)-certified buildings and LEED-accredited professionals, allowing a concentration of a green-building niche. The region also has opportunity to focus on alternative energy with associated business investments in technologies such as wind and solar power. It will be critical that the region take advantage of this position, as other regions develop expertise to close this gap in the mid- and long-term. Urban core markets appear to be a potential beneficiary of increased energy costs.

***Development Costs:*** Increased capitalization (cap) rates indicate higher levels of property income are needed to support new real estate development. From a real estate perspective, required income levels make it harder for industrial uses to compete for sites with commercial. In the short-term, construction materials become more affordable as commodity prices have eased, but the fear is that they will rise again as the global economy rebounds in the mid-term. This combination places more pressure on finding more cost effective ways of delivering higher-

cost urban than suburban development, but may also keep conditions ripe for redevelopment and renovation of existing buildings in developed areas.

**Demographics:** Aging baby boomers, smaller household sizes, flattened levels of labor force participation. These demographic trends have short-, medium-, and long-term implications to the labor market and levels of consumer spending, which will likely outlast the immediate financial situation.

According to an analysis by the Oregon Employment Department, Oregon's public-sector workforce has a higher proportion of older workers than the private sector, with about one in five workers in state and local government and education estimated to be 55 or older. State agencies are trying to accommodate older workers by allowing more flexible work options and allowing retirement-eligible employees to retain part-time work. Among private industries, the transportation sector has the highest proportion of older workers, with over one-third of the total workforce in transit and ground transportation 55 or older. Other industry sectors with a relatively higher proportion of older workers include other services, natural resources and mining, and health care and social assistance. Industry groups with moderate numbers of older workers include financial activities, professional and business services, wholesale trade, and manufacturing. Industry groups with the lowest proportion of older workers include retail trade; arts, entertainment, and recreation; administrative and waste services; construction; information; and accommodation and food services.

The potential economic and financial burdens posed by an aging population are offset, at least in part, to the extent that the U.S. remains attractive and facilitates continued in-migration. For example, a ULI analysis of a United Nations (UN) report indicates that North America—including the U.S.—has been the dominant recipient of the world's immigrants who intend to settle permanently. The UN further estimates that the U.S. population contains about six times as many foreign-born persons as Canada. Though the U.S. has a somewhat ambivalent view of immigration, Canada faces serious immediate labor shortages and anticipates a worsening of the situation, so therefore is actively recruiting immigrants, with an emphasis on skilled trades and professions. Expatriate professionals demand international-quality real estate product, including industrial, office, laboratories, and warehouses. All migrants generate housing and retail demand and generally contribute to the regional labor force (retirees excepted).

## COMMERCIAL/INDUSTRIAL REAL ESTATE MARKET

Global economic conditions affect regional development patterns through changes in employment patterns which, in turn, affect commercial and industrial real estate development.

The slowdown in the economy has been evident in the real estate market through most of 2008. In the United States, property sales of significant office, industrial, retail, apartment, and hotel assets total just \$46.5 billion in the first quarter of 2008, down from over \$135.0 billion the previous year. And even more striking, the number of investors is down from over 150 different buyers last year to less than 50 this year.



Most of these commercial property investors are watching on the sidelines with their capital, waiting for the economic cycle to recover. With no better opportunities in stocks or other asset classes, equity capital flows into commercial property investments remains strong. Foreign buyers of U.S. property are also growing, facilitated by the relatively weak dollar. Availability of capital will facilitate the stabilization of financial markets.

Unemployment in the metro area increased to 7.2 percent for November 2008, up nearly 2 percent from 5.4 percent a year ago. The Oregon average was slightly higher, at 9.0 percent for December, up from 5.4 percent. The national average increased 2.2 percent to 7.2 percent for the same time period. Job gains continue to be led by healthcare, education, and other services, while losses occurred in construction, trade and transportation, financial, and manufacturing.

For the *short-term*, the financial crisis will add another drag to the weakened economy. Job cuts are expected in industries serving the financial sector, and the economy is expected to remain weak with low consumer confidence and elevated unemployment. To date, the Portland region has not suffered to the same degree as many other regions, with relatively low vacancy rates holding lease rates steady.

In the *mid-term*, the region's opportunities for growth are tied to its current competitive position and key decisions by major employers in concert with state and local governments. Investments in infrastructure will allow both established and emerging niche industries to develop sustainably. For the *long-term*, the region remains dependent on its historic attractiveness for young creatives, global-pathway connections, and an emphasis on environmental and economic sustainability. Education—both in terms of a world-class higher-education system and workforce training—remains critical.

## INDUSTRIAL TRENDS AND OUTLOOK

Previous multi-story buildings were abandoned with the advent of the assembly line in Henry Ford's era to accommodate horizontally-organized factories. Industrial development in the 1920s and 1930s clustered in areas well-served by rail, and the evidence of these development patterns are still evident in the region today. In the 1950s and 1960s, business parks introduced a mix of office, R&D and warehouse/distribution in suburban areas with good freeway and airport access. More recently, a hybrid of traditional industrial and office has evolved, responding to industry's need for a greater range of amenities and higher-quality finishes than traditional industrial, with corresponding higher rental rates as well. Though still a small portion of the total industrial market, this tech-flex segment is generally higher density than traditional industrial in suburban areas and serves an important function in high-tech areas, offering an appealing alternative to traditional office space.

Industrial development includes a broad range of product types and settings.

***Warehouse/Distribution*** buildings generally provide storage and distribution of goods. These require large, flat sites with space for maneuvering trucks and access to transportation. They typically have low employee-to-area ratios so parking requirements are typically small. Some buildings may have 10 to 20 percent of their floor area allotted to office uses, to support the

administrative staff of a distribution or manufacturing company. Ceiling heights can be as high as 36 feet to provide for higher stacking, and buildings can be as large as 750,000 to 1 million square feet, though most buildings in the Portland Metro area are generally less than 250,000 square feet.

**Manufacturing** structures are large buildings designed to house manufacturing processes and can be more than 1 million square feet. Like warehouse/distribution space, ceiling heights are high and ample room for truck maneuverability is a necessity. Parking ratios are usually low, so the FAR is usually relatively high, despite the single-floor format.

**Tech-flex space** might be one- or two-story buildings ranging from 20,000 to 1 million square feet with internal space a combination of office and warehouse. The pattern of internal uses varies, though the CoStar data cited in the Task 1 Report defines it as 50 percent or more office space with the balance as warehouse space. This class includes buildings devoted exclusively to research and buildings which serve multiple uses, often with office and administration functions in the front of the building and R&D other high-tech uses in the rear. Offices in R&D buildings typically have open floor plans to promote teamwork and collaboration, and activities range from the creation and development of new technologies and products to the development, testing, and manufacture of products from existing technology. The design of tenant improvements is more important for R&D uses than for other industrial uses and is usually tailored to the needs of specific tenants.

## ***National outlook***

Employment in manufacturing, distribution, and related sectors drives the market for industrial space. Cautious consumers and inventory management practices are driving businesses to keep inventories lean, resulting in weak demand for warehousing/distribution space. However, despite increasing availability, rents are holding steady.

Historically, there has been a significant spread between regions in the vacancy rates of industrial properties. The national commercial/industrial real estate brokerage firm C. B. Richard Ellis (CBRE) compares the availability rates across metropolitan areas, which it refers to as “market areas.”<sup>1</sup> For the Portland market area—which includes Multnomah, Washington, Clackamas, Yamhill, and Columbia counties in Oregon, and Clark County in Washington—availability rates are one to two percent higher than the vacancy rates. According to CBRE, the five best performing cities have availability rates under 10 percent and the five worst experiencing much higher availability rates over 17.5 percent, as shown in Table 1.

---

<sup>1</sup> While conceptually similar to vacancy rates, availability rates include properties which may still be under construction or occupied, but which are expected to become available in the near future, and—as such—are being actively marketed.

**Table 1**  
**Industrial Market Availability Rates, 3<sup>rd</sup> Quarter 2008**

Markets with Lowest Availability Rates		Markets with Highest Availability Rates	
Tucson	4.4%	Austin	23.8%
Las Vegas	6.5%	Stamford	19.9%
Houston	7.0%	Boston	19.8%
Salt Lake City	7.6%	Columbus	18.9%
Long Island	7.6%	Baltimore	17.4%
Portland	8.2%		

*Source: C.B. Richard Ellis, United States National Industrial Availability Index, 3<sup>rd</sup> Quarter 2008.*

Ranked 24<sup>th</sup> in size among the 44 market areas reported by CBRE, Portland has been experiencing vacancy rates just above those of the strongest industrial markets.

Until the more recent economic slowdown, the U.S. and Portland Metro region experienced a somewhat unexpected resurgence in some manufacturing sectors following 9/11. The manufacturing sectors enjoying this renaissance seemed to be technologically sophisticated, niche-oriented, leading edge (for their industry) and market responsive (i.e. with rapid turnaround to changing customer requirements). It is not clear whether this was an anomaly (brought about, for example, by the weak U.S. dollar) or represents a path for selectively reinventing our industrial base—as tech-savvy and market-focused.

### ***Portland Metro Region Outlook***

Regional job losses have occurred in the construction and financial sectors, and—notably for the industrial real estate market—manufacturing, and trade and transportation. Gains were seen in healthcare, education, government, and professional services—industry groups driving office and institutional space, but not typically industrial space users.

As of the second quarter of 2008, the region's industrial real estate market was continuing to perform well, despite economic uneasiness. With relatively low vacancies and with only about 500,000 square feet under construction, the industrial market is expected to continue to perform well, given the limited choice and room for movement in the market. And as noted in the national outlook, rental rates have been holding steady, between \$0.33 to \$0.41 per square foot in the region. In some cases, new construction is asking rates as high as \$0.45 per square foot. Flex space is renting in the \$0.85 to \$0.95 per-square-foot range.

These rates compare favorably to the Puget Sound area, our global-pathway neighbor to north, whose market area average lease rates are \$0.54 per square foot, with warehouse/manufacturing/business park space leasing at an average of \$0.45 per square foot while flex/tech space commands \$1.20 per square foot. Portland also maintains this price advantage over other portal cities on the west coast, with asking rates (for warehouse only) averaging \$0.69 per square foot in the Los Angeles market area, \$0.91 in San Francisco, and \$0.71 in San Diego.

Pricing in Portland's six-county market area is also comparable to Sacramento's market area which has asking rates of \$0.36 per square foot for warehouse, \$0.58 per square foot for light A&B, and \$0.84 per square foot for R&D space. Pricing for other similarly-sized metro areas is also comparable, with Austin's lease rates at \$0.54 for warehousing, \$0.51 manufacturing, and \$0.81 for flex/R&D.

Within the region, there is significant variability in vacancy rates in the markets subareas. According to Commercial Real Estate Brokerage Cushman & Wakefield, the vacancy rates varied across the region as of the 3<sup>rd</sup> quarter, 2008 from a low of 4.2 percent in the Southeast sector including Southeast Portland and Clackamas to a high of 8.4 percent in the Southwest sector, with the Hillsboro/Sunset Corridor subarea 12.7 percent vacant. However, one limitation with broker data is its omission of owner-developed or owner-occupied space.

## ***Emerging Trends***

Employment in manufacturing, distribution, and related sectors drives the market for industrial space. Though job gains are expected in the transportation/warehousing and wholesale trade sectors, the Bureau of Labor Statistics has forecast a loss of over 1.5 million U.S. manufacturing jobs between 2006 and 2016. Some job losses are the natural result of automation as employers substitute capital for labor. But job losses coupled with the turmoil of the financial markets will not bode well for businesses making capital investments. Key trends affecting the Portland region's industrial land uses are described below:

***Offshoring:*** Continued movement of industrial operations overseas, including more high-tech manufacturing and R&D functions previously maintained in the U.S. The wage differential which drove the offshoring of certain manufacturing functions may be reaching the exhaustion point, according to some observers. Consulting firm McKinsey & Co. notes that other factors are changing global economics, including the high cost of oil, the falling dollar, rising overseas wages, and quality issues. According to a workshop summary of the Committee on the Offshoring of Engineering from the National Academy of Engineering, the overall business cycle and technological changes have a larger impact on the short-term engineering workforce. In addition, some foreign-based companies are now "onshoring" by increasing their engineering operations in the U.S. As globalization continues, an increasing number of workers likely will be vulnerable to the impacts—both negative and positive—of offshoring and other labor market shifts.

Globalization has also changed and ***consolidated industrial space across the U.S.***—with the areas of dominance the portal cities along the coasts and a few key inland nodes for distribution to the rest of the country.

***Supply-Chain Management:*** Continued consolidation of corporate America and resulting consolidation of distribution facilities have fueled the trend in supply-chain management such as just-in-time inventory management, direct distributing (shipping goods directly from manufacturers to retailers, or—in some cases—consumers), and electronic inventory control. All of these developments in supply-chain logistics have undergone an evolution over the past

decade, and several key parts of the supply chain—warehousing and distribution—have been incorporated into the changes.

Success with **Radio Frequency Identification (RFID)** in today's retail supply chain has been mixed. Wal-Mart started its push for adoption of RFID technology in 2004 when it announced its goal to have 12 of its approximately 120 distribution centers outfitted for RFID by 2006; as of September 2008, only five were. Research released in August 2008 by the RFID Research Center at the University of Arkansas showed promise for the use of RFID tags on individual retail items, though there were several disconcerting challenges noted in the study. Of particular concern was the limited success rate of readers when scanning varying quantities of items; the more items the reader had to scan in one instance, the less successful it was—a serious impediment to a technology intended to streamline large quantities of merchandise in the supply chain. As a compromise to item-level tagging, Walgreens has recently deployed an approach which places its control tags on plastic tubs and cages that carry cases of products to shipping dock doors. Information on the contents of the containers is synched with Walgreens' warehouse system to ensure that product quantities and items are destined for the intended store.

The impact of RFID technology on land needs will depend on the **physical layout of the distribution centers**. Distribution centers may now use multiple gates and trailers to minimize downtime for drivers and trucks. Empty trailers are then towed temporarily to the parking area until they are needed for preloading. Higher ceilings now observed allow increased stacking heights so more goods can be stored at one facility before they are shipped out. As at cross-dock trucking facilities, which allow loading and unloading at two or more sides of the terminal, many facilities run with bays on more than one side of the building.

**Shortened Product Life Cycles**—an indicator of a manufacturer's cost sensitivity—are speeding up. This phenomenon is most prevalent in semiconductors, other electronics, and apparel. Though development has traditionally occurred in the U.S., items are becoming commodified, and then manufactured elsewhere with lower costs of production. This change in production timing and location focuses on the need to accommodate these international supply chains. Similarly, recent volatility in fuel prices increases the dependence on well-integrated transportation networks.

**Geographic concentration, specialization, and differential growth** by industrial sectors: From real estate economics, the concept of the regional “anchor”—a large firm providing both stability and volume of ideas—helps to fuel start-ups and support their growth. As such, the capabilities of companies to coordinate will drive the degree of commercial success enjoyed within the region. Though a university is a critical component, research suggests that the existence of a world-class university is not, by itself, sufficient to promote an industrial cluster. To support the geographic concentration effort, the Oregon Business Plan has launched the **Oregon Cluster Network** to identify Oregon's mature, emerging, and potential industry clusters and assist cluster participants to accelerate innovation and growth of their industries. The clusters currently identified by this effort include the following:

Aerospace & Aviation  
Agriculture & Food  
Apparel & Sporting Goods  
Creative Services & Arts  
Defense & Security  
Distribution & Logistics  
Financial Services  
Fisheries  
Forestry Cluster  
Green Development

Healthcare & Biosciences  
High Tech  
Metals & Transport Equipment  
Outdoor & Recreation  
Professional & Business Services  
Renewable Energy  
Software  
Telecommunications  
Tourism & Hospitality

**Mass Customization:** One opportunity to revive a timber resource-based economy is through the concept of mass customization, which typically involves high levels of mechanization and design and order-processing over the internet, with the goal of yielding higher quality than standard mechanized products. A number of ideas surface from the previous interviews and other research conducted for a previous forest cluster study conducted by E.H. Hovee & Company – suggesting how mass customization might be applied to a largely softwood-oriented industry in Oregon, including:

- Ability of Oregon producers to apply up to 200-300 veneers or different finishes to a commodity plywood or MDF core product – on a *made to order* basis. Some companies are able to alter production daily – maximizing wood value based on market prices the day before.
- Manufacture of extensive door and window products – using a range of wood, composite and non-wood materials.
- Milling of large logs – for a variety of customized, high-end architectural and engineering applications.
- Greater involvement of primary producers in retail packing and displays – ranging from displays at major “big box” retailers to customized customer graphics.
- Ability to mesh concepts of mass customization at the factory with *just in time* inventory control desired by the end-user or retailer.
- Prospective ability to mill certified lumber to market specifications – with *chain of custody* tracking letting the customer know the precise source and management practices of the forest from which the lumber originated.
- Future potential for development of forest bio-refineries that use a common pulp digester with ability to rapidly switch between different outputs – from traditional pulp/paper to bio-fuels and other bio-products – thereby optimizing market demand and pricing.

All of these concepts for mass customization will be predicated on the ability to bring large quantities of raw resources together with virtual market information and high technology capabilities – enabling an ever increasing array of customer choice and value opportunities. In addition to this example of wood products, this concept may be applied to other similar manufacturing opportunities. The opportunities which might easily be adapted would be those sectors that seem to involve some combination of higher-value niche products, customer-driven ordering capabilities, technological sophistication (even for small to medium size companies),

links to high quality or green design, and building from existing core strengths of the regional economy.

**Table 2**  
**Industrial Business Trends by Use Type**

<b>Industrial Segment</b>	<b>Trends</b>	<b>Land Use Implications</b>	<b>High Performing Regions</b>
<b>Heavy Industrial/Manufacturing</b>	Increasing off-shore production and decreasing U.S. employment share, especially in non-durable goods. Cost sensitivity varies with life cycle of the product, which is speeding up (e.g. semiconductors).	Requires larger sites (possibly with industrial sanctuary) and good transportation and utility systems, such as redundant power. Fast and certain permitting a more important factor in location decisions.	U.S. industrial space is clustered in key hub distribution markets, rather than in manufacturing centers within each town. These hubs are Los Angeles, Chicago, Northern New Jersey, Dallas/Fort Worth, San Francisco Bay Area, and Atlanta. Preference for large markets, access to suppliers.
<b>Warehouse/Distribution</b>	Globalization, RFID and other forms of electronic warehousing, direct distribution, just-in-time inventory management, third party distribution. Merging functions with storefronts and siting in shopping centers (Costco). Low inventory/high turnover businesses will remain the most cost sensitive.	Regional/local trade markets (Portland) anticipated to need well located, affordable (vs. state of art) space. Adequate transportation infrastructure is critical. Less supply-chain real estate may be required in some industries. As business functions evolve, retailers may seek less expensive industrial space, rather than retail designated commercial space.	Key gateway cities for air transport distribution: Miami, New York/New Jersey, Los Angeles, Chicago, San Francisco, and—with the location of FedEx's DC—Memphis. Key gateway cities for maritime distribution: Seattle/Tacoma, Los Angeles, New York/New Jersey, San Francisco/Oakland, Miami, and—most comparably to Portland—Savannah and Charleston.
<b>Tech-Flex</b>	Provides campus-type setting desirable to some office users, and allows close siting of business functions (office, R&D, assembly). Encompassing increasingly diverse land uses as services for employees.	Pressure to provide more outlying greenfields along adequate major transportation corridors.	Centers viewed as competitive with Portland include San Diego, San Jose, Seattle, Phoenix, Salt Lake City, Denver, Austin. Other established regions include Boston, Research Triangle Park (NC), and Los Angeles.

### **Summary Portland Metro Region Outlook:**

**Short-Term (5-Year):** Though still low relative to other regions, vacancies in the six-county Portland Metro area are rising—putting downward pressure on rental rates, especially over the time period that regional / statewide unemployment rates continue to trend upward. The Portland region has a price advantage over other west coast cities and is priced competitively to other similarly-sized cities inland, making it attractive to companies seeking industrial space

with good access and a location with high-quality amenities and attractions for staff. To the extent that the dollar remains comparatively weak over this time period, exports may continue as an important source of stability for the regional economy.

The region has attracted significant attention as a leader in sustainable and renewable energy technologies. Two recent developments include Denmark's Vestas Wind Systems—the world's largest windmill manufacturer—with its North American headquarters in Portland's Central Business District (CBD)—and SolarWorld—one of the largest producers of solar cells in the world—recently opening a 480,000-square-foot manufacturing facility in the former Komatsu plant in Hillsboro. Such developments are key to utilizing large campus industrial sites.

**Mid-Term (20-Year):** For the 20-year time horizon, the region's prospects are highly dependent on its current competitive position and decisions by major high-tech and Port-related industries within the Portland metro area relative to other U.S. and global alternatives.

The opportunity for the region to attract new growth lies with the region's existing industry clusters. Particular emphasis has been on the recent surge in sustainable and renewable energy, with the City of Portland and the State of Oregon negotiating with Vestas to expand its local operations, hoping to add another 850 jobs to its current employment of about 350 local jobs. The ability of one company—such as Vestas or SolarWorld—to “anchor” the region's sustainable industry cluster could pave the way for spinoff industries.

Other opportunities include building off the region's other industry groupings, including established and emerging industries such as apparel, metals, high-tech, biosciences, and others. Linkages to Oregon's historic natural-resource activities should also not be overlooked, as these resource-based activities may also shift with a nod to the region's current emphasis on sustainability, such as green forest products, and local and organic agriculture, with a preference to agricultural products from Oregon and Southwest Washington.

If RFID technology improves and delivers on its promise to provide critical logistical data to supply-chain and merchandising functions, it is likely that inventories will continue to fall, making distribution centers more highly-automated activity hubs and less passive warehousing space. Volatility in the energy market and fuel prices may encourage development of second-tier distribution locations, and Portland may be well-positioned to satisfy this role.

**Long-Term (50-Year):** For the long-term, the region is increasingly dependent on securing an internationally recognized higher-ed research presence coupled with venture capital for leading edge technology and commercial applications. Likely shift from large footprint industrial park and campus orientations to higher-density industrial (including for some wholesale-distribution functions both close-in and on the I-5 corridor). Multi-story industrial applications may be possible. Public investments in infrastructure will be crucial.



## OFFICE COMMERCIAL TRENDS AND OUTLOOK

Office development is a highly segmented, highly diverse, and highly competitive segment of the development industry. They are categorized by class, building type, use, ownership, and location.

The three main classes are A, B, and C. *Class A* office spaces are investment-grade buildings with top-notch location, design, building systems, amenities, and management. They typically but are not always mid-high rise structures and command the market's highest rents and most credit-worthy tenants. *Class B* buildings also have good location, management, and construction with a little functional obsolescence or deterioration. This class is generally found in well-located buildings that have been well maintained. *Class C* buildings are typically substantially older and have not been modernized.

The office market can also be categorized as high- (15 or more stories), mid- (four to 15 stories), or low-rise (one to three stories), and garden office (one to five stories with extensive landscaping). Related building product types (often classified by brokers as industrial space) include R&D (typically one or two stories with up to 50 percent office/dry laboratory space and the workshops, storage, and perhaps some light manufacturing), and tech-flex space (one- or two-story buildings often with a mix of warehouse and light industrial and offices).

Most urban areas classify office space by the location and the physical characteristics of the offices and their typical users. The CBD usually contains the largest concentration of major office buildings, though the CBD's share of metropolitan office space is declining in most cities. (More later) Typical tenants in downtown offices include law firms, insurance companies, and financial institutions that require high-quality space. Creative firms and even software are an increasing part of the tenant mix in some metro areas including Portland. Suburban areas have experienced office nodes clustering near freeway interchanges or major suburban shopping centers and executive housing areas.

Historically, suburban rents have been lower than those in the CBD and tenants have typically included regional headquarters offices and smaller companies and service organizations, but suburban locations have been attracting more major law firms, accounting firms and some corporate entities from the CBD, with construction quality, range of amenities, and rents increasing correspondingly. Neighborhood offices are typically oriented to serve the needs of local residents by providing space for service and professional business along arterial streets near residential areas. Business parks might include several buildings with a range of uses from light industrial to office and are typically in suburban locations.

### ***National Outlook***

Prospects for the office market are generally tied to financial-, technical-, and professional-services sector employment. The hit to the financial sector directly affects commercial real estate markets serving global financial markets (most particularly New York and London), as job losses and other cost-cutting measures force employers to re-evaluate their space needs. A

steady increase in vacancy rates is putting downward pressure on rents, which will result in less short-term development activity.

Compared to other metropolitan areas, the Portland region was still faring well as of the third quarter of 2008, as shown in the table below.<sup>2</sup> As in many other metro areas of the U.S., Central City office product appears to be holding its own better than suburban office product.<sup>3</sup> This phenomenon reflects some back-to-the-City movement that is also being echoed in housing markets across the nation—driven, in part, by the appeal of urban amenities and efforts to reduce the cost of commuting.

**Table 3**  
**Best Performing Office Markets**  
**3<sup>rd</sup> Quarter, 2008**

<b>Metropolitan</b>	<b>Vacancy Rate</b>	<b>Downtown</b>	<b>Vacancy Rate</b>	<b>Suburban</b>	<b>Vacancy Rate</b>
Manhattan	5.9%	Charlotte	0.9%	Honolulu	8.8%
Honolulu	9.3%	Manhattan, Midtown	5.4%	Los Angeles & Miami	9.7%
Miami	9.9%	Boston	6.6%	Nashville	11.2%
		Manhattan, Downtown		Orlando	11.2%
Los Angeles	10.2%		7.4%	St. Louis & Ft.	
Portland	10.7%	Washington, DC	7.8%	Lauderdale	11.6%
		Portland	8.0%	Portland	12.2%

*Source: C.B. Richard Ellis, United States National Office Vacancy Index, 3<sup>rd</sup> Quarter 2008.*

**Table 4**  
**Worst Performing Office Markets**  
**3<sup>rd</sup> Quarter, 2008**

<b>Metropolitan</b>	<b>Vacancy Rate</b>	<b>Downtown</b>	<b>Vacancy Rate</b>	<b>Suburban</b>	<b>Vacancy Rate</b>
Detroit	24.7%	Detroit	26.1%	Detroit	24.4%
Dallas/Ft. Worth	21.2%	Toledo	23.1%	Phoenix	21.4%
Phoenix	19.8%	Dallas/Ft. Worth	22.2%	Cincinnati	21.2%
Palm Beach County	19.6%	St. Louis	20.1%	Dallas/Ft. Worth	21.0%
Atlanta	19.3%	Wilmington	20.0%	Austin	19.7%
<b>Portland</b>	<b>10.7%</b>	<b>Portland</b>	<b>8.0%</b>	<b>Portland</b>	<b>12.2%</b>

*Source: C.B. Richard Ellis, United States National Office Vacancy Index, 3<sup>rd</sup> Quarter 2008.*

<sup>2</sup> As described earlier, CBRE defines the Portland market area as Multnomah, Washington, Clackamas, Yamhill, and Columbia counties in Oregon, and Clark County in Washington.

<sup>3</sup> CBRE defines the downtown market as the office buildings in the central core of the largest city within the metropolitan area.

## ***Portland Metro Region Outlook***

As noted earlier, unemployment in the metro area increased to 6.4 percent for October 2008, comparable to the Oregon average of 6.8 percent, and the national average of 6.1 percent. Though losses were observed in construction, these losses were suffered mostly in residential building activity, as commercial activity is relatively strong with over 1.3 million square feet of office space under construction in the CBD, including MachineWorks, Ziba Design Headquarters, and Meier & Frank building in the Pearl and the ZGF Building, First & Main Equity Office, and Park Avenue West development downtown. The largest of these developments, First & Main and Park Avenue West, are not due for completion until 2010 and 2011. It is unclear whether the demand for these new buildings will be from net new demand or current CBD tenants looking to trade up into more efficient space—which helps justify the higher rents for new construction. If so, these new developments may have little impact on total market absorption, leading to increased vacancies, particularly of older Class B and C properties. Also of concern is the impending availability of some 106,000 square feet when the Port of Portland moves its headquarters to the airport. Suburban development activity was not indicated in available brokerage reports.

The vacancy rate in the CBD dropped to 8.5 percent for the 3<sup>rd</sup> Quarter 2008, from 9.1 percent from the 2<sup>nd</sup> Quarter and 9.2 percent one year ago. This contrasts with the suburban vacancy rate, which at 15.3 percent for the 3<sup>rd</sup> Quarter 2008, is the highest in the region, suffering from over 84,000 square feet in the Tektronix campus and nearly 94,000 square feet in the newly completed Pacific Highway Center.

## ***Emerging Trends***

***Influence of technology:*** As tenants require more extensive and sophisticated telephone and computer network systems integrated into the design of buildings, “Smart Buildings” are the norm, with advanced telecommunications cabling and services including phone systems, computer networks, data transmission, voice- and videoconferences and other communication technologies. Energy technology is becoming more sophisticated as well with energy management systems that control heating and ventilation and cogeneration and off-peak cooling systems, remote monitoring and control of HVAC systems is common for lower operating costs and more efficient billing of tenants.

***Green Building:*** Buildings account for nearly three-fourths of electricity consumption, and over one-third of all energy use, carbon dioxide emissions, and raw material use in the U.S. In response, the United States Green Building Council developed its Leadership in Energy and Environmental Design (LEED) building rating system to conserve natural resources, reduce operating costs, and provide a range of social and community benefits. Established in 2000, there are now 2,150 LEED certified projects nationwide, in all 50 states and 69 countries. By 2010, McGraw-Hill estimates 10 percent of new commercial construction will be green. Portland is seen as a leader in green building, with more buildings LEED-certified per capita than any other region. The City of Portland requires all new and major renovations of city

buildings meet LEED Gold green building standards. This year, *Popular Science* magazine rated Portland as America's greenest city with a population over 100,000, and Sustainlane.com, a San Francisco-based environmental group, last year ranked it as the greenest among the 50 largest U.S. cities.

**Corporate Campuses:** During the 1990s, Sears vacated its namesake tower in Chicago and relocated to a suburban campus. In southern California, the Disney Company continued to add to its corporate collection of buildings designed by renowned architects in suburban Burbank, with buildings designed by Robert Stern, Michael Graves, and Aldo Rossi. Sprint created a 240-acre headquarters campus in the suburb of Overland Park, near Kansas City. Though most market surveys of office space specifically exclude owner-occupied buildings from the inventory of commercial office space, these decisions obviously affect the local office market dramatically.

The past decade has revealed an overall ***trend toward office decentralization*** in urban areas—albeit with Central City cores also still experiencing strong office occupancies. Though downtowns across the United States are enjoying a renaissance with new sports and cultural facilities, restaurants and entertainment districts, old buildings are being converted into lofts and condominiums, and thousands of new residents moving in, one component of downtown's traditional livelihood has not generally enjoyed a similar surge: the office market. A review of central business district (CBD) inventories in 30 major U.S. cities by Integra Realty Services shows that nearly three-quarters of them experienced a net increase in office space between 2001 and 2007, but still continued to lose market share in their metropolitan areas to suburban office locations. According to Integra figures, the average metropolitan market share of these 30 CBDs dropped from 31.8 percent in 2001 to 28.4 percent in 2007. With an estimated 28.7 million square feet of office space outside the CBD, Portland's CBD share fell from 42 percent to 37 percent. However, with strong building activity noted in the CBD, the total impact of this trend is unclear.

**Mergers and acquisitions:** The trend toward business consolidation results in property surpluses as newly merged companies seek to realize the efficiencies that the merger intended. While efficient use of land is desirable, the resulting downsizing may result in adjustments in the real estate market, just as workforce downsizing often results in short-term labor market adjustments. The decline of the financial services industry and the collapse of Washington Mutual in Seattle will likely result in further consolidation, as evidenced by job losses in financial services.

**Globalization:** As with the movement of industrial operations overseas, professional services are being outsourced as well. The *Wall Street Journal* recently published an article highlighting the practice of offshoring legal services to India. Though such face-to-face tasks as appearing in court or handling witness depositions cannot currently be outsourced, routine legal research, due diligence and document review is being done in India at roughly half the cost as in the U.S. Though Indian lawyers often lack U.S. licenses, they are typically closely supervised by U.S. lawyers to comply with ethical concerns. Similar transitions are occurring in industries ranging from technology support centers to title insurance firms. As globalization continues, an increasing number of U.S. workers will be vulnerable to the negative impacts of offshoring and other labor market shifts.

**Office-Space “Hoteling”:** Improved technology and cost-cutting pressure is leading more companies to consider telecommuting and other strategies to reduce the amount they spend on office space. Besides increasing productivity and collaboration among their workers, companies are able to squeeze their operations into less space by adopting policies such as hoteling, in which a worker has no assigned desk but checks in when in the office and is assigned one. That helps mitigate the problem of “dark space” -- desks sitting empty when workers are on the road, working from home or on vacation. According to a 2005 survey, reported in the *Wall Street Journal*, Chicago real-estate office Jones Lang LaSalle Inc. asked the real-estate directors of 50 major corporations, who together control more than two billion square feet of office space, to rate their best options for cutting their real-estate costs. The top choice for 37 percent of the executives was telecommuting and hoteling. One potential drawback of this approach is that companies are running the risk that they may have more limited expansion opportunities when or if business picks up.

Businesses look for **strong education systems** that produce an educated workforce, a user-friendly development and regulatory bureaucracy, affordable workforce housing, and proximity to desirable amenities, including executive housing and recreational opportunities for employees.

**Ownership in small businesses** may continue to rise due to a variety of factors, including low interest rates, the conversion of leasable property to for-sale units motivated by high vacancy rates, the availability of below-market loans from the US Small Business Administration, retirement planning for small business owners, the tax benefits of property ownership, increasing numbers of professional women working part-time while caring for children, all of which might also point to opportunities for condominium- office development.

Following the trend to save time and commuting costs, the prevalence of **live-work space** seems to be increasing. For example, according to the *LA Times*, if all applications for mixed-use home-office types are approved, it would bring the total number of such units to over 10,000 in the LA region. An Urban Land Institute study indicated that local governments are attracted to the home-office model because it allows for higher levels of energy efficiency and potential for increased tax revenue.

**Office Serving Non-Local Markets:** Nationally, these *traded sector* office segments—including corporate headquarters, research and development, and back-office functions—have received the most attention, since they can readily move if the company perceives advantages to one location over another. Over the past two decades much of this corporate activity has gravitated to suburban office park and business park locations. Except in high profile corporate urban centers such as Manhattan, these can be difficult clients to attract into City Center locations.

An analysis by the Public Policy Institute of California concluded that net job loss from relocation is very small, and that in-migration largely offsets out-migration. For jobs in California in the 1992-2004 time period, out-migration accounted for 1.6 percent of all “job destruction”, and in-migration accounted for 1.0 percent of all job creation. Overall, jobs lost from net relocation accounted for an annualized rate of 0.06 percent of employment; in other

words, job loss from net relocation in California was only six out of every 10,000 jobs annually for the period 1992-2004.

**Table 5**  
**Summary of Trends of Office Serving Non-Local Markets**

Office Segment	Trends	Land Use Implications	High Performing Regions
<b>Headquarters</b>	Central cities or strong first tier suburbs with good educational systems and air connections.	Requires good choice of office space or availability of land for build-to-suit. Often a stated preference for suburban campuses.	Washington DC, Atlanta, Charlotte, Dallas, Raleigh-Durham.
<b>R&amp;D</b>	Proximity to universities, good K-12 and higher educational system, lifestyle amenities attractive to educated workforce.	Some preference for campus environment as buffer from neighboring uses and privacy. Sited in both traditional office and tech-flex space.	Route 1 in northern New Jersey, large metropolitan areas.
<b>Back Office</b>	Sensitivity to cost with respect to real estate, housing, telecommunications, taxes, wages.	Requires state of the art telecommunications and proximity to affordable workforce housing.	Domestically, medium & small sized cities – Tampa, Tucson, suburban areas. Globally, Bangalore, India.

**Office Serving Local Markets:** Outside of the traded-sector is another segment of the office market, more captive to the local community. This segment is generally comprised of law firms, Certified Public Accountants (CPAs), medical office, financial institutions, insurance providers, real estate professionals, architectural/engineering firms and others which serve the local business and consumer base of a particular region. As with retail commercial, this segment is driven by population growth and the general economic conditions in the region, but can vary by subarea, based on submarket population and incomes.

**Table 6**  
**Summary of Trends of Office Serving Local Markets**

Office Segment	Trends	Land Use Implications	High Performing Regions
<b>Central City</b>	Despite a strong inner-city rebound, decentralization of office continues. Firm re-engineering generally favors suburban, exurban, second & third tier cities for back office functions. The central city is favored for high profile and client-oriented service firms.	National trend towards decentralization although 'urban recommit' relocations are documented nationwide.	Boston, New York City, Albuquerque, Las Vegas, Fresno, San Antonio, San Jose, Jersey City, Little Rock, Omaha, Portland.
<b>Suburban</b>	Campus offices can be part of supply chain cluster of an industrial firm and allow for greater integration between land uses and office functions.	Continued pressure for greenfield sites with adequate infrastructure. Need for regulatory accommodation of integration of functions for high-tech sector and other rapidly changing business sectors.	Ventura County, San Diego, Honolulu, Sacramento, Tucson.
<b>Neighborhood</b>	Typically Class B & C space, service-oriented, including medical-office.	Often occurs in retail strip commercial and Main Street locations. Customer-oriented firms such as insurance and real estate often prefer ground floor locations.	Oriented to serve local population, no major differences across major metro areas.

Office Segment	Trends	Land Use Implications	High Performing Regions
Home Office	More people with traditional jobs are working from home a portion of their week, requiring greater communications infrastructure.	Reduces demand for office space to extent that individuals telecommute full-time. Live-work space also seems to be growing.	Limited empirical research; may be correlated with metro areas having a high share of <i>creative class</i> individuals.

### Summary Portland Metro Region Outlook:

**Short-Term (5-Year):** With relatively lower vacancy rates than comparable metro areas, the Portland region is expected to perform better than the national average. Even with uncertain economic conditions, building is continuing with over 1.3 million square feet under construction in the CBD, including the Pearl. Additionally, Vestas is considering investing about \$250 million to build 500,000 to 600,000 square feet of LEED-Platinum downtown space in the South Waterfront not yet on the books.

However, with increasing vacancies, a slowing of development is expected after projects in pipeline are completed. The duration of the slowdown depends on the extent of the global financial-sector consolidation now in process and statewide employment stagnation. Unlike many metro areas, there currently appears to be some opportunity for Central City (downtown plus Lloyd and Pearl) to recapture market share with more diverse products, attractive lease rates (in down market), increased transit premium, and LEED certifications. The greatest challenges are for much of the suburban market, including business/tech-flex parks with substantial office tenancies.

**Mid-Term (20-Year):** The future of the office market remains highly uncertain in the mid-term. The labor market—already growing slowly—is expected to further decelerate as baby boomers retire. An additional challenge is the Portland metro region’s perceived lack of “global-pathway” status, though increasing energy costs may represent an opportunity for the region even as a second-tier center. There are continued opportunities to build on the region’s appeal to young creatives and an entrepreneurial strengthening of business, tech-related and creative service sectors. Best opportunities are for transit-rich, higher density and increasingly urban locales marketed for green development. Portland’s position as a leader in sustainable and renewable energy in industry and manufacturing may be expanded to include professional services. With high numbers of LEED-accredited professionals currently in the marketplace, there may be opportunity for spinoff firms and other specialized professional services.

**Long-Term (50-Year):** For the long term, public investments in education and infrastructure will become even more important. Increased density and increased use of live-work options may affect the region’s need for traditional office environments, even in the face of uncertain job growth. Advanced telecommunications systems and globalization will make the prospects for office development even more uncertain. As a result, the region’s office development becomes increasingly reliant on the historical attractiveness of Portland metro area (extending well beyond the Central City) for migrants—particularly young creatives, and both environmental and economic sustainability. In addition to committed support of workforce training, achieving

world-class higher education and research status would be integral for sustained competitive advantage and improved incomes region-wide.

## **RETAIL TRENDS AND OUTLOOK**

Retail developments are typically categorized by the commercial real estate brokerage and development communities based on market served and tenant characteristics. The following definitions reflect typical real estate nomenclature, and the language may or may not match local planning definitions. For example, what the industry defines as neighborhood centers are often viewed by zoning as community centers.

***Convenience and Neighborhood Centers*** provide the convenience (food, drugs, and sundries) and personal services (laundry and dry cleaning, barbershop, etc.) for the needs for the immediate neighborhood. These centers are usually anchored by a supermarket or drug store, and contain up to 100,000 square feet of leasable area. The site is usually 3 to 10 acres in size and typically serves a population of between 3,000 and 40,000 people.

***Community Centers*** provide many of the convenience and personal services by neighborhood center with a wider array of soft lines (apparel) and hard lines (hardware and appliances). Most of these centers are anchored by a junior department store or variety store in addition to a grocery store and ranges in size from 100,000 to 500,000 square feet. The site area is usually 10 to 30 acres and typically serves a population of between 40,000 and 150,000 people.

***Regional and super regional centers*** provide the general merchandise, apparel, furniture, and home furnishings in depth and variety as well as a range of service and recreational facilities. Typically built around two or more full-service department stores (50,000 square feet each), they typically contain between 500,000 to 1 million square feet or more. The site area required ranges from 10 to 100 acres or more and serves a population of 150,000 to 300,000 or more.

In addition, there are several variations of the major types of shopping centers, including Power Centers, Lifestyle Centers, and Downtown or Urban (Street) Retailing. Specialization of shopping centers started in the 1970s, though the trend accelerated through the 1990s. The affects of these and other trends are explored in the Retail Trends section of this document.

### ***National Outlook***

With consumers tapped out on credit and unemployment numbers rise, retail has been hit hard. Large malls, typically owned by REITs, and high-income-area neighborhood shopping centers are generally expected to perform best, though even they will suffer through the unsettling jobs picture and housing woes. This ownership structure typically means remote decision-making and fiduciary responsibilities.

Decline in consumer spending prompted several regional mall stores to either file for bankruptcy protection or close some stores, including Circuit City, Sharper Image, Foot Locker, Pacific Sunwear of CA, and Zales. Retailers have been posting some of the largest year-over-year



declines in retail sales throughout 2008 including Dillard's, Kohl's, Limited Brands, American Eagle Outfitters, and Macy's. Stores that survive will still likely shelve expansion plans for the near term. The uncertainty has led to a flight to quality, with the newer or substantially upgraded regional malls with strong management faring the best.

Weakened consumer demand and inability to borrow to finance the purchase of merchandise are hitting some stores hard than others. Linens 'n Things filed for Chapter 11 bankruptcy protection and is set to close 120 of its 589 stores, including 27 closings in California. The Home Depot is also planning to close 15 stores (less than 1 percent of the company's store portfolio) scattered across ten states (none in Oregon or Washington), and cut its U.S. development pipeline by approximately 50 stores. Yet to be seen is whether this retail contraction is merely a short-term cyclical phenomenon or the start of a longer term transition in the national retail environment.

### ***Portland Metro Region Outlook***

A recent survey by Cushman & Wakefield's (C&W) Retail Specialty Group revealed that the Portland region has the second lowest amount of retail space per capita among the 25 largest U.S. metropolitan areas.<sup>4</sup> Only New York City has less retail space per capita. As a result, the Portland region is expected to weather the national slowdown better than most major markets. It is also likely that the region experiences higher overall sales per square foot, which may enable retailers to provide higher-quality store design and amenities.

C&W noted that furniture stores seem to be particularly hard hit by the economic downturn, with Wicks, Levitz, and Linens 'n Things vacating space, enabling some updating and remodeling where the historically tight market may support a higher lease rate for higher quality space.

Despite the cautious economic conditions globally, many retailers are still conducting due diligence for future openings in the Portland region, including national clothier Rue 21 planning to open several Oregon locations in 2009, and Toys R Us planning to introduce a new hybrid concept in 2010. Much of the proposed retail development seems to be following anticipated "new rooftops"—as with over 900,000 square feet of development in four large projects in Clark County. Also planned is The Rivers near Oregon City, a lifestyle-type center of nearly 700,000 square feet.

### ***Emerging Trends:***

Some of the trends involve variations of the major types of shopping centers. Specialization of shopping centers started in the 1970s, though the trend accelerated through the 1990s.

---

<sup>4</sup> Cushman & Wakefield includes Clark County in Washington in its retail analyses.

The **Power Center** is a specialized type of super community center which emerged in the 1980s. It usually contains at least four category-specific anchors of 20,000 square feet or more. These anchors typically emphasize hard goods, such as consumer electronics, sporting goods, office supplies, home furnishings, home improvement goods, specialty foods, toys, and personal computer hardware/software. They tend to be narrowly focused but deeply merchandised “category killers” together with the more broadly merchandised price-oriented warehouse clubs and discount department stores. Anchors in power center typically occupy 85 percent or more of the total leasable space.

Convenience-craving American consumers have driven even traditional department store chains to experiment with elements of the big-box format. Shopping carts—once exclusively in the realm of supermarkets and big-box discounters are now seen in midtier department stores as well. The Kohl’s chain set the pace, offering customers a virtual “racetrack” floor plan and other time-saving features such as centralized checkout. Sears and JCPenney have started developing and converting off-mall, big-box stores, emulating many of the speed-oriented elements that have helped Kohl’s expand so quickly. Despite these efforts, Sears and JCPenney were among many retailers reporting double-digit decline in same-store sales in November 2008. (Other stores reporting declines include Costco, Target, Macy’s Nordstrom, Gap, and Abercrombie & Fitch). Wal-Mart is the only national retailer to report a gain, raising the question of whether its good fortune is a result of the current economic condition (as shoppers trade down during a period of austerity) or an intensification of the long-term competitive of its low-cost, high-volume format.

Further boosting the strength of power centers is the addition of amenities and square footage. This new genre, sometimes referred to as a “**power town**” may contain 600,000 to 1 million square feet or more and feature expanded components beyond big-box retail anchors, such as lifestyle wings, mix of uses such as residential or office, or a entertainment or hospitality element. Examples in place now include the Alliance Town Center—a 300-acre center which will ultimately house a 1.35 million-square-foot power center/town center, plus an additional retail component anchored by Belk and J.C. Penney, the Village at Stone Oak—a 635,000 square-foot development that uses power-center tenants and lifestyle retailers in San Antonio, and Prairie Center—which will house up to 3 million square feet, including a 950,000 square-foot power center in Brighton, Denver.

**Lifestyle centers** are another specialized type of super community center. International Council of Shopping Centers (ICSC) in 2002 as defined a lifestyle center: a location near affluent residential neighborhoods, an upscale orientation, 150,000 to 500,000 square feet of gross leasable area (GLA), an open-air format, and at least 50,000 square feet of national specialty chain stores. The success of these centers, including the region’s BridgePort Village, appears to correspond with a downtown renaissance, with the lifestyle center emulating a man-made “town square.” With limited property available for retail development, it is likely that this trend will be beneficial to increased downtown and urban retailing.

Convenience-craving consumers’ quest for one-stop shopping has driven developers to acknowledge that today’s customer shops at both big-boxes and in-line boutiques, providing them together in a **Hybrid Center**. A pioneer of this combination of power and lifestyle is

Developers Diversified with the 1999 Phase 1 opening of Riverdale Village in Coon Rapids (Minneapolis), MN, which featured a Costco, Best Buy, and a Main Street with small shops in an 875,000-square-foot open-air center which includes a man-made lake and pavilion for outdoor events.

***Downtown or Urban Retailing:*** While the postwar suburban shopping centers grew, downtown retailing declined. The late 1970s and early 1980s saw the introduction of festival marketplaces in a few cities, such as the Faneuil Hall Marketplace in Boston, Harborplace in Baltimore, and South Street Seaport in New York. Regional shopping centers were built in a few downtown locations, such as Glendale Galleria in Glendale, CA and Hawthorne Plaza in Hawthorne, CA, and the Gallery at Market East in Philadelphia, and Eaton Centre in Toronto, continuing into the 1990s with the development of Circle Center in Indianapolis and San Francisco Centre. These new-generation centers form anchors within the downtown retail environment and encourage spillover of retail growth throughout the surrounding neighborhood.

Urban street retail is more difficult to track on a consistent basis as commercial brokerage firms do not typically include independent stand-alone retailers outside of larger shopping centers such as NW 23<sup>rd</sup> Avenue or SE Hawthorne Street. This type of “Main Street” retail is sometimes configured as neotraditional developments, with ground floor retail and residential and office uses on the upper floors. Local, independent shops are usually the first to “discover” a new urban street ripe for retail. As business builds, chains start to take notice, and move in, often building larger stores overshadowing their precursors. Unfortunately, as the economy slows, the pacesetter independents are typically the ones to close first, as has been observed on NW 23<sup>rd</sup>. According to Shelley Poticha and Gloria Ohland of Reconnecting America, “Portland is modeling a new kind of downtown neighborhood that appeals to the demographic groups (smaller, older neighborhoods) that are becoming the new majority in the United States.”

Retailers are being challenged to adapt successful suburban retail formulas to fit urban spaces, leading to the ***Vertical Stacking of Tenants***. In addition to being more expensive to build than a conventional horizontal center, these projects need to draw shoppers from floor to floor and create the visual connections that allow circulation. Escalator and checkout placement can affect aisle width and loading areas may need to be adaptable to accommodate multiple retail users. There are numerous examples of vertically stacked retail, including Pioneer Place in downtown Portland.

***Transportation-Integrated Retailing:*** Following the restoration of Union Station in Washington DC in the late 1980s demonstrated the potential for shopping centers in major transit stations. The restoration of Grand Central Terminal in New York has created the opportunity for high-end specialty shopping to serve commuters, tourists, and office workers in the Midtown area. Transit-oriented development along light-rail stations is Portland’s answer to this type of transportation-integrated retailing. As ridership continues to increase, station areas can expect to become increasingly visible and desirable retail locations. Despite suffering the incredibly poor timing of opening on September 10, 2001, CascadeStation has since re-tooled and en route to success with new specialty furniture anchor IKEA. Another example of transportation-integrated retailing is the Oregon Market, featuring local shops and restaurants in the Portland Airport

(PDX). PDX was reportedly the first major airport to adopt “fair retail pricing”—a requirement that airport retailers and restaurants sell at the same price as their off-airport outlets.

The popularity of *on-line shopping* has raised questions about the impact of internet sales on bricks-and-mortar stores. More than half of U.S. households regularly shop on the Web, but online purchases still make up only 7 percent of total retail sales, according to Forrester Research. This market share varies, based on consumers’ shopping patterns for different product types. For bigger-ticket items, consumers tend to research options online, and then go offline to buy (some who return to make the ultimate purchase online after satisfying their desire to see the product in-person, only if cost savings are present)—a practice found in just over half the customers purchasing consumer electronics. These *cross-channel shoppers* do make purchases online, with 5 out of 6 reporting online purchases within three months of the survey, likely on items like books—whose ubiquity, wide availability, and relatively low price helped amazon.com usher in the genre of on-line shopping. According to a survey of consumer book-buying habits conducted by Fairfield Research, chain stores accounted for just over one-third of book purchases (in units) in 2007; that figure, based on consumers' buying plans for 2008, is projected to fall to just marginally percent this year. In contrast, the percentage of books purchased online jumped from 23 percent in 2006 to 30 percent in 2007 and is projected to inch up to 30.5 percent in 2008. The increased integration between on-line and in-person shopping will heighten the demand for integrated transportation networks.

### **Summary Portland Metro Region Outlook:**

***Short-Term (5-Year):*** With relatively less square footage of retail space than other comparable metropolitan areas, the Portland Metro region should outperform the national average. However, global deleveraging will certainly affect this region with increasing retail vacancies, the likely exit of national retailers from the market, and dramatically slowed retail development (especially in outer suburban areas). The seeming potential for more center-related development may also be offset in this region by urban-growth-boundary management combined with opportunity for well-capitalized independents as with urban street corridors. Overall, the best investment opportunities are expected to be with major regional centers and grocery-anchored neighborhood centers, while older strip centers will face challenges and likely higher vacancy rates as the economic downturn results in a flight to quality. New developments will continue to employ the more population and lower-cost open-air format, in contrast to the former enclosed mall format.

Possible increase of on-line purchases, particularly for smaller, more ubiquitous products such as computer hardware and software, books, pet supplies, cosmetics and fragrances, and as price-sensitive consumers are exposed to more direct-market channels. Continued price competition on bigger-ticket and widely-available items such as appliances, autos, and electronics.

***Mid-Term (20-Year):*** As the economy recovers, development will be renewed but at a slower pace with the aging of the prime baby-boomer market. As a result, there may be increased emphasis on redevelopment or reuse of dated centers. Increasing consumer desire for open-air formats and limited real estate for new lifestyle developments may benefit urban street retail with mixed use, possibly including scaled-back infill grocery concepts.

Transit-oriented development is likely to benefit from increased ridership and lack of development sites. More vertical stacking of retail is also likely. As distribution becomes more centralized and automated, it will become increasingly dependent on public investments in transportation infrastructure.

There is opportunity for retailers with both websites and brick-and-mortar stores to respond to web-savvy consumers with well-integrated, multichannel operating strategies, including consistent pricing, ability to purchase and redeem gift cards online or in stores, and ability to accrue loyalty points across channels. Some retailers may invest in their web presence not only to sell merchandise directly, but to position their site as a research tool to increase sales at their stores.

**Long-Term (50-Year):** As large sites for traditional shopping center formats becomes more scarce and regional malls continue to age, there is an increased risk of physical and market obsolescence, yielding possible opportunities for the reconfiguration of outer ring retail to more urban, mixed-use, street and transit orientations. An important question mark is the long-term competitive position of large format national retailers – both in terms of community acceptance, adaptation to more urban footprints and potential trends toward shopping closer to home (as exemplified by Portland interests in achieving 20-minute neighborhoods).

In the long term, the overall impact of online shopping on traditional retail is unclear, though the main influencing factors seem to be consumer preference for handling merchandise versus value of time and the sophistication of retailer distribution technologies.

## INSTITUTIONAL TRENDS AND OUTLOOK

National real estate literature is not oriented towards institutional users. More than any other employment related real estate product type, institutional users such as medical centers and universities tend to respond more to unique considerations associated with project funding and market demand.

However, universities and hospitals have increasingly become strong economic development drivers of their communities. In many cities they are major employers, bringing high-wage jobs to the communities in which they locate. Not only have these jobs been viewed as largely recession-proof, enrollment in higher education is often counter-cyclical, with residents returning to school when the jobs are scarce.

For outerlying areas without existing infrastructure or well-developed land use networks, a potential role for institutions might be as drivers of infrastructure or as “anchors” to other developing commercial or residential nodes.

**Educational Institutions:** As reviewed by Professor Heike Mayer, Margaret Pugh O’Mara chronicles the efforts of the Silicon Valley, Philadelphia, and Atlanta to create what she calls “cities of knowledge.” As she describes it, Stanford University played an active and largely successful role in real estate development and its entrepreneurial efforts in connecting with

industry. In contrast, O'Mara considers the University of Pennsylvania effort to create a critical mass of academia and industry a failure which she attributes to obstacles in the existing urban neighborhood, including an unfriendly business climate, urban problems, and a lack of support for entrepreneurial ventures. Efforts to utilize the Georgia Institute of Technology as a catalyst for high-tech development also failed, because 1) Georgia Tech failed to become involved in real estate development, 2) developers established technology parks not adjacent to Georgia Tech, and 3) government officials were focused not on a concentration of knowledge in Atlanta, but on building scientific industries statewide.

O'Mara concludes that key ingredients to the recipe for high-tech success include investments in science and technology, a world-class and politically-powerful university, control over land development in the right location, and the will to use high-tech economic development as an end, not as a means to solve other urban problems.

**Health Care Institutions:** Healthcare expenditures by those 65 and over represent the majority of healthcare spending in the U.S. And with the baby boomers reaching that threshold, the increased need for health care will be significant in the short, mid, and long term. However, though the demographics support growth, there will likely be significant challenges posed by increased funding uncertainty particularly related to Medicare and Medicaid (pending substantial health care reform), given that increasing costs for health care require an ever-increasing share of GDP.

The nature of the health care institution itself has changed from a one-stop shop for inpatient services to a collection of many organizations following the trend of specialization in medicine, with more procedures conducted on an outpatient basis. As a result, the medical office sector is expected to be a growth business for the foreseeable future. Medical office buildings are often developed on the campuses of existing hospitals, but can also be stand-alone buildings in downtowns or even suburban environments. From an investment perspective, analysts say they have historically been overlooked not only because they lack the pizzazz of gleaming skyscrapers, but also because their complex operating structures can scare off traditional office investors.

**Corrections Institutions:** The Office of Economic Analysis produces a semi-annual Corrections Population Forecast which provides projections of the offender populations supervised by the Department of Corrections (DOC). The forecast uses a model which simulates the flow of inmates from intake to the prison through their sentence, and final departure as prisoners are released. Although criminal activity (measured by arrests) has generally decreased in Oregon over the past decade, the prison population has gradually increased, primarily due to increasing lengths of stay. The future rates will be influenced by changes in the Alternative Incarceration Program (AIP). The prison population at the beginning of July 2008 was approximately 13,550, or 0.5 percent higher than one year before. By mid 2018, the prison inmate population is expected to grow to just over 15,800. Unlike the historical NIMBY (Not-in-My-Backyard) image, modern correctional institutions are often viewed as a potential economic development strategy, bringing family-wage jobs with benefits. With existing capacity, however, observers do not expect development of significant additional correctional institutions in the immediate-term.

**Other Public/Private Institutions:** Many universities have embarked on large-scale redevelopment projects, often in partnership with real estate development firms, presenting opportunities for the private sector. These university-related projects are frequently extensive mixed-use developments that will serve both daily and visiting populations. For example, a new 345-acre development at Western Carolina University (WCU) in Cullowhee, North Carolina, will include not only academic buildings, but also private sector and government facilities, as well as multi-family housing. The projects, 40 percent of which will comprise the actual buildings, will be funded in part by a \$2.89 million investment by the state as part of series of projects costing about \$400 million. The catalyst for this development is WCU's Millennial Initiative, facilitated by state legislation that allows universities to enter into public/private partnerships with businesses that support both university development and economic development.

### ***Emerging Trends:***

**Demographics:** As the population continues to age, health-care institutions will continue to flourish. The first baby boomers will turn 65 in 2012, and their healthcare needs will be significant. From 2005 to 2020, the under-65 population is expected to grow by nine percent, while the 65-and-over population is expected to grow by 50 percent. This age shift is amplified by the fact that the 65-and-over population utilizes greater levels of physician services than those under 65 (about 4:1 for populations 65 to 74 and about 6:1 for populations 75 and older).

Inner-city school districts—which have faced declining enrollment for years—are now seeing their student populations stabilize and may even experience a bit of recovery in coming years. Though these declines are largely offset by gains in suburban school districts (for example, the Beaverton School District has been experienced gains which roughly offset losses in the Portland Public Schools), the flattening of the region's population pyramid is undeniable, resulting in impacts on institutional planning as students move through the K-12 system to higher education or workforce training programs.

**Private redevelopment partnerships:** As shown by Western Carolina University and the Stanford/Silicon Valley examples, universities can work in partnership with businesses that support both university development and economic development. These neighborhoods will allow students to attend class, then walk next door to apply their learning in related workplaces. Conventional models focused on research and began with incubators and research/technology parks sponsored by the largest research universities. The Silicon Valley example shows that adjacencies and integration have synergistic qualities.

**Unconventional Sites:** At a time when universities are running out of room to expand on their existing campuses, some are thinking beyond their ivy-covered walls and finding ways to use unconventional sites to their advantage. In the process, they are helping to revitalize neighborhoods and creating synergies with other uses. San Francisco State University's College of Extended Learning, MBA and Executive MBA programs joined the retail and office tenants at the Westfield San Francisco Centre, the largest urban shopping center west of the Mississippi River. Locally, University of Oregon's Portland satellite campus in the White Stag block of Old Town is an institutional example benefiting the urban area's revitalization efforts. And Oregon

Health and Science University's (OHSU) development of South Waterfront allowed much-needed expansion, despite severe land-capacity constraints.

### **Summary Portland Metro Region Outlook:**

**Short-Term (5-Year):** Though the prospects are good for increased need for health care and education, the economic downturn will likely provide challenges of constrained funding for education, Medicare/Medicaid reimbursements, and public and nonprofit agencies. In the short term, there could be an emphasis on planning for mid-term development, and the opportunity to accommodate adults returning for added education.

**Mid-Term (20-Year):** In the mid term, substantially increased health care demand is anticipated with aging of baby boomers. There may be challenges posed by increased funding uncertainties for Medicare and Medicaid (pending substantial health care reform). Medical office buildings—traditionally located on hospital campuses—will likely need to expand to more stand-alone locations proximate to growing populations. Educational facilities may also be likely to focus development on satellite campuses, closer to the populations they serve. Workforce training programs will also need to be distributed with population. A South Portland expansion and strengthened linkage of OHSU/PSU campus development is anticipated. Inmate population and capacity of correctional institutions will need to be revisited.

**Long-Term (50-Year):** The institutional share of regional employment base (and resulting space needs) is expected to continue to increase. This growth may include greater ancillary opportunities ranging from R&D to supportive residential community options. There will be greater pressure for increased density of institutional development, including reconfiguration of existing facilities. Decentralized operations of institutional users are expected to follow population growth.

## **MIXED USE**

Mixed-use design has advanced from the traditional main street approach—with residential above retail space—to a diverse mix of property types, users, and strategies to create true urban environments. The relative resurgence of many city cores and the desire of some metro areas to better manage or limit sprawl and increase sustainability have seen mixed use emerge as a major component of contemporary real estate strategy. This resurgence takes the traditional main-street-residential-over-retail approach to the next level by introducing other uses and forms to the urban—and even suburban—environment.

A key challenge with mixed use is to successfully conquer the conflicts sometimes inherent between uses. One designer sees mixed-use development being conceived of as 'insertions' into gaps in existing downtowns as opposed to greenfield sites. In most cases, a limited number of large new anchors are introduced to attract new customers to the edge of an existing retail area. The anchors then are surrounded by smaller retailers, and some office space that can be placed above retail. Housing is placed around these attractions in locations less central and in most cases is used as a buffer to surrounding residential districts.



## ***Emerging Trends:***

Some land use combinations which appeared in the literature included the following:

**Suburban Office/Housing/Retail:** The transformation of suburban business districts from poorly linked, auto-dependent, segregated-use projects into well-connected, pedestrian-friendly, mixed-use environments is a development trend gaining momentum in urban areas nationwide, with plans for suburban office parks transitioning to mixed-use developments, sometimes with nearly equal parts of office space, housing, and retail. Many of the same factors that influenced the resurgence of central business districts in the 1990s apply to the revival of suburban business districts. Such factors include: development density, improved spatial connection between buildings, pedestrian interconnections, street layout, opportunities for shared parking, and choice in mode of transit. However, because the building form and layout of suburban business districts have an independence and separation not found in downtown business districts, they can prove a major challenge to public transit, which is sometimes unable to serve lower density and fragmented development in a cost-effective manner.

**Retail/Medical Office:** As described in the office and institutional sections of this report, health care services were historically provided on hospital campuses, but began to move into freestanding medical office buildings—sometimes still in or near medical complexes, but increasingly in freestanding office buildings conveniently located near population and employment centers. Health care services moved from institutional to office—and now—to retail. Typically located inside drug store chains and staffed by nurse practitioners, *retail clinics* fulfill patients' demand for convenient routine medical care. The first retail clinic opened in August 2000, morphing a medical office use with a neighborhood retail use. In most cases, retail clinics operate under existing retail zoning, making them not a mixed-use per se, but a trend toward new combinations of retail and service uses that will affect land use needs for institutional, medical office, and retail.

**Redevelopment of Obsolete Public Buildings:** Obsolete facilities of all kinds can result in newly available parcels of prime land. These facilities might include public uses—decommissioned military bases, surplus school sites, hospitals closed due to demographic shifts and changes in health-care standards and delivery systems—or private uses—industrial sites and buildings intended for development which never occurred. The resulting sites—proximate to transportation infrastructure—are often ideal candidates for redevelopment. Hospital redevelopment in particular favors a combination of uses, as shown by the former Boston, Forborough, and Metropolitan State Hospitals in Massachusetts. Locally, the former Dammasch Hospital site in Wilsonville is an example now being developed by Costa Pacific Communities as Villebois. Smaller scale examples in this region include the McMenamins restaurant/brewpub redevelopments and the identification of two sites in Portland under the Department of Defense's Base Realignment and Closure (BRAC) process—the Lt. Alfred Sharff US Army Reserve Center located in the Portsmouth Neighborhood in North Portland at 8801 N. Chautauqua Boulevard and the Sgt. Jerome Sears US Army Reserve Center located in the Multnomah Neighborhood in Southwest Portland at 2730 SW Multnomah Boulevard. Disposition of these surplus military properties presents potential opportunities for creative re-use of these sites.

## **Summary Portland Metro Region Outlook:**

**Short-Term (5-Year):** Likely slowdown in mixed use (beyond existing pipeline projects) due to overall economic contraction, greater financial feasibility challenges with urban density projects, and lender caution with what is often viewed as more challenging mixed use project finance. Maybe offset, at least in part, by public-private development programs (as with urban renewal where available).

**Mid-Term (20-Year):** Major rebound opportunity as core urban markets solidify emerging advantages over car-dependent outer ring alternatives. Substantially increased market share depends on extension of mixed use beyond the Central City, as with station area development and streetcar extension, and greater diversity of mixed use application, e.g. work-live, office/retail condos, and use diversification of ground floor space beyond retail.

Provision of health-care services will likely become increasingly specialized and geographically segmented as the bulk of baby-boomers reach retirement age. As the sector continues to grow and adapt to these needs, its growth will have implications across multiple land uses.

**Long-Term (50-Year):** Could emerge as the hallmark of the Portland Metro region as a legitimate but distinctive global pathway community, with substantial mixed-use throughout the region – focused on regional and town centers, corridors, and possibly selected high demand employment areas.

## **SUMMARY CONCLUSIONS**

In addition to the industrial makeup of the economy—reviewed in the Task 1 report, existing and emerging trends will influence the capacity of the Portland Metro region to meet employment needs and support its regional economy. This memo reviews those emerging trends, and explores how they might affect the outlook for land use and development in the region—over 5-, 20- and 50-year time horizons.

In the short term, demand for warehousing/distribution space is expected to remain weak, due to lackluster retail sales. In the industrial real estate market, the Portland Metro region currently has a price advantage over other west coast cities which makes it attractive to companies seeking industrial space with good access and a regional location with high-quality amenities and attractions for staff. As job losses and other cost-cutting measures force employers to re-evaluate space needs, a steady increase in vacancy rates is putting downward pressure on rents, which will slow short-term development activity. But as with industrial real estate, the region's office market is faring this recession better than the rest of the nation.

With relatively little retail space per-capita, the region's retail market is also expected to perform well relative to other regions. Retailers expected to perform well are those who have well-integrated, multichannel (web and stores) operating strategies. Services—particularly medical-office, education, and workforce training programs—are moving toward more stand-alone locations proximate to population and employment centers. Distinctions among traditional land uses are becoming increasingly blurred.

Over the longer term (of the next 20 years and beyond), employers may have difficulty filling positions as baby boomers retire and leave the already slow-growing labor market. The public sector and certain transportation and health care sectors in particular will need to ensure adequate workforce training and flexible work options to allow older workers to remain in the workforce.

Increased globalization and offshoring of some activities will continue as the wage differential between the domestic and international labor markets is expected to persist. Increasing levels of automation and highly effective supply-chain management enables this trend in industrial and manufacturing, while advanced telecommunications systems threaten traditional office jobs. However, volatility in energy prices may slow this phenomenon somewhat, and may even create an opportunity for the region with its well-integrated and multi-modal transportation network. These and other implications are summarized in Table 7 on the following page.

There may also be opportunities to bolster employment growth by encouraging in-migration and building off the region's recent attention as a leader in sustainable and renewable energy technologies. Industry clusters in apparel, creative services, biosciences, and metals and others also continue to offer key opportunities. To realize these opportunities, the region's economic potential is increasingly dependent on investing in a solid infrastructure system, securing a world-class presence in higher education, and attracting the capital required to convert promising new technologies to commercial applications.

## **IMPLICATIONS FOR FUTURE TASKS**

As noted at the beginning of this memo, the results of the Task 1 employment demand factors and trends analysis and this Task 2 survey will inform employment forecasting of Task 3 and the job choices of Task 5. The New Demand Paradigm associated with Task 3 will allocate employment forecast to the tri-county portion of the larger metro area by industry sector, subarea geography and design types using a range rather than point estimate approach. From there, Task 4 will evaluate the land and building capacity of the region, while Task 5 frames those choices in a policy context.

Questions raised in this memo about the region's role in supporting and cultivating certain emerging drivers may be explored in those future tasks. For example:

- How does the region compare to other parts of the country / world with respect to employer incentives (including the Oregon Department of Energy's Business Energy Tax Credits, known as BETCs)?
- How might the region support building re-use for new emerging industries?
- What types of infrastructure improvements will be most beneficial to employers?
- How might the region explore the role of institutions as drivers of infrastructure or as "anchors" to other developing commercial or residential nodes.
- How might the region further support workforce training and higher education to achieve world-class status?
- How might the region cultivate the development or redevelopment of unconventional sites?

- To what degree should the region consider or encourage development concepts for which there is no clearly demonstrated market at least in the Portland region to-date?

These are some of the questions which might be further explored as the new demand paradigm is development and Metro and its partner jurisdictions explore implications of various policy decisions.

DRAFT

**Table 7**  
**Summary of Implications**

<b>Commercial-Industrial Land Use Segment</b>	<b>Short-Term (5-Year)</b>	<b>Mid-Term (20-Year)</b>	<b>Long-Term (50-Year)</b>
<b>Industrial</b>	<p>The Portland Metro region’s price advantage over other west coast cities continues to make it attractive to companies seeking industrial space with good access and a location with high-quality amenities and attractions for staff. To the extent that the dollar remains comparatively weak over this time period, exports may continue as an important source of stability for the regional economy. Attracting large industrial users is key to utilizing large campus industrial sites.</p>	<p>The opportunity for the region to attract new growth lies with the region’s existing industry clusters including emerging applications (as with solar). Particular emphasis has been on the recent surge in sustainable and renewable energy. The ability of one company to “anchor” the region’s sustainable industry cluster could pave the way for spinoff industries. Other opportunities to build off the region’s other industry groupings, including established and emerging industries such as apparel, metals, high-tech, biosciences, and others. Volatility in the energy market and fuel prices may encourage development of second-tier distribution locations, and the region may be well-positioned to satisfy this role.</p>	<p>For the long-term, the region is increasingly dependent on securing an internationally recognized higher-ed research presence coupled with venture capital for leading edge technology and commercial applications. Likely shift from large footprint industrial park and campus orientations to higher-density industrial (including for some wholesale-distribution functions both close-in and on the I-5 corridor). Multi-story industrial applications may become more possible.</p>
<b>Office-Commercial</b>	<p>With relatively lower vacancy rates than comparable metro areas, Portland can be expected to perform better than the national average. However, with increasing vacancies, a slowing of development is expected after projects in pipeline are completed. There appears to be some opportunity for Central City (downtown plus Lloyd and Pearl) to recapture market share with more diverse products, attractive lease rates (in down market), increased transit premium, and LEED certifications.</p>	<p>The future of the office market remains highly uncertain in the mid-term. The labor market—already growing slowly—is expected to further decelerate as baby boomers retire. Continued opportunities are to build on the region’s appeal to young creatives and an entrepreneurial strengthening of business, tech-related and creative service sectors. Best opportunities are for transit-rich, higher density and increasingly urban locales marketed for green development. Portland’s position as a leader in sustainable and renewable energy in industry and manufacturing may be expanded to include professional services. With high numbers of LEED-accredited professionals in the marketplace, there may be opportunity for spinoff firms and other specialized professional services.</p>	<p>For the long term, public investments in education and infrastructure will become even more important. Increased density and greater use of live-work options may affect the region’s need for traditional office environments, even in the face of uncertain job growth. Advanced telecommunications systems and globalization will make the prospects for office development even more uncertain. In addition to committed support of workforce training, achieving world-class higher education and research status will be integral for sustained competitive advantage and increased incomes region-wide.</p>

<b>Commercial-Industrial Land Use Segment</b>	<b>Short-Term (5-Year)</b>	<b>Mid-Term (20-Year)</b>	<b>Long-Term (50-Year)</b>
<b>Retail-Commercial</b>	<p>With relatively less square footage of retail space than other comparable metropolitan areas, the Portland Metro region should outperform the national average. The economic downturn will likely result in a flight to quality. Possible increase of on-line purchases, particularly for smaller, more ubiquitous products. Continued price competition on bigger-ticket and widely-available items such as appliances, autos, and electronics.</p>	<p>There may be increased emphasis on redevelopment or reuse of dated centers. Increasing consumer desire for open-air formats and limited real estate for new lifestyle developments may benefit urban street retail with mixed use, possibly including scaled-back infill grocery concepts. Transit-oriented development is likely to benefit from increased ridership and lack of development sites. More vertical stacking of retail is also likely. As distribution becomes more automated, it will become increasingly dependent on public investments in transportation infrastructure. Opportunity for retailers with both websites and brick-and-mortar stores to respond to web-savvy consumers with well-integrated, multichannel operating strategies.</p>	<p>Increased risk of physical and market obsolescence, yielding possible opportunities for the reconfiguration of outer ring retail to more urban, mixed-use, street and transit orientations. Overall impact of online shopping on traditional retail is unclear, though the main influencing factors seem to be consumer preferences for handling merchandise versus perceived value of time, desire for convenience, and the sophistication of retailer distribution technologies.</p>
<b>Institutional</b>	<p>Though the prospects are good for increased need for health care and education, the economic downturn will likely provide challenges of constrained funding for education, Medicare/Medicaid reimbursements, and public and nonprofit agencies. In the short term, there could be an emphasis on planning for mid-term development, and the opportunity to accommodate adults returning for added education.</p>	<p>Substantially increased health care demand is anticipated with aging of baby boomers. There may be challenges posed by increased funding uncertainties for Medicare and Medicaid (pending substantial health care reform). Medical office buildings—traditionally located on hospital campuses—will likely need to expand to more stand-alone locations proximate to growing populations. Educational facilities may also be likely to focus development on satellite campuses, closer to the populations they serve. Workforce training programs will also need to be distributed with population. A South Portland expansion and strengthened linkage of OHSU/PSU campus development is anticipated.</p>	<p>The institutional share of regional employment base (and resulting space needs) is expected to continue to increase. This growth may include greater ancillary opportunities ranging from R&amp;D to supportive residential community options. There will be greater pressure for increased density of institutional development, including reconfiguration of existing facilities. Decentralized operations of institutional users are expected to follow population growth.</p>

<b>Commercial-Industrial Land Use Segment</b>			
	<b>Short-Term (5-Year)</b>	<b>Mid-Term (20-Year)</b>	<b>Long-Term (50-Year)</b>
<b>Mixed-Use</b>	Likely slowdown in mixed use (beyond existing pipeline projects) due to overall economic contraction, greater financial feasibility challenges with urban density projects, and lender caution with what is often viewed as more challenging mixed use project finance. May be offset, at least in part, by public-private development programs (as with urban renewal where available).	Major rebound opportunity as core urban markets solidify already emerging advantages over car-dependent outer ring alternatives. Substantially increased market share depends on extension of mixed use beyond the Central City, as with station area development and streetcar extension, and greater diversity of mixed use application, e.g. work-live, office/retail condos, and use diversification of ground floor space beyond retail. Provision of health-care services will likely become increasingly specialized and geographically segmented as the bulk of baby-boomers reach retirement age. Growth will have implications across multiple land uses.	Could emerge as the hallmark of Portland for a legitimate but distinctive global pathway community, with substantial mixed-use throughout the region – increasingly focused on regional and town centers, corridors, and possibly selected high demand employment areas.

## APPENDIX 1

### *Industry Case Studies*

The following are case studies of specific industry sectors with significant employment that could affect the Portland Metro employment and commercial/industrial development patterns over a 20- to 50-year period.

***Oregon's Transportation and Warehousing Sector Case Study:*** The transportation and warehousing industry is an integral part of Oregon's economy. A comprehensive and efficient passenger and freight transportation system is essential to economic activity and contributes to the health and growth of Oregon businesses. This sector provides the state's manufacturers, wholesalers, retailers, farmers, tourists, and residents with air, road, rail, and water transportation, and storage services. As estimated by the Oregon Employment Department, Oregon's transportation and warehousing industry is expected to grow by 13 percent by 2016, or by 44,000 jobs to nearly 380,000 jobs. The state and structure of the regional economy will influence future growth in the sector. In addition to its role in supporting the efficient movement of passengers and freight, technological advancements will also propel growth as more firms use transportation and warehousing companies for logistical services such as inventory management and just-in-time shipping. According to a 2007 analysis commissioned by the Port of Portland, regional maritime and aviation activity supported nearly 78,000 jobs in the local economy, including approximately 45,500 jobs created directly by marine cargo and airport activity.

***Oregon's Traditional Metals Sector Case Study:*** Though considered a mature industry, Oregon's metals manufacturing industry employs more than 25,000 workers, with about 17,000 in fabricated metals industries and over 8,000 in primary metals, according to the Oregon Employment Department. Although employment levels have declined from their recent peak in the late 1990s, the industry continues to provide many workers with stable high-wage jobs with benefits and considerable hiring has taken place in metals manufacturing since the recession of 2002-2003. Because the industry has a relatively large fraction of older workers, according to data from the U.S. Census Bureau's Local Employment Dynamics (LED) program, employers will soon lose many skilled workers as baby boomers retire. These retirements will create further job opportunities for workers with the appropriate skills. Primary metals had an average wage of more than \$5,000 per month while jobs in fabricated metals paid a little more than \$3,300 per month during the first quarter of 2006. The comparable wage for all private employers in Oregon was roughly \$3,200 per month. The 2006 to 2016 industry employment forecasts suggest the state's metals industry will see modest job increases between 2006 and 2016, adding over 1,900 jobs and growing by roughly 8 percent.



## APPENDIX 2

### *Potential Emerging Trends: Specific Examples*

The following are more specific examples of less tested but potentially emerging trends that could affect the Portland Metro employment and commercial/industrial development patterns over a 20- to 50-year period.

***Supply-Chain Management and Logistics Analysis Example:*** Logistics analysis uses distribution network modeling to simulate the requirements of retail distribution centers. For example, Deloitte Consulting has developed a model for a prototypical national network of stores which suggests that 95 to 99 percent of the population can be served within one to two days with five distribution centers, located in Atlanta, Chicago, Dallas, Reno, and Scranton-Allentown, PA. Further consolidation may result in secondary hubs, presenting a possible opportunity for the Portland region.

***Multi-Story Industrial Buildings Examples:*** The physical land constraints in the industrial hubs of Asia have precluded the U.S. trend of pushing industrial development to the perimeter. The need to maximize land use in island economies with high populations reveals that a multistory industrial development will pencil out when land values increase to more than half the value of the building. This is when it becomes reasonable to incur the extra construction complexities and costs associated with going vertical. The major Asian industrial hubs of Tokyo, Osaka, Singapore, and Hong Kong contain numerous examples of multistory distribution facilities. For example, AMB Kasugai Distribution Center in the city of Nagoya, Japan is a 1,298,000-square-foot distribution center comprised of six stories and two corkscrew truck ramps. The infill distribution facility is centrally located and building tenants are now closer to their customers, minimizing transportation-related impacts.

In Japan, where vertical development has long been common, zoning ordinances reflect the realities of scarce land. The typical FAR for distribution facilities is around 200 percent (meaning two square feet of building area for every square foot of land area), which enables developers to build vertically and still have ample room for trucks to maneuver around the facility. The seven-story AMB Ohta Distribution Center at the Port of Tokyo, for example, has a floor/area ratio in excess of 398 percent, unheard of in the U.S. Western urban planners have often argued that higher FARs simply allow too many warehouses in densely populated areas, when in fact multistory developments encouraged under higher FAR allowances are proving to be more eco-friendly and less costly to their communities.

Early adopters of multistory industrial facilities in the U.S. will likely be global shippers already operating in multistory facilities in Asia. Assuming that a combination of rising land prices, environmental pressures, and more enlightened urban planning will accelerate this trend, multistory industrial development may be on the mid- to long-term horizon in the U.S., despite its engineering and operational challenges. Fortunately, existing engineering and design best practices from Asia are available to be emulated and adapted to U.S. conditions.

## SOURCES

Barnett, Erin Hoover, Haute closure--A shop's rise and fall reflects challenges on Northwest 23<sup>rd</sup>, *The Oregonian*, Thursday, June 12, 2008

Bergsman, Steve, High-Throughput Distribution, *Urban Land*: June 2003

Berton, Brad, Going "Off Mall," *Urban Land*: January 2005

Beyard, Michael D. W. Paul O'Mara, et al. *Shopping Center Development Handbook*. Third Edition. Washington, D.C.: ULI—the Urban Land Institute, 1999.

Beyard, Michael D., Beyond Lifestyle, *Urban Land*: January 2008

C.B. Richard Ellis, Austin Industrial MarketView, 3<sup>rd</sup> Quarter 2008.

C.B. Richard Ellis, Portland Industrial MarketView, 2<sup>nd</sup> Quarter 2008.

C.B. Richard Ellis, Puget Sound Industrial MarketView, 3<sup>rd</sup> Quarter 2008.

C.B. Richard Ellis, United States National Office Vacancy Index, 3<sup>rd</sup> Quarter 2008.

C.B. Richard Ellis, United States National Industrial Availability Index, 3<sup>rd</sup> Quarter 2008.

Campbell, Steve and Guy Jaquier, Going Vertical with Industrial Facilities, *Urban Land*: July 2008.

Chittum, Ryan. Office Space as Cost-Cutting Tool: Less is Less, *The Wall Street Journal*, July 27, 2005, p. B4.

Culverwell, Wendy, Busy Cascade Station awaits flow of retailers, *Portland Business Journal*, August 17, 2007.

Cushman & Wakefield, MarketBeat Portland Industrial Report, 3<sup>rd</sup> Quarter 2008.

Cushman & Wakefield, MarketBeat Portland Office Report, 3<sup>rd</sup> Quarter 2008.

Cushman & Wakefield, MarketBeat Portland Retail Report, Midyear 2008.

Dunham, Kemba, Real-Estate Finance: Healthy Asset: Medical Offices; Niche Gains Favor as Investors Discover Strong Fundamentals; REITs like the Demographics, *Wall Street Journal*, Jun. 20, 2007, p. B9.

Frankel, Merrie, Urban Retail, *Urban Land*: February 2001

Feldman, Maryann, The Locational Dynamics of the US Biotech Industry, *Industry and Innovation*; Sep 2003; vol.10, No. 3, p. 311.

Field, Katherine, Leasing for the Future, *Chain Store Age*; Jan 2008; vol 84, no. 7; p. 112.

Field, Katherine, Powering Up Retail, *Chain Store Age*; Jan 2008; vol 84, no. 1; p. 108.

Franklin, James C., *Employment outlook: 2006–16*: An overview of BLS projections to 2016, *Monthly Labor Review*, November 2007.

Gentry, Connie Robbins, Logistics, Location, Leverage, *Chain Store Age*; May 2005; vol. 81, no. 5, p. 124.

Gose, Joe, Growth Prescription: Medical Office, *National Real Estate Investor*; Jan 2006; vol. 48, no. 1, p. 18.

*Green Building Facts, Green Building by the Numbers*, United States Green Building Council, December 2008, <http://www.usgbc.org/ShowFile.aspx?DocumentID=3340>, accessed December 5, 2008.

*Growing Smarter in Suburban Business Districts through Mixed-Use Projects: ULI Explores What Works and Why*, an extension of an in-depth ULI publication, *Transforming Suburban Business Districts, 2002*.

Gunning, Jeff, The “Life” in Lifestyle Centers, *Urban Land*; August 2006.

Hein, Kenneth, Study: Web Research Nets In-Store Sales, *Brandweek*, May 7, 2007; vol 48, no. 19; p. 8.

Hernandez, Vittorio, Los Angeles Leads The Way As Home-Offices Are On The Rise, *All Headline News*, April 14, 2008.

Huntsman, Daniel, and Sascha Wagner, Nontraditional Sites for Academic Campuses, *Urban Land*; March 2008

Is the Practice of Offshoring Jobs Headed for an About-Face? *HR Focus*. New York: Dec 2008. Vol. 85, Iss. 12; p. 3 (2 pages).

Kolko, Jed, and David Neumark, Business Location Decisions and Employment Dynamics in California, Public Policy Institute of California, 2007.

Kozloff, Howard, Refining Mixed Use, *Urban Land*, February 2005.

Levitt, Rachelle, The University–Real Estate Connection, *Urban Land* - March 2008.

Lewis, Jr., Morgan, A Convenient Truth: Retail Health clinics are on the Rise. Can Your Practice Keep Up in the Era of Care-on Demand?, *Medical Economics*, Sept 19, 2008, vol 85, no. 18, p. 20.

Macht, William P., Building a Mixed-Use Campus, *Urban Land*: March 2008.

Mayer, Heike, Review of *Cities of Knowledge: Cold War Science and the search for the Next Silicon Valley*, American Planning Association. *Journal of the American Planning Association*; Autumn 2005, vol. 41, No. 4, p. 468.

Milliot, Jim, E-tailers' Market Share Grows, *Publishers Weekly*, Mar 31, 2008. Vol. 255, Iss. 13; p. 14.

Moore, Eric, Employers Face Changes as Workforce Ages, Oregon Labor Market Information, November 21, 2006.

Navas, Melissa, Enrollment upsets Beaverton district income forecast, *The Oregonian*, October 2, 2007.

Office of Economic Analysis, Department of Administrative Services, *Oregon Economic and Revenue Forecast*, September 2008.

Office of Economic Analysis, Department of Administrative Services, *Oregon Corrections Population Forecast*, October 2008, Volume XIV, No. 2.

The Offshoring of Engineering: Facts, Unknowns, and Potential Impacts, National Academy of Engineering, Washington, DC, 2008; Review of Workshop Summary, Research Technology Management, November-December 2008.

Ohland, Gloria, and Shelley Poticha, **Street Smart: Streetcars and Cities in the 21<sup>st</sup> Century**, American Public Transportation Association and Community Streetcar Coalition, 2006.

On-Line Retail Boom, *Chain Store Age*; Aug 2006, vol 82, no. 8, p. 26.

Oregon Employment Department, *Employment Projections by Industry and Occupation, 2006-2016*, Oregon and Regional Summary, December 2007.

Oregon Labor Market Information, <http://www.qualityinfo.org/olmisj/OlmisZine>, accessed December 3, 2008 and January 21, 2009.

Palmer, Kimberly, Shop Online for Everything, *U.S. News & World Report*, Dec 17, 2007. Vol. 143, Iss. 21; p. 61

Peiser, Richard B. with Anne B. Frej. *Professional Real Estate Development: The ULI Guide to Business*. Second Edition. Washington, DC: ULI—the Urban Land Institute. 2003.

Portland State University, Center for Real Estate, *Quarterly & Urban Development Journal*, 4<sup>th</sup> Quarter 2008

Portland State University, Population Research Center, Portland Public School Enrollment Forecasts, 2007-08 to 2015-16, August 2007.

Premier Open-Air Centers, *Chain Store Age*; Jul 2008; vol 84, no. 7, p. 120.

Retailers see sales drop in dreary November, The Associated Press, December 04, 2008

Sheth, Nirag, and Nathan Koppel, "With Times Tight, Even Lawyers Get Outsourced," *The Wall Street Journal*, November 26, 2008, page B1.

Smith, Craig, Medical Office Development Continues to Rise as Aging Demographics Drive Demand for New Space, *Real Estate Finance*, April 2008, Vol. 24, No. 6, p. 3.

Smith, Susan, *Korpacz Real Estate Investor Survey*, PricewaterhouseCoopers LLP, Vol 21, No. 2, Second Quarter 2008.

Spivak, Jeffrey, The State of Downtown Office Markets, *Urban Land*: July 2008

Summer, Will, Metals Manufacturing: 'Old Economy' Still Producing Job Opportunities, Oregon Labor Market Information System, March 25, 2008.

Szatan, Jerry W., Portland's Green Cluster, *Urban Land*: July 2008

Webster, John S., Wal-Mart's RFID Revolution a Tough Sell, *Network World*; Sep 15, 2008; vol 25, no. 36; p. 34.

Weier, Mary Hayes, Walgreens Embraces RFID, *InformationWeek*; Sep 15, 2008; vol. 1202; p. 19.

Weil, Nancy, Another Small Step for RFID?; Footwear giant Nine West joins a long list of retailers in search of the RFID Holy Grail: item-level RFID tracking. Will the move be a good fit? Even the mighty Wal-Mart has struggled to cash in on this technology, *CIO*, Oct 15, 2008. Vol. 22, Iss. 2

Zeizima, Katie, NATIONAL PERSPECTIVES; Abandoned Hospitals For the Mentally Ill Morph Into Housing, *The New York Times*. January 15, 2006.

# Employment & Economic Trends Analysis

## Focus Group Research – February 2009

---

In cooperation with the business community, focus group research has been conducted to obtain business and industry perspectives on emerging trends in building space needs and changing regional competitive advantage. The following eight focus groups were conducted:

- Biotech/medical
- Distribution/logistics
- Food/beverage
- High tech
- Metals/machinery
- Business locators
- Regional services
- Retail

There were 47 participants with these eight groups. A list of participants is provided in the Appendix at the end of this research report.

### FOCUS GROUP RESEARCH PURPOSE

Focus groups were conducted over the time period of December 2008 to February 2009 as part of an employment and economic trends analysis for the Portland tri-county region on behalf of Metro. The primary purpose of this trends analysis is to outline a *new paradigm* for evaluating job needs and associated capacity demand within the region over 5-, 20- and 40-50-year time horizons.

### PARTICIPANTS

Funding support for this focus group research was provided by Metro in cooperation with City of Portland, Port of Portland and private funders through the auspices of an informal group of business groups and trade associations (as detailed in the Appendix). Seven of the eight groups were led by Adam Davis and John Horvick of the opinion research and consultation firm Davis, Hibbitts & Midghall.

The retail group was led by economic and development consultant E. D. Hovee & Company, LLC in conjunction with Bonnie Gee Yosick LLC. Logistical support including invitations and space arrangements were provided by The Bookin Group on behalf of the Commercial Real Estate Economic Coalition (CREEC). Capacity Commercial Group, Greater Hillsboro Area Chamber of Commerce, and Commercial Realty Advisors hosted the groups.

While not designed to measure with statistical reliability the attitudes of a particular group, focus group research is valuable in providing the perspectives of the population from which the sample was drawn. In the interest of encouraging candid discussion, comments made are not attributed to specific individuals. This report provides an overview summary of findings, followed by more detailed results from each of the individual focus groups.



Photos courtesy of Davis, Hibbitts & Midghall.

## SUMMARY OF FINDINGS

Findings of the eight focus group discussions are organized to cover discussion of building and space needs, emerging trends, development patterns, advantages and disadvantages of doing business in the Portland metro area, and on-going competitive advantage for the region.

This summary is intended to cover major themes emerging from the eight groups collectively. Subsequent sections of this report provide results by focus group.

### BUILDING & SPACE NEEDS

Focus group participants were asked separately about changes in building space and then location/site needs over the next 1-20 years. Key themes from discussion across the eight focus groups are noted as follows.

#### *Building Space:*

- Rapid industrial change – as land and building space becomes increasingly expensive
- Hi-cube distribution – on the horizon for mid-large firms
- “New-age shop” for manufacturing – as companies of all sizes invest in technology
- Diversity of office needs – but with common themes of more collaboration, space-sharing and conferencing
- Retail shift to smaller store concepts – especially grocery and for the near-term

#### *Location/Site:*

- Regional competition for industrial sites – extending at least from Woodland to Salem
- For sites of 20+ acres, increasing need to look outside the metro region
- Distribution requirement for freeway access (I-5 + )
- Clustering for competitive advantage – exemplified by clusters including high-tech, metals and professional services
- Labor force a growing driver of facility siting
- Customer / client businesses driven for closer proximity to population
- Little eagerness for brownfield redevelopment – due to liability issues
- Greater impetus for businesses to stay in the same site footprint – to mitigate neighborhood and cost issues

### EMERGING TRENDS

As a follow-up question, participants were asked to identify other emerging trends that could impact building space and location/site needs 20 to perhaps even 50 years into the future. Major response themes:

- Transit now important across all business groupings – especially for employees

- Transit-oriented development (TOD) interest – but a source of frustration for at least some commercial/industrial firms in this region
- Auto orientation still critical for customer and patient access – with parking needed but a major cost and with recognition that auto reliance varies widely across the region
- Work force accessibility a critical concern – key to attracting young talent which is easier due to this region’s quality of life draw.
- Going green of broad interest – especially when supported by customers, clients, workers and/or investors

## **DEVELOPMENT PATTERNS**

A question framed for focus group participants was as follows:

*A recent Metro 2060 forecast is that the region’s employment base could essentially double from less than 1 million jobs in 2000 to about 2 million by 2060. About 70% of this job growth can be expected by 2035.*

*The Portland metro area has already shifted toward greater density of residential development. To accommodate the anticipate job growth at the lowest possible environmental cost to the Willamette Valley, similar approaches may be needed to encourage a “smaller footprint” of land need with each new job created. Over the next 20 years – what options could you see your business taking advantage of ...*

This question evoked considerable and wide-ranging discussion among participants. Major themes resulting include the following key observations:

- Multi-story development works best for office / administrative functions
- Mixed opinions on retail suitability for 2+ stories – but most likely at higher value and urban or constrained sites
- Manufacturing typically holding at 1-2 floors – more for admin / R&D functions
- Multi-level economics are not workable for distribution yet (despite some global experience) – but hi-cube distribution accomplishes similar results of reduced land footprint
- Great impetus for more and more efficient building on site, adaptive reuse, and multi-level parking on constrained sites
- Continued strong and growing orientation to sites offering transit accessibility together with exploration of opportunities for improved site efficiency (including less land devoted to parking where supported by project economics and other transportation modes)

## **ADVANTAGES & DISADVANTAGES**

Participants also were asked to identify advantages and disadvantages of conducting business in the Portland metro area. Items mentioned most frequently (across most or all focus groups) are distinguished from those less frequently mentioned – as outlined by the following chart.



<u>Advantages</u>	<u>Disadvantages</u>
<i>Most frequently mentioned</i>	
<ul style="list-style-type: none"> <li>• Talented work force (‘the cutting edge is out of Oregon’)</li> <li>• Multi-modal access</li> <li>• Quality of life (urban, recreation)</li> <li>• Relationships (business-to-business &amp; customer)</li> </ul>	<ul style="list-style-type: none"> <li>• Poor market proximity (no critical mass)</li> <li>• Shallow labor pool (skill positions)</li> <li>• Limited, high cost sites</li> <li>• Transportation congestion (freight, passenger)</li> <li>• Public policy issues (taxes, fees, permitting, infrastructure)</li> </ul>
<i>Less frequently mentioned</i>	
<ul style="list-style-type: none"> <li>• Sustainability commitment (business, environmental, land use)</li> <li>• Reasonable cost of doing business</li> <li>• Population growth (good demographics)</li> <li>• Gateway location</li> </ul>	<ul style="list-style-type: none"> <li>• Cost of doing business (cost of living)</li> <li>• Limited investment capital (with need for incentives)</li> <li>• Industrial encroachment &amp; gentrification</li> </ul>

## COMPETITIVE ADVANTAGE

The last question raised in the focus group discussions was:

*What message do you have for Metro and local jurisdictions about what to do in a changing world to assure that the Portland metro area remains competitive as a place for businesses in your industry group to expand or locate?*

Key themes heard in both written responses and ensuing discussion are summarized to include:

- More land in the right place(s) – with in-place infrastructure
- Increased focus on sustainability – as a necessary cost of doing business
- Economic stability of Portland – a plus compared to the rest of the west coast
- Addressing issues of congestion – on local streets as well as the freeway system
- Taxes, fees, permitting – consider streamlining
- Value capture as a mechanism for infrastructure funding – for new employment land brought into the UGB
- Encouragement of high-end jobs
- Flexibility in policy application
- Paying attention to the short as well as long-term – take incremental steps to achieve the long-range vision

The remainder of this report provides a more detailed listing of results for each individual focus group.

## BIOTECH / MEDICAL

Four people participated in the biotech/medical focus group. Three were leaders of small start-up businesses and one was a representative of a local university actively involved in bio-med research and university-commercial technology transfer (or commercialization).

### SUMMARY OF FINDINGS

**Building and location site needs are expected to change in next 10-20 years.** All the participants expected their organizations to grow and need more space for offices, laboratories, and, perhaps, manufacturing.

**Low-cost facilities important to startup companies.** The participants felt that affordable space is critical for startup companies. Because they are not yet making profits and operate on investor money, they need to be especially careful with their funds. The OHSU Marquam 2 building and PSU Business Accelerator are viewed as important facilities because of their relatively low rents. One participant said that his company would not locate to Portland or Multnomah County because of high local taxes.

**Proximity to other biotechnology companies, OHSU and PSU was essential.** The participants wanted to be close to one another for collaboration, and near universities for access to researchers and facilities. Also, creating a cluster of biotechnology companies would help build a culture that is attractive to investors and perspective employees. Transit from downtown and the PSU campus to the South Waterfront and OHSU is critical to collaboration.

**A “green” culture is valuable to recruit talent.** The participants did not embrace green development for its own sake. If it lowered their costs, great. Otherwise they did not think their clients would judge them based on the commitment to sustainable practices. However, there was a belief that Portland’s reputation as a green community helps attract qualified employees to the region.

### BUILDING SPACE NEEDS

#### a. Anticipated Changes in the Next 10-20 Years

*“I think it will. We hope to take on more projects.”*

*“Definitely. The evaluation of the business plan is to establish a diagnostic laboratory and to expand that component of the business automatically requires more space.”*

*“All of this is hypothetical because we could be gone in a year. What I envision is that our company will continue to be involved in discovery research. To the extent we can get funding to carry that out is a big part of the ball game.”*

*“Don’t foresee qualitative changes, but quantitative changes (i.e., we will need more office space and more lab space). We will continue to have need for specialized space (BSL-3 lab at OHSU).”*

*“Increase in office space, with increase in patenting and industry collaboration.”*

All four participants said they anticipated their building space would change in the next 10-20 years. They believed their companies would grow and need more office space for administration

and more specialized laboratory space. As the firms grow from Research & Development to production they may need space for manufacturing, but only if it is cost effective to do it themselves. Also, some of the companies operate in different locations throughout the region and consolidating was a long-term goal.

### **b. Building Space Needs for Biotechnology Companies**

*“At an earlier stage when you're trying to develop the technology that's where the public/private collaboration is ongoing and you need space that can be leased.”*

*“If you're doing diagnostic service you need a couple of things. You need access. You have to be able to back in trucks... The space you need – part of it is manufacturing – but part of it is packaging. As well as the R&D laboratory.”*

*“For a therapeutic company you really need to have a CGMP [Current Good Manufacturing Practices] or access to that to develop pilot scale processes to have enough therapeutic compounds to conduct animal trials.”*

*“It's doesn't always make sense to set up your own manufacturing facility. When large pharma has extra capacity you partner with them.”*

The participants said within the biotechnology sector, different companies have different building site needs. Medical device and diagnostic companies need space for manufacturing, packaging, and access for trucks to deliver supplies and pick up finished products. Companies involved with Research & Development for pharmaceuticals and vaccines need access to specialized laboratories. Cost was also a concern, especially for start-up companies. Without capital to build specialized facilities, startups need affordable space to lease.

## **LOCATION/SITE NEEDS**

### **a. Anticipated Changes in the Next 10-20 Years**

*“Currently occupying the Portland State University Business Accelerator, which is an incubator and by definition short-term. Perhaps be in better proximity to customers, i.e., Portland or Hillsboro.”*

*“Need to be closer to university faculty.”*

*“Will likely stay in leased space outside Portland and Multnomah County. Not likely to move office into Portland due to tax policy. As a money sink, we do not like to pay taxes on venture capital investments.”*

*“Don't see need for major move but modest move to improve accessibility and/or consolidate operations might be attractive.”*

Two participants thought their location needs would change in the next 10-20 years. One participant's location is temporary by design and the other would like to move closer to OHSU and PSU. A third participant did not anticipate moving. Their present location was desirable because of low local taxes. The fourth participant thought his office might move to improve accessibility, but would stay in the same general area.

## **b. Location/Site Needs for Biotechnology Companies**

*“Marquam 2 is not a particularly presentable space but were not brining in clients there. We do work.”*

*“Staying in the vicinity of PSU and OHSU makes sense because it's new technology. The stuff that's going to need that space is most likely to come out of those institutions.”*

*“And it comes down to ease of access. If the collaborators have to drive an hour to be with each other, it's not going to work.”*

*“You've got to build that culture. You can feel it starting to happen here. And I think bringing people together, providing services that are affordable, that can be centralized is part of that.”*

*“One of the most important things to us is being adjacent to other companies. There are so many rules and regulations that the university has, that NIH has, that the FDA has, that it's really helpful to be able to walk next door to someone from another company who happens to have been through x, y, or z.”*

*“If you take a look at what's happening around OHSU and PSU there is not a lot of space that is available. It's all built. How do you locate a business that needs proximity to an academic institution? You start going up and down the river saying, 'Where is there space?'”*

*“There is land out in North Portland by the race track. But the problem with that is ease of access.”*

*“Looking 10 years down the road if the Life Science Collaboration building goes in [at OHSU], if the light rail tracks are built and extended to Clackamas County and linked to PSU and OHSU, that is integrated to allow this flow of people, you could easily see manufacturing in all the land that Clackamas County has available. If you link that up to Swan Island you've got the trucking as part of that.”*

Three of the four participants had experience with the Marquam 2 building, which OHSU leases out. It is desirable because of its affordability and proximity to both OHSU and PSU. In fact, all the participants agreed that being close to other biotechnology firms and universities is advantageous. Trimet buses (and future MAX extension at the South Waterfront), the Portland Streetcar, and the OHSU Aerial Tram help facilitate collaboration. Collaboration was more important for Research & Development than manufacturing.

There was discussion about whether OHSU plans for a new “Life Science Collaboration” building would have space for startup biotechnology companies. One participant said it depended on how much tax-exempt bond money paid for the facility because IRS rules limit the amount of space that can be used for commercial enterprises when tax-exempt bonds fund development.

## **ADVANTAGES OF THE PORTLAND METRO AREA**

*“Close to the money in the Bay Area.”*

*“Quality of life makes it easier to recruit young talented people. People want to move here.”*

*“Portland is an easy place to recruit people.”*

*“OHSU/PSU”*

*“Proximity to OHSU.”*

The main advantages to doing business in the Portland metro area are the quality of life and higher education institutes, particularly OHSU and PSU.

## **DISADVANTAGES OF THE PORTLAND METRO AREA**

*“Dearth of venture capital.”*

*“Not a prominent biotech/venture capital location.”*

*“The tax structure could be more flexible to start up companies. You feel different about paying taxes when you're making a lot of money.”*

*“Lack of existent biotech culture.”*

*“Lack of seasoned, experienced, executive biotech management.”*

*“Lack of open space for building infrastructure for labs.”*

*“Culture. This is the first place that I've been where there are so many agencies trying to do the same thing without talking to each other.”*

The participants said disadvantages to doing business in the region were a lack of venture capital for startup companies and high taxes. They suggested that this could be overcome with more grant and loan programs that encourage investment, and reducing taxes on startups that have not turned a profit. One participant's said, “investments are not profits; research supplies are not product inventory.”

The participants also said that the local “culture” hindered the industry. They felt hopeful that the region is coming closer to having a “critical mass” of biotechnology firms, but they didn't think it is there yet. Without that culture it is harder to collaborate, attract employees, and develop experienced management.

A final disadvantage was a lack of laboratory space – particularly affordable space. The participants recommended more efforts to facilitate the construction of laboratory space and providing rental subsidies to startup companies.

## **HOW TO BUILD A BIOTECHNOLOGY SECTOR**

Two different perspectives on how to build a biotechnology sector in the Portland region.

*“I think the way you build a biotech industry – and there are a lot of states trying to do this – it's to look at the North Carolina model. First you got the universities united and mandated to be business friendly and all these constraints relaxed. And then they tried to recruit a big drug company. Once they got the big drug company and the university was there to support them, there was a biotech industry born.”*

*“We're not going to be a North Carolina. We're not going to be a San Diego, San Francisco, or Boston. But when I take a look at where we are today, we're easily 15 years behind where Utah is, 15 years behind Colorado, and 20 years behind Washington in terms of development of the bioscience sector. When you take a look at Utah and Colorado it was growth within the state. The industry grew within the state. When I was in Utah we never recruited a large pharmaceutical company. We*

*just made it easy for companies to grow and locate next to each other. Once you have a co-location of companies good things happen. You share ideas, you get to know one everyone else, and you get spin-offs."*

## **CLIMATE CHANGE & GREEN DEVELOPMENT**

*"If it makes a more cost effective space, great. If makes it a more presentable space, great. But not a big concern. We're not going to be judged by the space we rent. We'll be judged by the quality of our science."*

*"Climate change is of no consequence. Green development in Portland makes us attractive to creative, well-educated, bright people. So the more that Portland is perceived as the green capital of the world, the better it is for recruiting."*

*"Climate change is going to make Portland more attractive than other parts of the country."*

*"We've made a conscientious effort to go with LEED Platinum ratings for any new construction we do."*

For most of the participants, climate change and green development were not important values in and of themselves. One participant said that his company would not be judged on its commitment to sustainability or what type of facility they leased. On the other hand, he said if green development helps to lower costs that would be beneficial.

At least one person felt that green development and a commitment to slowing climate change are values particularly important to "creative, well-educated, and bright people," and that Portland's reputation as a "green" city makes the region more attractive to the type of employees that biotechnology companies desire.

## **SMALLER FOOTPRINT**

*"I'm not sure I subscribe to a smaller footprint. I'm not totally in favor of it because it hasn't been adequately defined. Does it mean just selectively? Is it an overarching plan? At what expense? For what gain? You need to be careful."*

*"If there is substantial difference in cost it is hard to accommodate."*

*"The issue for more, when you construct an office building, you have about 1-1/2 feet of HVAC space per floor. In a wet lab you have about 3 feet of space – at least. That adds substantially to the cost if you're thinking about density."*

The participants were asked if they would locate in taller buildings with greater urban density. Three participants said that they would consider 2- to 4- story building. One participant said he would consider a 3- to 5-story building. None would consider an 8-story or higher building.

The primary concern was cost. They were skeptical that their laboratory and manufacturing needs could be met in taller buildings without increasing construction or leasing costs. One participant questioned whether it was even possible to put specialized wet laboratories in high rise buildings.

## DISTRIBUTION / LOGISTICS

Four people participated in the focus group. Three were representatives of trucking and logistic companies. One was a representative from the Port of Portland. Of the three trucking and logistic companies, one was a large “asset-based” company headquartered in Portland. It had five sites in the region, approximately 160 employees, and a fleet of trucks. The other two were national companies with operations in the region. One described his company as “asset light.” It had some administrative offices in Vancouver, two staging areas at the Port of Portland, but otherwise operated out of their vendors’ warehouses. The other was a large property owner in northwest Portland, where their finance and IT workforce are located. Additionally, it owned truck yards in Wilsonville and north Portland.

### SUMMARY OF FINDINGS

**Expect to need larger facilities and more land in the next 10-20 years.** The participants expect the region’s population and demand for their services to grow in the next two decades. To accommodate growth, and in addition to an expanded marine and rail service, they believe they will need larger facilities for administrative staff, larger warehouses, and more land for truck yards. Furthermore, they said there is an inadequate land supply in the region partly due to land use restrictions and a social culture that doesn’t understand their industry.

**Congestion along the I-5 corridor is a serious impediment to the distribution sector.** All the participants said traffic congestion is a major problem. While they believed that solving the Columbia River Crossing is important, it is only one of several choke points through the metropolitan area. Congestion and access to I-5 are key to their location and site decisions.

**Climate change and green development are relevant in so far as it affects profitability.** The participants were not antagonistic to environmental policies, but they saw them through the lens of profitability. Most said their businesses have taken steps to reduce their energy and fuel costs, and that they support mass transit. They do worry, however, about environmental restrictions that are insensitive to their industry.

### BUILDING SPACE NEEDS

*“Logistics needs are changing. Constant reevaluation of modes.”*

*“Tied to growth of partners (i.e., increased freight will demand larger facilities).”*

*“Our needs are really dependent on what the Port is going to do and how that will increase.”*

*“The dramatic change we’ve seen in our business is we need more and more yard space. Our new model is to make the building slightly smaller, maybe taller. But we are operating drop carriers 24 hours a day and need that yard space.”*

All four participants said their building site needs would change in the next 10-20 years. They said that as the Portland metro area grows demand for their services will increase, and to meet demand they will need larger facilities.



The participants had difficulty distinguishing their building space needs from their land space needs, which were paramount. To the extent that they did, however, they felt that their building space needs would grow to accommodate more administrative staff and larger warehouses.

## LOCATION/SITE NEEDS

*“Because congestion over the Columbia Crossing is so problematic we needed another facility to manage stuff going north.”*

*“The key component is the I-5 corridor. For distribution to happen you have to have access to I-5.”*

*“Fundamentally on the marine side we see continued growth. We'll continue to look for waterfront land, for which there is a huge limitation--there is not much of it.”*

*“Since we're asset-based, industrial land is critical to what we do. Unfortunately, there is a lack of it in the Portland metro area. We need fairly good sized parcels.”*

*“We've developed an expertise in brownfield redevelopment. We recognized that because of Oregon land use laws, land is constrained. And that reuse of existing land that is adjacent to key transportation corridors is opportune. To the extent that we can develop brownfields that is attractive. And we see that as an opportunity.”*

The participants described their location and site needs for the next 10-20 years. Again, they foresaw a need for more land. As the region's populations grows, demand for their services will grow, which in turn will mean more demand for trucks, ships, and rail to move goods. As one participant said, “You can't stack tractors on top of one another.”

However, the participants were of the opinion that available industrial land is running out. They attributed part of this to the Urban Growth Boundary and other land use restrictions. At least one participant also felt the social and political culture of the region looked down on the distribution sector as “dirty work” and didn't take its interests into account when developing public policy.

A bright spot was the Port of Portland's development of the Rivergate Industrial District. They praised it as having access for trucks, rail, and marine. One participant said, “It's got everything located there. It's a gem in terms of rich infrastructure.”

It was critically important to the participants to be both physically close to Interstate 5 and have easy access to it. They said the Portland metro region alone isn't a large enough market to support them. They all had a regional approach to business. And because the vast majority of the region's population is along the I-5 corridor, that's where they need to be. Additionally, access to the north and south is more important than access to the east.

The participants all said that I-5 choke points including the Interstate Bridge hampered their businesses. One participant said his company had to open a second truck yard in north Portland because it took too much time to get products into Washington from their yard in Wilsonville. Another said his company would consider relocating to Clark County if I-5 traffic didn't improve through Portland.

## **ADVANTAGES OF THE PORTLAND METRO AREA**

*“Great place to live from an employee standpoint.”*

*“Quality of life.”*

*“Alternative to the Seattle/Tacoma choke point.”*

*“Potential for growth large because of excess capacity at Port of Portland. Their growth means our growth.”*

The participants said the region’s quality of life is an advantage to doing business here because it attracts and retains employees. One participant said it is particularly important to recruiting IT and logistic workers.

As much as the participants complained about congestion in Portland, they said it is significantly better than Seattle and Tacoma.

The participants also believed that Portland’s population would grow over the coming decades and that this is an opportunity to expand their businesses.

## **DISADVANTAGES OF THE PORTLAND METRO AREA**

*“Small consumer base relative to other markets (e.g., Los Angeles/Long Beach and Seattle/Tacoma).”*

*“Transportation congestion.”*

*“We lack a vision and plan. We’ve been trying to get trucks off the street, which is not good for job creation.”*

*“Taxes, fees, and attitude of the city to industrial growth and business growth. Needs major work.”*

The participants said a significant disadvantage to the region is that it is not large enough to support a completely local operation. Also, traffic congestion along the I-5 corridor is a serious problem.

At least one participant didn’t think the local political culture is friendly to or understands the needs of the distribution industry. He said, “The idea of freight needs to be expanded in the community. It is not just the trucks going from here to Fred Meyer.”

A participant suggested that changing when businesses receive products from trucks would go a long way to solving distribution and congestion problems. From his perspective, businesses in the Portland metro area expect and demand deliveries between 10:00 AM and 3:00 PM, which results in trucks being on the road during peak traffic hours. He said truckers and distribution companies would rather make deliveries between 10:00 PM and 8:00 AM. He admitted that many businesses don’t have the scale to accept deliveries during these hours – and that it would take a change of business culture among those who do – but he pointed to the downtown

Nordstrom’s as an example of a business that does accept deliveries during off-peak hours. For him, the demand for peak-hour deliveries harms both commuters and distribution companies and changing this should be part of the overall transportation plans for the region.

## CLIMATE CHANGE & GREEN DEVELOPMENT

*“We are concerned about reducing the cost of building operations and energy.”*

*“Sustainability important. Cost and availability of energy. It’s the right thing to do.”*

*“Green building requirements are hard to understand or implement. Very expensive with no return.”*

*“To the extent that there are tax credits and tax benefits are going to be huge.”*

*“We want to see things done for the right reasons and be economically effective. We use it as a way not only to be socially responsible but to increase our level of profitability.”*

*“One of my concerns is that we don't have a cookie-cutter approach.”*

All the participants were concerned about climate change and green development to a degree, but their concern was largely borne out of economic considerations. They saw “greening” their businesses largely as reducing their fuel and energy costs.

They were not antagonistic to green practices – a new Port of Portland building will be LEED certified and another company has a sustainability committee – but they were leery of how environmental regulations affected their businesses. One participant in particular was concerned that clean air requirements in California may be replicated in Oregon. He said this would “radically change” their business model, which relies on partnerships with independent operators who could not afford to upgrade their trucks. He felt that California-like regulations would drastically increase the price of trucks making his company less competitive. Another participant warned against environmental policy having a “cookie-cutter approach.”

## SMALLER FOOTPRINT

*“Multistory warehouses don't work. Everything has to go up and down an elevator. It would create a choke point. We need more of a footprint, not less.”*

*“People aren't going to move here, there's not going to be jobs here if we don't have the appropriate infrastructure.”*

*“We're going to need more footprint not less. You can't stack tractors.”*

*“People don't want to live near industrial jobs. You're going to have to go someplace for an industrial job.”*

*“This might work for commercial and residential, but it doesn't really work for distribution functions that this city relies on.”*

*“We're a big believer in high density and live/work environments.”*

We asked the participants if they would locate to taller buildings with greater urban density. Only one participant said his business would consider locating in a 2- to 4-, 5- to 8-, or more than 8-story building. They didn’t believe that warehouses and other facilities that distribution companies need could be scaled upwards though one participant mentioned seeing such a facility in Singapore. Moreover, they anticipated that as the region’s population grows – and with it demand for their services – they will need more land not less.

However, most were open to the idea that office and other administrative workers could be in taller buildings. One of the participants, said that his business is actively trying to develop a high-density, mixed-use development on land they own in northwest Portland.

All four participants said that they would consider locating to sites that emphasize transit accessibility. They have a self-interest in this because they believe their businesses will be more successful if mass transit can help reduce traffic congestion. One participant stressed that from his perspective the freight community and transportation community share the same values. He said, “Every car that comes off the street is a good one. We like bicycles, we like transit because it gets cars off the street and cars are what cause congestion.”

## FOOD / BEVERAGE

Four people participated in the focus group. Two were owners of small craft distilleries. One opened in 2005 in inner southeast Portland. The other is located in northwest Portland and has been in business for over twenty years. Between them they have three to eight employees and operate out of 5,000 to 18,000 square feet. The third participant is the president of a medium-sized maraschino cherry processor with production facilities in Forest Grove. It has approximately 70 employees that work in a 130,000-square foot building. The final participant was a representative of the Kraft food processing company in north Portland.

### SUMMARY OF FINDINGS

**Most expect to need more building space.** Three of the four participants believed business growth will require more space. One participant, however, believed that improved manufacturing technology and equipment may allow them to decrease their space and increase output.

**Residential encroachment affecting location site needs.** Residential development is nearing the industrial space of some of the participants. This will impact their decision about how long to stay in their present locations.

**Transportation costs and traffic congestion are a problem.**

**The region lacks skilled labor.** It is difficult to find skilled mechanics, electricians, and other skilled employees. The participants recommended more programs to support the industrial arts in high schools and community colleges.

**Regulations are costly, contradictory, and often poorly implemented.** The participants were frustrated by local regulations and regulators. Their experience made them leery of additional regulations for green development.

**Climate change not as important as green development.** The participants were not motivated by concerns about climate change but they were supportive of practices that would lower their energy costs. They are, however, worried about administrative burdens.

### BUILDING SPACE NEEDS

*“We could have more building space needs but it would depend on consumer demand and population growth in the area.”*

*“There are two issues. One is simple growth. It is already beginning to look like we are running out of room. New product lines will require all our space fairly soon. The second issue is the impending gentrification.”*

*“So the question is how do we move to a smaller, more efficient space? Something we can maintain at a lower cost.”*

*“But for our natural growth and expansion we will need to have more room for equipment and barrels. Coming into this year we have an expansion plan, which will probably get us out of that building in 2010.”*

All four participants said that their building space needs would change in the next 10-20 years. Three thought they would need more space and one believed that more efficient operations and improved technology would allow his company to reduce their space demands.

Distilleries have moved into their current locations in the last few years, but strong growth has already pushed them to maximize their space. Demand for their products is growing and they are expanding their product lines. A particular need for both of them is barrel storage. One said that his company is considering offsite storage. Another concern was appearance. Because the craft distilling business attracts tourists, there is a need for a more attractive space for walk-in customers.

One participant thought that eventually more space would be needed, but there are no immediate plans. When consumer demand and population growth push them to expand, the biggest issues will be more space for handling incoming materials and shipping finished product.

A processor said they currently occupy a building that is much too big for their operations – and that they will need even less space in the future. While he expects his company to grow, he believed that technology improvements would lead to more efficient processing with smaller or less machinery. The company has started to look for new locations, but one hindrance is the depreciating real estate market. He would like to sell the building they currently occupy but anticipates it taking a long time to find a buyer.

## LOCATION/SITE NEEDS

*“I would be a fool to reinvest in that space because I have an encroaching neighborhood around us.”*

*“We face a number of competitive pressures but at the end of the day our costs are lower at the Michigan facility. So we continue to push production to Michigan.”*

*“We’re right (close-in) so we have great access to transportation. We choose it for that fact. It has easy access for deliveries and pick-ups. Also it’s very inexpensive in that area. Right now it’s a great deal for us.”*

*“As long as I’ve good rail and good transportation it’d be okay [to move to Clackamas or Clark County].”*

*“From a workforce point of view, quality of life is a significant competitive advantage. The fact of the matter is that if we were going to build another (plant) it wouldn’t be here.”*

*“A major reason we are looking in the Portland region is that as a private business we get to make certain lifestyle decisions and I want to live in Portland.”*

The participants were mixed on whether they expected their location site needs to change in the next 10-20 years. One reason for this is uncertainty about changes happening in the neighborhoods that surround their facilities – a significant concern for these businesses. Two of the businesses occupy land in areas that in recent years has become more residential. One participant said local political forces will continue to push for more housing near his facility. And yet another is concerned that a nearby firm may sell their property for residential development.

Whatever decisions these companies make about location in the future, easy access to transportation will be key factor. Each said that highway access, especially I-5, is critical. It was also important to be close to crops that supply them, particularly if it is fruit. Proximity to the Port was also important for grain supply and access to international markets.

In one way or another, the participants each indicated that they had options to do business in another region or even another country, but would like to stay here because of the quality of life. This is a desirable place to be for them personally and attractive to employees. Moreover, the local community is very supportive of local agriculture and specialty foods.

## **ADVANTAGES OF THE PORTLAND METRO AREA**

*“Recruiting talent. Desirable location to live.”*

*“Willing demographic. Excited and interested in local products.”*

*“Good employment pool.”*

*“Good access to raw materials.”*

Quality of life was the most mentioned benefit of the Portland metro region. As one participant said, “as a private business we get to make certain lifestyle decisions and I want to live in Portland.” They each said they personally want to stay in the region and said that it is attractive to employees – especially high-paid, skilled employees.

A second significant benefit to being in this region is access to local crops. Three of the participants rely heavily on local agriculture to make their products. Being near the supply lowers transportation costs, makes maintaining relationships with suppliers easier, and is a way to support local farmers. For the distillers, a benefit of the region is that the community is interested in gourmet food and supportive of local products.

## **DISADVANTAGES OF THE PORTLAND METRO AREA**

*“Distance from larger population and cost of transportation.”*

*“Transit. Proximity to United States population base.”*

*“Contradictory regulatory and bureaucratic hoops.”*

*“What you have now is expensive regulatory efforts done by poor quality employees, badly managed, that produce mediocre results.”*

*“This workforce issue is big. My joke right now is I’ll kill you for an electrician; I’ll just maim you for a mechanic.”*

Access to good transportation was important to all the participants, but especially important to those whose customer base is national and international. It is an issue of both distance from raw materials and customers. One participant said,

“We could do business elsewhere, and that has to do with population centers not being on the west coast. You could theoretically harvest here and ship to Kansas City. If you just want to do low-cost manufacturing and centralize to be close to key customers, it would not be in the Portland metro area.”

Also noted is that congestion on I-5 and delays at the Port of Portland increase their shipping costs.

The participants said that they are burdened by regulations that are costly, contradictory, and often poorly implemented by government employees. A participant complained that too often regulators do more to stop projects than working with business owners to help them work within the system. He said, “You can be signed off by everybody then some other agency comes in and puts it to a stop. And there is very little recourse. There is not a lot of innovation on the part of regulators. There seems to be a dogged motivation to say no rather than figure a problem out.”

To ease this problem, some participants would like state regulatory agencies, Metro and other regional governments to help businesses navigate the permitting process. They suggested “streamlining” regulations with less paperwork and less overlap among government agencies. They also recommended the governments work together to create some type of “one-stop permitting.”

The participants report different experiences with the region’s workforce. The two largest employers said that there is a dearth of skilled blue-collar workers in the region. They would like Metro and the region’s other governmental bodies to do more to support industrial education in the schools. “What we should do is invest in education and workforce training, but keep in mind not everyone is going to go to college. There is no shame in taking that electrical position or mechanical position. We should have specific programs for blue-collar positions.”

One participant, however, reports the opposite experience. He said because his company produces an artisanal product he is able to easily attract employees. “I have a lot of people doing blue-collar work who are not blue-collar people. That is my strategy. I’ve been lucky to hire very bright, very energetic, easily-trainable, highly-educated youngsters to work for me. They are the creative class.” For him the challenge hasn’t been hiring skilled workers, but retaining them.

## **CLIMATE CHANGE & GREEN DEVELOPMENT**

*“I worry more about the administrative hassle. If I’ve got to understand the carbon footprint of my building and have a tax or trade expense against that, how am I going to figure it out?”*

*“I’m all for sustainability. But it is more what the consumer is asking.”*

*“I would say that in terms of really well thought out green issues for sourcing, production, distribution, and sales, we are not much. We haven’t brought a lot to the conversation. We’re keeping our heads down.”*

*“We have a very extensive recycling program. When we go to a new location, I’m very concerned about water, heating, and cooling. I’m worried about cost, but I also don’t like things to go to waste.”*

We asked the participants how big a concern is climate change and green development relative to their building space and location/site needs in the future? For the most part they weren’t overly concerned about climate change per se but they were interested in how green development might help them lower their energy costs. “I don’t see climate change affecting my business directly



but green building is highly desirable to save on water, heat, natural gas, etc. Conservation and a subsequent decrease in cost are very important to our business.”

There were concerns, however, about the administrative and regulatory burdens of green initiatives. They worried that governmental policies would be costly and time consuming, which would make them less competitive in the national and international markets. One participant said, “If it gets to a point where the cost – whether if carbon trading or green energy – impacts our electrical or natural gas expense...if that pushes us to an uncompetitive position, then we're off to Turkey or we're out of business.”

One participant had a unique perspective. He said he started his business in part to help local farm growers. By using their crop locally, he was helping small, family growers.

## **SMALLER FOOTPRINT**

*“In our production facility gravity flow might work. A high-rise wouldn't work, but I could definitely see a 2- to 3-story building maybe working. Might work like a brewery.”*

*“The best model to look at are the wineries. Some of what they do is very creative with gravity.”*

*“I'd say going up would require the same sort of engineering challenges and creativity as it would be to increase your output with a smaller footprint by changing your processes. In fact that would be an easier goal.”*

*“In our industry it would be difficult. There would have to be a paradigm shift in over technology. Our (production equipment) is 300-350 foot long and 40-50 inches wide. You don't put those in a high rise.”*

We asked the participants if they would locate to taller buildings with greater urban density. One participant said he would consider locating in a 2- to 4-story building and none said they would go taller. Interestingly, distillers indicate there might be some possibilities to go taller by taking advantage of gravity flows to move product. They thought that the breweries and wineries provide some examples of how it could work for them.

One participant thought the goal of reducing their footprint would be easier to accomplish with technological advancements (e.g., smaller more efficient boilers) that lessen their overall need for space. He added that he could imagine being on the first floor of an industrial space with upper floors leased to other tenants.

Another business representative said that they currently reside in a tiered facility with a maximum height of six stories. Product moves higher to lower levels during the (production) and packaging process. He said it would take a “paradigm shift in...technology” to be able to operate in a single high rise facility.

## HIGH TECH

Six people participated in the technology focus group. Three were associated with the solar industry, either directly with a company or as a leader of a business association that represents the industry. Two were from multi-national semiconductor and computer technology businesses with a large presence in the region. One participant was from a software business association. The businesses owned several hundreds of acres of land and employed 500 to 15,000 people in the region. The focus group was held in Hillsboro and the participants came from businesses in Washington County.

### SUMMARY OF FINDINGS

**Building space needs will grow with time and technology changes, but some participants now have excess capacity.** The participants in the solar industry are expanding, and have plans to build additional facilities to support their manufacturing. The participants from the semiconductor sector said their businesses have been contracting and they have excess capacity in the facilities they own. Technology changes quickly in the industry, and facilities with good access to move equipment in and out is important.

**All the participants have side they own enough land for future expansion but there is not enough shovel ready industrial land in the region to attract new businesses.** Because of prior planning, the businesses represented at the focus group had purchased enough land to meet their long-term expansion goals. However, they said the west side of the Portland metro region has run out of industrial land for new high-tech manufacturing businesses.

**Congestion and public transportation's "last mile" are serious problems.** The participants said that Shute Road and the intersections at Evergreen Street and Highway 26 are at the "cusp of failure." They were broadly supportive of public transportation, but complained that there is not enough bus service in Washington County. The MAX provides good east/west service but there is poor or non-existent bus service from the MAX station to the large employers. They described this as the "last mile" problem.

**Multi-story facilities are not applicable to manufacturing, but some participants were open to more creative use of industrial land.** There was agreement that multi-story buildings will not work for manufacturing, but lower-level buildings may be acceptable for office space, corporate housing, and other amenities at industrial sites. The participants, however, were concerned that building regulations will make the region less competitive when recruiting new businesses.

### BUILDING SPACE NEEDS

*"We'll add to existing facility and bring in more types of manufacturing (modeling)."*

*"Our (another state) facility is currently a third occupied. If there was going to be expansion it would probably not be in the Oregon facility – subject to incentive programs we could work out with local and state governments."*

*"What you want is a large straight building that has easy access on both sides so you do the equipment move ins. Because the technology changes very rapidly."*

*“The fact is that this is our largest operation. We don't want to put all our eggs in one basket.”*

Over the long-term, the participants expected their building space needs to expand as their businesses grow and technology changes. The participants on the solar manufacturing side said they are now in a “ramp-up” phase. One plans to add space to their present building to handle “ancillary and logistic activity.”

Overall, the participants had a mix of building space needs, including large manufacturing facilities for solar panels and semiconductors, laboratories for research, and office space for administration. A couple of the participants also stressed that some of their work is highly confidential and that secure campuses are necessary.

For high-tech manufacturing, the participants said it is important to have a long, straight facility for manufacturing. Ideally, it would have access on both sides of the facility to ease the movement of equipment. Technology in the industry changes rapidly and they frequently update their equipment. Having a building with good access facilitates this.

One of the participants said they have seen a decline in business with the recession. Where just a few months ago their major manufacturing facility was running at capacity, now they have more capacity than they need. One representative indicated said that the company has a manufacturing facility at another location that is only at one-third capacity and when business picks up again it is most likely that they will increase production at this site rather than expand in the Portland region.

One high tech participant said that when they bought their land, they developed a master plan that included future construction. Although new construction isn't planned for the near term, this person expected at some point in the future new manufacturing, R&D, office, or other buildings would be built.

Software firms indicated that they cared less about the overall size or shape of their buildings than about access to band-width and transportation. A priority need is community space for meetings. Something with open spaces, meeting rooms, Internet access, and video conferencing. One participant suggested creating a collaborative space on the second floor of the Hillsboro Library.

## **LOCATION/SITE NEEDS**

*“Yes. Due to the expansion of the company industry.”*

*“Solar being the only industry that is going to be adding jobs to the Oregon economy over the next two to three years, we have three to five manufacturers that are kicking tires in the region.”*

*“The backend is the labor-intensive part. We would like to source, and have been sourcing where our customer base is.”*

*“One of the things that is interesting about the solar industry is the manufacturing side has a lot in alignment with the semiconductor side as far as needs in terms of industrial sites.”*

*“Probably the most pressing issue is congestion we expect at the intersection of Highway 26 and Shute Road.”*

*“There is no land on the corridor where light rail is. There is no bus service north of Highway 26.”*

All the participants said they have adequate room on land they currently own for expansion. Some of the business are experiencing a decline in business because of the recession and have enough capacity to expand when the economy recovers.

All the participants said that transportation and congestion are significant problems for their businesses. They said that Shute Road and the intersections at Evergreen Street and Highway 26 are particularly problematic. They said it would only get worse as two existing firms in ramp up phase move into full operation.

Concern is also expressed with inadequate public transportation in Washington County. They described it as the “last mile” problem. They said with MAX there is relatively good east/west movement, but that employees cannot get from the MAX station to the work site because the plant facilities are a mile or two away and there are no buses serving them. One firm has a private shuttle service to pick employees up at MAX stations and transport them between campuses. Also noted is that there are conversations going on now between some of Washington County’s large employers about sharing shuttle services.

One participant cautioned about the limits of public transportation. A high-tech company has won national awards for its transit program – which include shuttle services, subsidized Trimet passes, carpool programs, and onsite showers for bike riders – but only 3-5% of employees take transit. For many employees public transportation, it still takes significantly more time than driving and there are too few routes serving the area.

At least one participant believed that the west side of the metro region needs a logistics facility of the scale what exists at PDX. Moving goods and materials across the region to PDX is costly and time consuming. The company represented has explored relocating some operations to (another state) where a new logistics facility was recently built.

Despite the fact that these participants said their companies had room to expand, there was agreement that the western side of the region does not have enough shovel ready industrial land to attract new businesses. One participant said, “There is no shovel ready land in the UGB. We’ve just used the last one. We’re maxed out. We don’t have one industrial, shovel ready site.”

## **ADVANTAGES OF THE PORTLAND METRO AREA**

*“Skilled silicon workforce.”*

*“The biggest thing we have going for us is our employee RD”*

*“Cost-effective energy.”*

*“Utilities. One of the reasons we’re here is the power is very good because of the groundbreaking work the semiconductor business has done.”*

*“Local tax incentives.”*

*“Support of state and city.”*

The participants said a principle advantage to the Portland metro area is the workforce. The cluster of high-tech companies has been able to “beg, borrow, and steal” the best intellectual talent from around the world. Other frequently mentioned benefits were the tax incentives provided by state and local government and cost effective energy.

## **DISADVANTAGES OF THE PORTLAND METRO AREA**

*“Distance from primary transportation hubs.”*

*“Transportation gridlock.”*

*“Portland-centric policies.”*

*“Metro had their urban agriculture program and there wasn't the addressing of industrial needs and job needs.”*

*“It doesn't seem like folks appreciate the natural and necessary difference we have out here.”*

Traffic congestion, especially on Shute Road and Highway 26, is a major disadvantage to the Portland metro area. As mentioned above, the participants said that there is a “last mile” problem with public transportation in Washington County. Another significant problem is that there is a lack of available shovel ready industrial land. The participants thought that part of the reason for this is that regional policy makers don’t understand the needs of high-tech manufacturing.

In various ways during the conversation, the participants expressed frustration about regulatory burdens. They said that they are discouraging companies from locating here. One participant put it this way:

*“Flexibility is the word. I don't want a situation with a rigid set of rules and we end up losing the solar industry. Because we can't be flexible enough to adapt to get these industrial sites shovel-ready, sited, and built. There are more to come if we make it possible. And they're not choosing between Hillsboro and Gresham. They're choosing between Hillsboro, Albuquerque, Germany, Austin, and Korea. Governments are actively pursuing and competing for this investment. If Oregon becomes known as the place as 'Yeah we'd love to have you, but this is our list of ten demands', it's going to a real problem for us.”*

## **CLIMATE CHANGE & GREEN DEVELOPMENT**

*“We are a green company and believe in influencing climate change.”*

*“Enterprise funded partly on climate change concerns, so huge”*

*“Due to chemicals used and substrate, concerned with regulatory controls.”*

Three of the participants represented the solar power industry. Not surprisingly, the group gave a high importance to green energy and climate change. Most of the participants also stressed the importance of public transportation to reduce their employees’ carbon footprint. They would like there to be more done to improve public transportation in Washington County and asked for more bus transportation to major employment sites. One participant said, “If we look out five to ten years, and this region wants do to more than market the lexicon of sustainability then they do have to look at how people get around and where people live and make policies that are relevant not to the world they would like to see but the what actually exists.”

## SMALLER FOOTPRINT

*“I see the ambition in this and where you'd ideally go, but it's not applicable out here.”*

*“I appreciate their vision. But when you look at manufacturing you got ugly buildings.  
You can't build out onto the street.”*

*“Administrative and financial stuff could be on more than one floor.”*

We asked the participants if they would locate to taller buildings. For manufacturing, the participants did not think multi-story facilities could ever work. Some participants did say that for office and other administrative buildings multi-story buildings are viable.

And one participant encouraged the others in the focus group to think more creatively about how to use space. This person elaborated: “Could we go to the street and have a parking garage, child care facility, a restaurant. Yes. Then I'm thinking of the second story we could have four or five corporate apartments? Could there be housing? I think the answer is yes. Let's take a different approach. Let's kick some ideas around.”

On the other hand, a couple of participants reacted strongly to being asked about higher density and multi-story buildings. They were concerned about regulations that didn't account for the realities of their operations. When asked if their businesses would consider multi-story buildings, one participant objected. “I don't read this and think you've got manufacturing in mind. It's not applicable. I see the ambition in this and where you'd ideally go, but it's not applicable out here.”

Software companies may have a different perspective. Businesses care less about the physical structure of their building space than the available bandwidth, access to amenities, and good transportation.

## METALS / MACHINERY

Six people participated in the focus group. They ranged from local family-owned businesses to multi-national corporations with major operations in the region. The smallest company employed about 50 people locally and the largest employed 3,000 in Oregon. Several of the businesses had multiple facilities in the region, including northwest Portland, Clackamas, the Port of Vancouver, Swan Island, and Johnson Creek.

### SUMMARY OF FINDINGS

**Business growth and larger equipment will require larger facilities.** Most of the participants said they will need more building space. They all expected demand for their services to grow. They will need more space to handle more business and, with that, bigger, heavier, and taller equipment.

**Current sites/locations are too small for expected growth.** The participants who said they will need larger facilities said their current sites will not suffice. They are more likely to locate in outlying communities than the City of Portland.

**Green development is important to control energy costs.** The participants were not concerned about climate change, but did aspire to lower their energy costs. They supported green development to the extent that it helped them become more efficient.

**Multi-story facilities are not an option for metals manufacturing.** The participants said the size and weight of their equipment makes multi-story facilities impossible.

### BUILDING SPACE NEEDS

*“Need more space. Definitely expanding.”*

*“New markets have always been sought. Current markets come and go, but those that stay grow.”*

*“Your components become larger physically, they become heavier. So it's more height and more crane.”*

*“We're in an inefficient set up with three different small shops and it would be nice to combine into one area. To one nice, new facility.”*

We asked the participants if their building space needs would change in the next 10-20 years. Five said yes and that they all will need more space and larger facilities. First, they expect demand for their services to grow and their businesses to expand. Second, growth will require them to purchase larger and heavier equipment, which will require more building space and height. They said they will need larger cranes, advanced conveyor systems, computer servers, furnaces, and more.

For some, in addition to growth, they would like to be in newer buildings. Older buildings are serviceable but lacking. One participant would like to be in a more modern building with better heat, lighting, and ventilation.

A participant who did not expect building space needs to change indicated that, in the last several decades, facilities have been underutilized and that they will be able to absorb growth for the foreseeable future.

## **LOCATION/SITE NEEDS**

*“No. Or minor incremental change.”*

*“The types of businesses that we move into will need more industrial area. The area we currently do business in is too expensive for the land that we need.”*

*“We’ve been there fifty years and now we’re surrounded by residential and other industrial businesses.”*

*“I need property now. But where is it?”*

*“The big thing for us is acreage. For example, ...we’ll need a test track. So we’ll need maybe ten to twenty acres of space in the metro area.”*

*“Reasonable proximity to major highways is the important transport issue for us.”*

Again, five of six participants said they expect their location or site needs to change in the next couple of decades. A primary reason for this was expected businesses growth. Several believed that they will outgrow their current locations and that they don’t have room left at their sites for expansion.

Several participants said they are “land-locked” or that the property around them is not developable. Two said that over the years residential neighborhoods have encroached upon them. One has land near the firm’s property that is protected by a water district. These are examples of situations indicated by participants who indicate they are currently looking or will have to look for new land to develop.

Transportation will be key to their location decisions. Some factors that they are considering are proximity to major highways and the Port of Portland, and also the ability to bring in a rail spur. Two of the larger businesses have facilities scattered throughout the metro area and they would like to either consolidate operations or least keep future facilities reasonably close to their present locations.

Looking forward, some said government support and incentives will drive their location decisions. There was a sense that the City of Portland was an unfriendly place for them to do business and that outlying communities are doing more to attract metal manufacturers. For example, speaking of Portland one participant said, “It’s tough to be convinced that anyone wants you here.” Another said, “We’ll look anywhere. Whatever happens, it’s going to be a huge investment so if someone comes to us and says here’s \$50 million to come out to the boonies, it’s possible we’ll do that... It’ll be what incentives and the full package when it comes together.”

To help make their location decisions, the participants suggested that Metro and regional governments create a database of shovel ready sites. They said the State of Oregon is already doing this and it would be helpful if it existed locally too.



The participants discussed the possibility of locating on brownfield sites, but they were not enthusiastic. More than one business representative indicated they would not consider brownfields because of public relation and liability problems.

One person commented, “We’re not eager to take on the problems associated with brownfields. We have enough issues with our own manufacturing processes and trying to keep those clean. We don't need the complications of land that is already questionable.” Another said, “Our business is a little bit different with having a target painted on our back. So we're probably a little bit more sensitive. I agree about brownfields. I can't imagine doing that here. We're very cautious.”

On the other hand, at least one participant would consider brownfields if several criteria are met. “We're not anti-brownfields per se. It's all bottom line cost effectiveness. If someone is going to pay for it, if it's indemnified, if the city takes it, if the permitting process is expedited...I don't really care where it is if all those bottom line costs are taken care of.”

## **ADVANTAGES OF THE PORTLAND METRO AREA**

*“Technical talent.”*

*“Highway access (trucking is main transportation).”*

*“Near the Port of Portland”*

*“Good political support.”*

The participants named a range of advantages to doing business in the Portland metro area. Some of the most mentioned were the stock of talented employees and access to the Port of Portland. Other advantages included community services, political support, and personal history doing business in the region.

One participant made the point that manufacturing companies will have more long-term benefits to the region than industries associated with the “creative class.” The point made was that because of the equipment and capital investments that manufacturing companies make, they are unlikely to move. Or in this person’s words, “Everything we do is so big and so heavy we are not the type of companies that are going to pick up and move. I love the creative class, but all these people that are coming to work in office buildings and high-rises, they can move tomorrow.”

## **DISADVANTAGES OF THE PORTLAND METRO AREA**

*“Very few large, undeveloped land areas close to highways.”*

*“Not central to the United States—shipping costs to Midwest.”*

*“City interference with day-to-day operations.”*

*“Other industries get more attention”*

More than anything else, the participants said that the lack of available industrial land is a disadvantage to doing business in the region. They said that what exists often is of poor quality, has limited access to transportation, or is expensive.

A few participants also said their industry isn’t supported by local governments. They thought land supply was overly regulated and biased against manufacturing.

## CLIMATE CHANGE & GREEN DEVELOPMENT

*“Climate change is more of a general community concern to us than a business concern. Green development is something we see as economic advantage to us.”*

*“Climate change and global warming built off models slanted to build case. Green concepts are fine.”*

*“There is a lot of potential in our industry. We use a lot of electricity and we have a lot of big flat roofs. If there were programs in place that help offset electric on a leases basis for solar. There is great potential there.”*

As a group, climate change was not a factor in their decision-making. Those who expressed an opinion about it were skeptical or identified it as a “community concern” more than a “business concern.” But they were interested and supportive of green development as a means to lower their energy costs. As one participant said, “Just specifically about the facility it's really about energy efficiency. It's the cost of doing business.”

Being near a residential neighborhood has motivated one participant to be more concerned about their manufacturing emissions. One comment:

*“In terms of emissions and environmental controls, we are very sensitive to the fact that a number of our manufacturing facilities are located in residential neighborhoods. So we really measure ourselves not just against regulator standards but the perception of the neighborhoods. It's not just altruism. Complaints take up time, effort, and energy.”*

At least one participant was concerned about environmental regulations interfering with plant operations. The sentiment was expressed most clearly by a participant who said, “I could go from yellow to red real easily depending upon how DEQ responds to political pressure...”

## SMALLER FOOTPRINT

*“We deal with molten steel and molten titanium. Multi-story manufacturing is not feasible.”*

*“Everything we have to do is with bulk steel. So I can't imagine multi-stories for manufacturing.”*

*“In our current location we do have a second floor and we don't use it. It doesn't work for our industry. It just doesn't.”*

*“How are you ever going to do anything with cranes on multiple stories? It's never going to happen.”*

We asked the participants if they would locate to taller buildings. They all agreed that multi-story buildings would not work for their businesses. They said the size and weight of their equipment made multi-story buildings impossible.

The only options they saw for multi-story were office space and structured parking. One participant said the business would consider a 2- to 4-story office building for engineering and R&D employees. Another participant said the business was considering building a multi-story parking structure because their current parking lot is threatened by a planned highway expansion.

Four participants said they would consider locating to sites that emphasize transit accessibility. One firm's representative noted: "We like to be on a transit line because ideally if someone is going to work for the streetcar it would be nice if they never had to take a car."

A business representative said that the December 2008 snowstorms made public transportation – especially light rail – more important. During the week of storms only 30-40% of employees were able to get to work. But public transportation was less important to others. Two people said that they already subsidize Trimet passes but few employees use them.

## BUSINESS LOCATORS

Nine people participated in the focus group. Seven were from private firms that help industrial and distribution clients locate and purchase property in the Portland metro region. They represented local and national companies, and ranged in experience from 6 to 39 years. The other two participants came from the State of Oregon and the Port of Portland.

### SUMMARY OF FINDINGS

**Manufacturers and distributors will need larger single-story buildings in the future.** Trends in technology, competitiveness, and fuel prices will result in businesses seeking larger facilities in the region.

**Larger facilities will require more land.** The participants said multi-story facilities could not work for distribution and manufacturing. Therefore, as building sizes increase there will be a corresponding demand for larger plots of industrial land. Factors that make industrial land useable are infrastructure (water, sewer, electricity, etc.), proximity to transportation, and the employment pool.

**Current land inventory not adequate to meet needs.** The participants said there are not enough large and contiguous pieces of industrial land in the region. They said the region needs new industrial parks with over 1,000 acres. They believed that the land is available if there is the political will to expand the Urban Growth Boundary.

**Green development is increasingly important.** The participants were mixed about whether businesses are willing to pay more for green development today, but they expect it to become more important in the future. They distinguished between a desire for reducing energy costs and concern about climate change.

### BUILDING SPACE NEEDS

*“I think the economies of scale drive larger and larger warehouse. But with fuel prices I think you'll see the reverse of that. There'll be smaller regional facilities servicing smaller areas.”*

*“Vertical growth works at a very large scale. It doesn't work well for a 20,000 - 40,000 square foot user. It doesn't have the economy of scale when you're that small.”*

*“The other thing is technology is replacing humans in distribution. And so to take advantage of vertical growth it is customize picking and conveyor systems that are replacing 20 guys on a fork lift.”*

*“Even distribution users are getting into that very specific building type with technology and automatic picking because of the price of labor as a component of their overall budget is continuing to go up.”*

*“Greater design focus on efficient logistics and energy efficiency.”*

The focus group began by asking the participants if they expected the building space needs of their clients to change in the next 10-20 years. Everyone said yes. They expected larger facilities with higher ceilings to accommodate modern equipment.

Some of the participants expected distributors to change their business models from very large centralized facilities to smaller regional facilities because of fuel costs. They said that as fuel costs increase, it will become more profitable to operate multiple facilities in smaller population centers than to truck goods from one central location. If this comes to be, then distributors will want to build or purchase facilities in Portland. However, they said that while these would be smaller facilities relative to some of the “mega” facilities that exist elsewhere, they would be large for this region – 150,000 square feet or more.

Some participants noted manufacturers and distributors are replacing people with machines – such as cranes, pickers, and conveyors – and that they expect this to continue. As the cost of labor increases and machines become more efficient, it is more cost effective for businesses to automate.

Moreover, tax laws incentivize equipment over labor because equipment depreciation is a tax deduction. In terms of building space needs, this means that companies will need more space with taller ceilings to have room for cranes and other equipment.

There were mixed feelings about environmental design and whether businesses are willing to pay extra for sustainable features in the current market. But a number of participants said in the written comments that they expected green building practices to become more important in the next couple decades.

## **LOCATION/SITE NEEDS**

*“Limited supply will push development out and to smaller communities. Not driven by users’ needs to be farther from city center.”*

*“Warehouses are getting bigger. The need for larger flat sites will increase.”*

*“We’re short of useable land and the economics of the less useable land is so far out of whack. It’s one of the reasons that it’s hard to get companies to expand and move here.”*

*“I agree that I-84 is important. But not in my lifetime the UGB is not going beyond the Sandy River. So for our discussion today it’s I-5.”*

*“I think east/west traffic in the metro area is a fundamental problem. It’s very difficult to go east/west.”*

In the written comments, all the participants said their clients’ location site needs will change in the next two decades. They expected to need more land to accommodate larger facilities and bigger truck staging areas. But the participants felt that the region lacks the inventory to accommodate these needs. They expect businesses to look farther out for land to build their facilities – if they decide to locate in the region at all.

Business locators indicate that the importance of access to transportation differed by business and industry sector. For some sectors, particularly distribution, access to the I-5 is critical. But I-5 access was less important to manufacturers, as long as they could reach another major road, such as I-205 or US 26.

A couple of participants said that access to labor is important to a business's location and site needs. Companies that need a large labor pool will select sites near population centers. One participant said, "The problem with Damascus or being on either side of Estacada or Canby is they don't have a population base to support. That is the big disconnect." Another said, "What I tried to explain to people is yes you need transportation for trucks, but if you're looking for companies that hire knowledge based people, their employees have to get to it."

## **ADVANTAGES OF THE PORTLAND METRO AREA**

*"Livability"*

*"Gateway to Asia."*

*"Strong land use laws."*

*"Educated and good workforce."*

We asked the participants to write what they considered the biggest advantages of the Portland metro area for their clients' businesses to grow. The top two responses were quality of life and a talented workforce. They said the region's recreational activities and "socially-aware culture" make this a desirable place to live and attractive to employees.

Some of the other advantages to the region included access to Asian markets, being a regional hub, relatively good transportation, the Port of Portland, and the low cost of power.

## **DISADVANTAGES OF THE PORTLAND METRO AREA**

*"Limited industrial land."*

*"Government entities that don't care about business."*

*"Cumbersome jurisdictional approvals."*

*"Liberal attitude."*

The participants said a limited land supply and the difficulties doing business were the biggest disadvantages to their clients. They said that taxes are too high, that permitting takes too long, and that government is unfriendly to business.

Other disadvantages cited include not having a major university, expensive construction, and a small regional population base.

## **LAND INVENTORY**

*"Our inventory at the Port has decreased quite a bit. So people are actually shocked when they learn the Port doesn't have a 35-acre site or a 50-acre site."*

*"And it's not just fifty acres here seventy five acres there. What you need is fifteen hundred acres in a large industrial park. Because then there is synergy."*

*"There are 'A,' 'B,' 'C,' and 'D' [grade] sites. 'A' sites are gone. 'B' sites are really tough to find. What you have are 'C' and 'D' sites with slopes and wetlands."*

*"One example is industrial land brought into Damascus where it has not been served, and is not where anybody wants to be. People want to be on I-5."*

*"There is plenty of available land, but there is a lack of political will."*

Throughout the focus group nearly all the participants stressed that the region is land constrained, in part, because of the Urban Growth Boundary (UGB). They said within the UGB it is very difficult to find large enough parcels for their clients. And if their clients need smaller parcels, what is available often doesn't meet their needs. For example, it is too far from the interstate, on sloped land, near environmentally-sensitive habitat, or not the right size.

Some participants said that what is needed are large – 1,000 to 1,500 contiguous acre – industrial parks with infrastructure and access to multiple modes of transportation. One participant said, “If I can make one point today it is that it can't be 100 acres here and 150 acres there. It's got to be a big move.” At least one participant believed that there are a couple hundred acres zoned for industrial in Wilsonville that aren't utilized because of a lack of infrastructure. Another participant said that industrial land in Damascus isn't ideal because it is too far from I-5.

The participants felt that the politics of the Urban Growth Boundary and local zoning are unfavorable to industrial users. They felt that there has been a lack of political will and a NIMBY-ism attitude. As one participant put it, “The government put a big ‘no’ around the city. And there is a political responsibility that comes with that. It means having the nerve to say ‘yes’ for the things you need. Otherwise you bring everything to a stop.”

We asked the participants where they would like to open more land for industrial uses. Some specific suggestions were Colwood National Golf Course (7313 NE Columbia Blvd.) and Broadmoor Golf Club (3509 NE Columbia Blvd.). More general suggestions were land north of I-205 merge near Ridgefield, Washington, and land between Wilsonville and Woodburn.

Suggested was a tax on windfall profits to help pay for infrastructure developments on industrial land. One person elaborated as follows:

“I don't think a farmer today, who has enjoyed the advantages of low taxes outside of the Urban Growth Boundary, ought to be entitled to the total windfall profit of being brought inside. In terms of how you fund some of that infrastructure, I think when you come in the UGB and sell your property you owe a tax to pay for the infrastructure that is brought in.”

Not every comment about the UGB was negative. A couple participants said the UGB has helped support the region's quality of life, which makes it attractive to companies and employees.

## **CLIMATE CHANGE & GREEN DEVELOPMENT**

*“It's important to people and their investors. It's the practical thing to incorporate into your site selection.”*

*“I'd say we've had one client that acted like they cared. I would be surprised if he thinks he kept any money in his pocket because of it.”*

*“I don't think it's worth anything on the lease rate. I think it is a tie breaker.”*

*“Green is good. LEED is bad.”*

The participants had mixed feelings about the importance of climate change and green development. In the written comments some said that green is becoming more of an issue for their clients. Some examples were: “It's getting more and more play.” “Historically most companies have not prioritized sustainability, but this is changing.”

There was a sense that green development is more important for commercial clients than those in manufacturing or distribution. One participant said, “In an office I don't think you can play unless it's LEED silver or better. But on industrial I think it's just nice to have.” Also, they distinguished between a concern for climate change per se and development practices that reduce energy costs. Only the latter drives development decisions.

Others were more critical of green development. One called it “marketing” and didn’t think that businesses are willing to pay extra for it. Another complained that LEED certification is far too expensive. An anecdote is cited of the case where it cost a building owner \$2,500 to remodel a building to meet LEED standards but the certification process cost \$44,000.

## **SMALLER FOOTPRINT**

As with the other groups, participants were asked if their clients would locate to taller buildings in areas with greater urban density. Two said they would consider 2- to 4-story buildings and 5- to 8-story buildings. Three said they would consider buildings eight or more stories. However, they qualified their answers by saying only their commercial clients would consider taller buildings.

The participants generally agreed that multi-story facilities for manufacturing and distribution are not feasible. Multi-story buildings are inefficient and cannot accommodate modern industrial equipment, such as cranes, pickers, and conveyor systems. In fact, they saw the trend working the other direction, with businesses moving out of multi-story facilities into larger single story units. One participant went so far as to say, “That these questions would be posed to a group like this scares me. You’d have to be somewhat removed.”

Five participants said their clients would consider reducing land site needs for parking by encouraging transit, shared parking, and/or structured parking. They cautioned, however, that this would not be popular and that expansions of transit infrastructure shouldn’t come at the expense of industrial land. The participants who said no commented that trucking is dependent on freeways and that the “hub-and-spoke” model of transit clashes with the “satellite” model of manufacturing and distribution.



## REGIONAL SERVICE PROVIDERS

Five people participated in the focus group. (A sixth person started and completed some written exercises but did not stay for any of the group discussions.) One of the participants represented a regional law firm with headquarters in downtown Portland that employs about 250 people. A second participant was from an international consulting firm with offices in downtown Portland with about 1,000 local employees.

Three participants represented the health care sector. Two were from large health care providers that have multiple clinics, hospitals, and administrative offices in the metro region. The other was an executive from a health insurer that leases three office spaces in downtown Portland. Each of their companies has several thousand workers in the area.

## SUMMARY OF FINDINGS

**For office settings, space per employee is decreasing.** Professional workers are using smaller offices or cubicles. This will mitigate future space needs even as business expands. However, needs for conference and collaborative work space are increasing.

**Health care providers expect to build more facilities as the population ages.** As the population ages it will require more care. Health care providers expect to need more facilities to accommodate them.

**Public transportation critical to service sector.** It is important downtown businesses where parking is limited and to bringing patients to health care facilities.

**Green development embraced.** All the participants valued green development. Several are located in LEED buildings or will only consider LEED building for the future. The region's focus on sustainability draws young, creative talent to the region.

## BUILDING SPACE NEEDS

*“One thing a lot of law firms are looking at is single-sized offices regardless if you are a partner or associate. With the idea that you meet with your clients in a conference room.”*

*“Your own personal workspace is getting smaller and smaller. One reason is employees are spending a lot less time there. They're in and out.”*

*“If you look at health care financing, the role of government as we move into health care reform, you may see some of those functions taken over by the government and our sand box shrinking.”*

*“Well the doctor patient nexus remains relatively unchanged. Patients are still going to come in. The change we see is with day surgery and ambulatory services. Overnight stays are not increasing.”*

There was a mix of expectations about future business space needs among the participants. In general, for office and administrative work they anticipated needing less space per employee. Individual offices have become smaller or disappeared all together. The representative from the

law firm said that it is becoming more common for partners and associates to have the same size offices and to use conference rooms for client meetings.

Several participants said that the majority of their employees work in cubicles and open spaces. This was true for low-level workers, such as claims processors, and becoming more common among professional staff.

One participant said, “The perfect space would be office, highly open, highly interactive, and accommodating for communication. A big part of our business is sharing communications, sharing ideas. Technically we do not have any offices. It's all open cubes. That's very important.”

A couple of participants commented that it is becoming more difficult to manage space because employees spend more time out of the office telecommuting, traveling, or at client meetings. One person estimated that on any given day 20-30% of employees are not at their desks. To better manage office space use in the future, employees may lose their permanent space altogether. Instead, the office would have fewer cubicles and employees would store their materials in cabinets and share common workspace on a first come first served basis. Not everyone agreed with this specific suggestion, but did agree that they will need creative solutions to manage space as more employees work outside the office.

Additionally, increased electronic filing was seen as further reducing space needs. This has already happened, for example, with a law firm where the library shrunk as more legal text became available online.

Among these participants, the health service providers had unique space needs. In particular, they said the aging population will require more health care services – both acute and chronic – and that this impacted how they thought about their expansion plans. They will need more facilities to care for the elderly, and they will have to consider where to locate and how to build them to accommodate a population with diminished mobility. For example, they were leery of taller facilities because they are less accessible to people with wheelchairs and walkers.

## **LOCATION/SITE NEEDS**

*“They've changed a little bit, but we're still committed to the central city. We went through the process of looking at the suburbs, but we felt more connected to downtown. More connected to the relationships, the cultural issues. And the rates were not significantly different.”*

*“Transit and the transit modes drive what we can do. It means you can drive your parking down and your land needs down, and your floor to area ratio goes up.”*

*“Consolidation of employee functions in regional claims and customer services.”*

Three participants said they anticipated their location site needs to change in the next 10-20 years. Two thought growth and expansion will require them to add more facilities. But one participant expected the size of his company to decrease because of consolidation and government involvement in health care financing taking some functions out of the private sector.

The most mentioned issue in regards to location was access to public transportation. In one way or another all the participants said that this was important. One participant said that “it's a huge

issue for our front-line employees. Getting in and out of the downtown area and parking is a very costly thing. So to the extent that we can get them to use public transportation helps.” Another said that light rail is more important than buses. “Light rail is particularly important. We operate shuttles and are able to pick people up at light rail stops. That's what sends our mode split so high.”

The health care providers expressed different experiences with patients using public transportation. One said it was critical to their patients and to decisions about where to build new facilities. The other said that in their experience most patients don't use public transportation and that it was more important to employees.

Most of the participants had seen increases in the number of employees commuting by bicycle. One mentioned that the company expanded its onsite bike parking and it is full most days. However, they also agreed that public transportation and bicycles will never be able to fully replace the need for automobiles and parking. Employees that need to be out and about during the day don't have the time for public transportation.

A few participants said their companies have experimented with car-share programs. The purpose of the programs has been to encourage employees to take public transportation to the office, but have access to company cars or Zip Cars during the day. One person said their program is little more than a “novelty.” Another said that their program hasn't gained much traction because it's cumbersome. Two more said they were aware their business has a program but didn't know how many employees use it.

## **ADVANTAGES OF THE PORTLAND METRO AREA**

*“Availability of workforce and clients.”*

*“Positive demographic and employment trends.”*

*“Sustainability focus. Most important now and will be in the future. It points a picture that is important to our employees and actually important to our business. We're doing a lot of work in that area.”*

Advantages to the Portland metro area include a skilled and educated workforce, relatively stable population, and economic growth.

The region's focus on sustainability is important to maintaining the region's quality of life. It also makes it easier to recruit young, creative employees who place a high value on environmental sustainability.

## **DISADVANTAGES OF THE PORTLAND METRO AREA**

*“Expensive for front-line employees to park and commute.”*

*“Congestion limits access to our facilities.”*

*“Congestion around emergency rooms is an increasing concern for us. That is a situation where people have to get to us in a hurry.”*

*“Delays with the I-5 bridge are silly. Companies are not locating here because of traffic. It will probably be a bigger issue in the future.”*

*“Erosion of employment segments valuable to our growth.”*

In the written comments, the participant named a variety of disadvantages to Portland including the cost of land and facilities, the decline of the manufacturing sector, and the relatively small population base. In the group discussion, the most mentioned disadvantage was traffic congestion.

One participant said that traffic congestion and the delay of reaching a solution to the I-5 bridge has caused businesses not to locate to the region. Another said that congestion near hospital emergency rooms is becoming a concern because the vast majority of emergency room patients drive their own cars. And another said that cost of commuting to downtown is expensive for frontline employees.

We asked the participants what Metro and local governments can do to assist their business and others in their industry sector. Five of six participants said improving transportation infrastructure and accessibility.

## **CLIMATE CHANGE & GREEN DEVELOPMENT**

*“Part of our organizational mission is community health. So environmentally-sensitive building is a contributor to that.”*

*“We're looking at space to lease in Seattle now and it's got to be LEED-certified.”*

*“The public service nature of what we do guides action. Our new hospital was the first LEED gold hospital in the country.”*

*“To get the best and brightest engineers and professionals we have to be in that area. It's a recruiting issue.”*

The participants were strongly supportive of green development and their individual companies have already taken steps to reduce energy use. One participant said his firm will only consider LEED-rated buildings for future leases. Others presently rent or built LEED-certified facilities.

The two health care providers said that community health is part of their organizations' mission and therefore it's important to have green buildings. And in addition to health benefits, they valued lower energy costs.

One participant said that his company works in the environmental field and that it was vital his company embrace those values. Customers and employees demand it.

## **SMALLER FOOTPRINT**

*“I think as a company as we get our technology issues sorted out, these mid-rise buildings will be more attractive. It would be less expensive office space in a geographic region where our employees can come and go more easily.”*

*“Two to four stories is just not big enough.”*

*“What we're building now in the town centers are all 2-, 3-, and 4-story offices. They could be higher but the ambulatory issue is important to us. We try to keep the number of stories down.”*

We asked the participants if they would locate to taller buildings in areas with greater urban density. Three said they would consider 2- to 4-story buildings, four said they would consider a 5- to 8-story buildings, and two said they would consider buildings eight or more stories.

Two of the three participants who have a large presence in downtown Portland desired taller buildings. These businesses have a relatively high ratio of professional employees. However, one participant, who currently has offices in a high-rise building, thought in the future the organization might prefer to relocate to a mid-rise building in the suburbs. In part, this is because of a labor profile with more low-wage workers for whom the cost of commuting and parking downtown are higher than it would be outside of the city center.

Health care providers indicated that mid-rise buildings tend to work better for their clinical space. They didn't rule out being in taller buildings and acknowledged that the OHSU Center for Health and Healing is an example of clinical space in a tall building. But they said that for standard care their patients do not want to travel far and therefore they need clinics in neighborhoods and town centers. They did agree that administrative operations could be in taller buildings.

## RETAIL

Summarized are key points made during the retail focus group hosted by Bob LeFeber of Commercial Realty Advisors and facilitated by Eric Hovee and Bonne Gee Yosick. There were eight participants in this focus group including four representatives of grocery store operators, a specialty retailer, dining establishment, lending institution and personal services provider. “Facility reach” ranges from just one operation to 34 stores in the Portland metro area. Store size ranges from a few thousand to over 200,000 square feet.

### SUMMARY OF FINDINGS

**After a period of increasing store size, retailers are now looking to smaller and more infill store sites.** The recent trend has been toward smaller-scale developments with a thinning of in-line stores (a combination of the economic situation and weeding out of weaker competitors). Also noted is that the backroom is shrinking; less storage is required since deliveries are more frequent, daily in some cases.

**The Portland metro market may be slightly underserved, but this is a benefit as there is not excess store square footage with greater resiliency as retail spending slows.** Because this region is perceived as generally a bit under-served, participants don’t expect the region to be as adversely affected as others in the U.S. will during the current economic downturn.

**Multi-level stores work, but primarily in urban environments.** Where they have been attempted in suburban environments; shoppers don’t go upstairs and those departments suffer. Larger footprint uses prefer free-standing versus in-line uses when possible but will accept in-line sites with urban development when supported by potential sales volume.

**Retailer financial capacity varies depending on the customer market segment served.** Opportunities are much different for 1<sup>st</sup>- versus 2<sup>nd</sup>- and 3<sup>rd</sup>-generation store formats. Reuse of existing space is more critical for lower rent in-line and 2<sup>nd</sup>-/3<sup>rd</sup>-generation stores.

**Zoning and development regulations need to be manageable to allow for site use and redevelopment.** Issues related to setbacks, street orientation, multiple entrances, corner versus mid-block appeal, and design review can make or break retail success. Also cited are zone change requirements affecting the way that new grocery stores to replace previous grocery operations.

**Multi-channel uses continue to increase; customers are using a combination of on-line and in-person shopping and banking.** However, people still want a place to go where they can shop and sample merchandise in favorite departments or talk to their own personal service representative as in a financial institution.

**Customers and employees expect retailers to be green.** For retailers, sustainability includes greater emphasis on recycling, reduced energy use, more efficient lighting and HVAC systems. Energy savings are important and can be significant. However, green measures also need to pencil, a reason for concern with application of LEED standards to retail development.

## BUILDING SPACE NEEDS

*“It was initially thought that on-line banking would take over, but people seem to want a place to go to, people to talk to, and drive-through facilities.”*

*“Seems to be a trend toward the smaller (store) concept”*

*“The backroom is shrinking with less storage required since deliveries are more frequent, daily in some cases.”*

*“Suspect a trend toward smaller shopping centers in general.”*

*“Rehab of in-line space if a playground can be accommodated.”*

There is general agreement that the Portland metro region is likely to see less suburban shopping center development than in the past. When development does occur, it may be on smaller sites than previously. More development of infill sites is also expected.

A firm that previously targeted 10- to 30-acre sites is now seeking more 9- to 12-acre sites. In their words, the “shopping centers are shrinking; in-line tenants are gone.” This trend is partly but not solely a cyclical phenomenon of the economy and reflects a “weeding out of weaker players.”

The trend toward smaller store sites is exemplified by the grocery industry. Examples of smaller grocery prototypes include Wal-Mart’s MarketSite (more of a convenience-type concept), Tesco’s Fresh and Easy store (being introduced first in the Southwest US), and similar Safeway smaller format stores.

For one retailer, a key to successful innovation is a full-scale emphasis on trying to get customers through transactions faster. The focus is on keeping labor low with self-bagging and other self-service functions.

## LOCATION/SITE NEEDS

*“Grocers generally need parking. Planners talk about pedestrian and bike accessibility, but grocers need people buying 8 bags of groceries, not 1 or 2 bags of groceries.”*

*“It was initially thought that on-line banking would take over, but people seem to want a place to go to, people to talk to, and drive-through facilities.”*

*“Anytime we can do a free-standing building, it is preferred.”*

*“... a second or third-generation space user, so need to look for the redevelopment opportunities.”*

*“When people drink alcohol, they want to be closer to home.”*

*“Other urban locations like NW 23<sup>rd</sup> will be sought out but probably not in the Portland metro area.”*

As one participant, noted, the retail objective today is to create the “nodes of activity” such as a grocery store or bank around which other retailers will then also be attracted.

Parking remains a pivotal consideration for retailers. But retail parking needs can vary widely across the region. One retailer conducted a mode split study and found that only 2% of shoppers

arrived by non-car modes at a Beaverton store while 50% of shoppers came by means other than auto at a Hawthorne store site.

Secondary urban areas can perform well for retail but should not necessarily be expected to perform at urban levels. Areas ranging from Gateway to Orenco are cited as “well performing, but they are not urban.” This means that retail site and building planning can expect to differentiate between very intense central city, close-in urban street and more recently emerging suburban shopping areas throughout the metro area.

## **ADVANTAGES OF THE PORTLAND METRO AREA**

*“The region seems slightly underserved (with retail) but that is generally positive. Less choice is better than too much choice.”*

*“We are close to the customer and each store responds to its unique environment.”*

*“We are continuing to look for sites.”*

The region’s population growth is viewed as a plus by area retailers. As one retailer commented, the Portland area continues to experience unmet market demand which is why they are continuing to expand.

Another retailer expressed optimism about market demographics more in the sense of being better able to survive the current economic downturn: “We won’t be hit the way others in the U.S. will be because we are generally a bit underserved.”

## **DISADVANTAGES OF THE PORTLAND METRO AREA**

*“Compared to the other metro areas, this is a tough place to go shopping.”*

*“Issue of jurisdictions working with developers collaborative versus antagonistically”*

*“Development regulations are a disincentive to move walls. It does not allow evolution of the space.”*

*“California has the worst state regulations to deal with, but Oregon is 2<sup>nd</sup>.”*

*“It would be helpful if approvals were more administrative (by the Planning Director) instead of requiring several levels of hearings by Planning Commission and/or City Council.”*

*“Site design requirements are not responsive to current economic conditions.”*

*“... urban level requirements are difficult in suburban environments.”*

*“There is a need to accommodate cars.”*

*“Somewhere in recent history, we went from vision-driven planning to regulation-driven planning, and we need a return to the vision.”*

Many of the perceived disadvantages of doing business in this metro area focus on aspects of the regulatory environment. These are perceived as being onerous from a variety of standpoints – including impact on development feasibility, store profitability, and comparison with other metro areas of the U.S.

A grocer gave an example of prior grocery store sites that had to be rezoned to allow redevelopment for a new grocery store. Another store operator cited an example of requirements



for pedestrian entrances in non-pedestrian environments, creating inefficiencies in design and problems with added shoplifting.

One retailer gave the example that “in the Albina plan, all stations were zoned high-density residential, but the HD residential won’t go in without the services to support it.” Also cited was an example of a competitor filing a LUBA appeal for only \$250 – after the project had already gone through an extensive public review process. The requirements need to be “clear and predictable.”

A store developer expresses concerns with the nexus between SDC charges and where the improvements are made, noting that “the improvements need to be made in the vicinity of the project.” Another commented that improvements made by the retailer need to be offset in fees.

As one successful retail operator noted: “Despite all the grouching, there is a recognition that it is this highly-regulated environment that has created the conditions that allow the company to be successful.”

A final suggestion: “There needs to be a phasing-in of the long-term vision which is not economically feasible yet.” When asked about the “single most important thing that Metro and local jurisdictions could (or should) do to best assure that this region remains competitive”, suggestions received include the following:

- Keep approvals process clear and predictable.
- SDC nexus needs to be clear; keep public improvements in the vicinity of the development.
- Don’t demonize the automobile. It’s part of our culture and society. People require it.
- Urban development standards don’t work in suburban environments.
- Ensure development requirements respond to existing market conditions. (For example, poorly planned pedestrian accesses can result in less efficient use of space within the establishment and/or end up being used nearly exclusively by shoplifters.)

## **CLIMATE CHANGE & GREEN DEVELOPMENT**

*“Customers and employees expect it (going green)”*

*“It’s ingrained and expected.”*

*“Energy savings are important and can be significant.”*

*“All our meals used to be on disposable serveware, now it’s down to about 25% disposable.”*

*“Access to transit is important for the staff”*

*“Energy-efficiency needs to pencil.”*

One participant commented on the emphasis on green and sustainable development this way: “As a resident, it’s wonderful; but it shouldn’t be in conflict with industry.” A retailer looking at added sites noted that “new buildings apply LEED principles, but are not certified” due to high costs of certification, especially for smaller footprint buildings. Another retail business

comments that solar panels on light fixtures save money but were “harder to permit than the standard approval process.”

A food retailer comments that they “use no Styrofoam and are seeking energy savings.” And a service business representative observes that “better light and HVAC systems make for a better environment, which makes the experience better for the customer.”

A business that values transit access not only for those who work at store sites but in preparatory facilities. In addition to transit, walking and biking (including bike route access) are important.

## **SMALLER FOOTPRINT**

*“Allow master planning of sites to respond to market conditions.”*

*When the environment demands it, there is no problem putting parking underneath.”*

*“The marriage of LRT and economic activity seems questionable. Dallas seems more successful, developed as public-private partnerships.”*

*“Recognize that we have a pro forma that we’re bound by.”*

As with the other focus groups, participants were asked if they would locate to taller buildings with greater urban density. Opinions were mixed.

Among retail representatives, the general consensus seemed to be that multi-level retail and participation with mixed-use development makes most sense in higher demand urban and mixed use settings. One business representative noted that “development patterns have been established; it’s about redevelopment.”

However, in other less urban settings, an urban format with multi-level stores and reduced parking ratios may not work. With retail, one size does not fit all situations.

What is clear is that retail and service business patterns and customer demands are continually changing. A store that uses multi-channel marketing finds that its customers “still want to shop the deli, produce and other departments.”

Even functions like an ATM take on greater importance in a retail site. As one participant noted, the “ATM is becoming more of a multi-convenience center” where people can also make purchases – as for stamps, travelers’ checks, and gift cards.

In summary, the trends most favorable toward smaller footprints include a more conservative development environment favoring smaller store sites, growing emphasis on urban infill sites, and willingness to adjust parking requirements to the mode mix of traffic in a particular portion of the metro region. However, clear limits are also noted – a suburban setting may not immediately adjust to or support an overly urban retail development concept.

## APPENDIX. FOCUS GROUP FUNDERS & PARTICIPANTS

This appendix provides a list of focus group funding partners and participants (by group).

### PROJECT FUNDING

This focus group research has involved funding support from both public and private sector organizations including:

Clackamas County Business Alliance (CCBA)  
Commercial Association of REALTORS® (CAR)  
Commercial Real Estate Economic Coalition (CREEC)  
East Metro Economic Alliance (EMEA)  
Metro  
Oregon Association of REALTORS® (OAR)  
National Association of Industrial and Office Properties (NAIOP)  
Port of Portland  
Portland Bureau of Planning  
Portland Business Alliance (PBA)  
Providence Health & Services (PH&S)  
Society of Industrial and Office REALTORS® (SIOR)  
Westside Economic Alliance (WEA)

### FOCUS GROUP PARTICIPANTS

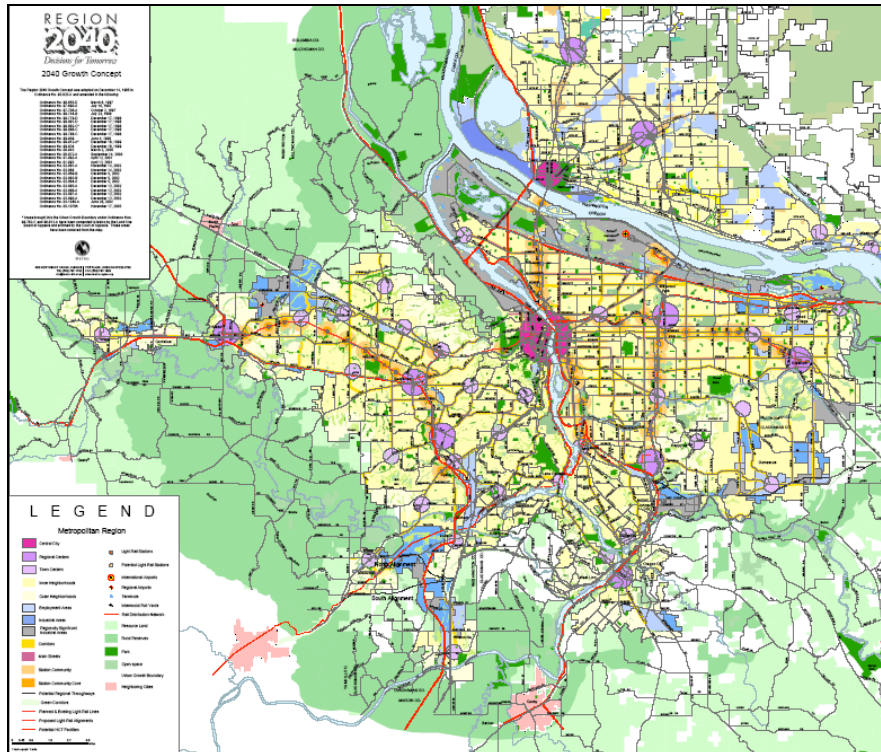
Listed below are names and business/organizational affiliations represented within the eight focus groups. This contribution of time and ideas by focus group participants is gratefully acknowledged.

Name	Position	Focus Group	Firm / Organization
Mike Becker	Director of Legislative and Regulatory Affairs	Regional Service Providers	Regence BlueCross/BlueShield
Bob Beisner	Board of Directors	High Tech	SolarWorld
Steve Benight	CEO	Biotech/Medical	Portland Bioscience, Inc.
Craig Boretz	Vice President of Corporate Development	Distribution/Logistics	Con-way
Paul Breuer	Senior Vice President	Business Locators	Colliers International
Chandra Brown	Vice President	Metals/Machinery	Oregon Iron Works, Inc.
Erin Carlson	---	Retail	Save-A-Lot Foods
Mark Childs	Principal	Business Locators	Integrated Corporate Property Services
Bob Currey-Wilson	---	Retail	Fred Meyer

<b>Name</b>	<b>Position</b>	<b>Focus Group</b>	<b>Firm / Organization</b>
Tom Dechenne	Senior Real Estate Broker	Business Locators	Norris, Beggs & Simpson
Eileen Drake	Vice President	Metals/Machinery	Precision Cast Parts/PCC Structurals, Inc.
Gary Eichman	President	Distribution/Logistics	Oregon Transfer Company
Patrick Flanagan	---	Retail	Key Bank
Glenda Hollenbeck	---	Retail	Kindercare
Dan Hossley	---	Retail	Moonstruck Chocolate
Wray Hutchinson	---	Retail	Buffalo Wild Wings
J. Isaac	Senior Vice President Business Affairs	Regional Service Providers	Portland Trailblazers
Jeff King	Director	Biotech/Medical	Virogenomic, Inc.
Susie Lahsene	Senior Manager Transportation and Land Use Policy	Distribution/Logistics	Port of Portland
Tim Leahy	President	Metals/Machinery	Calbag Metals
Dave Marks	President	Metals/Machinery	Marks Metal
Harvey Matthews	Executive Director	High Tech	Software Association of Oregon
Stephen McCarthy	Owner	Food/Beverage	Clear Creek Distillery
Doug MacGowan	Vice President Foundry Operations	Metals/Machinery	Esco Corporation
Lee Medoeff	Owner	Food/Beverage	House Spirits Distillery
Jill Miles	National Business Development	Business Locators	State of Oregon – Economic Development Department
Joe Mollusky	Real Estate Marketing Manager	Business Locators	Port of Portland
Clark Nelson	Human Resources Manager	Food/Beverage	Kraft Foods
Don Ossey	Principal	Business Locators	Capacity Commercial Group
Drew Park	---	Metals/Machinery	Columbia Wire & Iron
Arundee Pradhan	Director – Technology & Research	Biotech/Medical	Oregon Health & Science University
Donna Ragan	Director – Taxes and Economic Development	High Tech	TriQuint Semiconductor, Inc.
Morgan Randis	---	Retail	WinCo Foods
Josh Reynolds	President	Food/Beverage	Gray & Company
Brian Rohter	---	Retail	New Seasons Market
Ben Santarris	Public Affairs Manager	High Tech	SolarWorld
John Siemsen	Director of Planning and Strategy	Regional Service Providers	Kaiser Permanente
Stuart Skaug	Associate	Business Locators	CBRE
Greg Smith	Transportation Solutions	Distribution/Logistics	Road Link
Desari Strader	Executive Director	High Tech	Oregon Solar Energy Industries Association

<b>Name</b>	<b>Position</b>	<b>Focus Group</b>	<b>Firm / Organization</b>
Irfan Tahir	Broker	Business Locators	Grubb and Ellis
John Titteninton	Director of Research & Development	Biotech/Medical	Najit Techonologies, Inc.
Steve Wells	Principal, Development and Investment Group	Business Locators	Trammel Crow
Donald Williams	COO	Regional Service Providers	Schwabe, Williamson & Wyatt
Jonathan Williams	Government Affairs Manager	High Tech	Intel Corporation
John Willis	Area Vice President	Regional Service Providers	CH2M Hill
Ty Wyman	Attorney; Representative PH&S	Regional Service Providers	Providence Health & Services/Oregon

# EMPLOYMENT & ECONOMIC TRENDS ANALYSIS



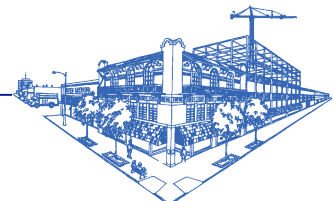
## Interim Status Report

**Prepared for:**  
**Metro**

**March 2009**

**E. D. Hovee & Company, LLC – Economic & Development Services**

☐ Bonnie Gee Yosick llc ☐ FCS Group ☐ Davis, Hibbitts & Midghall, Inc.



## INTRODUCTION

This is the interim report for an employment and economic trends analysis being conducted for the Portland metro region. The primary purpose of the analysis is to outline a *new paradigm* for evaluating job needs and associated capacity within the tri-county portion of the metro region.

**Report Context.** In 1995, the region endorsed the 2040 Growth Concept, an innovative blueprint that seeks to direct future population and employment growth into urban centers, transportation corridors and employment areas in a manner that uses land more efficiently and enhances the character and economic vitality of urban communities. In 2008 the Metro Council adopted six characteristics of a successful region that describe outcomes to guide the region's efforts to accommodate population and employment growth while enhancing quality of life for current and future residents. One outcome focuses specifically on the economy: *Current and future residents benefit from the region's sustained economic competitiveness and prosperity.*

State land use laws require Metro to produce an analysis of the region's capacity to meet the forecasted 20-year demand for jobs and housing by the end of 2009. Metro, in partnership with Clackamas, Multnomah and Washington counties, is also working to identify urban and rural reserves, which will define the shape of the region for the next 40 to 50 years.

**Economic & Employment Trends Work.** To support efforts to analyze demand and capacity and identify urban reserves, Metro is undertaking a fresh look at an employment methodology with the assistance of a consultant team led by Eric Hovee, E. D. Hovee and Company, LLC. The employment and economic trends work will provide the Metro Council with a new paradigm for evaluating job demand and associated employment land demand for the 5-, 20- and 50-year time horizons. The work will include:

- Economic trends focused on location decisions and development practices,
- An updated inventory of employment land across the region, and
- Policy options for assessing employment capacity needs.

**Summary Overview.** Work that has been completed to date includes:

- Employment Demand Factors & Trends (Eric Hovee & Tess Jordan)
- Variables Affecting Location Decisions (Bonnie Gee Yosick, LLC)
- Focus Group Research (Adam Davis – Davis, Hibbitts & Midghall, Inc.)

The purpose of this status report is to provide a *summary overview* of work completed to date and implications for next steps – notably the formulation of a new demand assessment paradigm, capacity inventory, and framing choices for regional job needs. More detailed draft technical reports are available for each of the topics described above.

This report begins with a brief overview of key findings from analysis completed to date. This is followed by discussion of research results from each individual project task – leading to implications for a new demand paradigm and resulting choices for regional job needs.

## OVERVIEW FINDINGS

Drawing from research completed on employment trends, a literature search of factors affecting location decisions and industry focus groups, the following overall findings are outlined as being of particular importance to shaping a new employment paradigm for the tri-county region:

1. *Post-2000, the Portland region has experienced an economic recovery with modest job growth accompanied by migration of net added employment to outer ring suburban areas of the metro area.* Non-farm job gains were at much lower rates (averaging 0.5% annually) than were experienced in the 1990s. This post-2000 experience of more moderate job growth also appears consistent with expectations of slower labor force and employment changes over upcoming 5-, 20- and 50-year time horizons. While 75% of existing jobs remain concentrated in the region's center and inner rings, the outer rings experienced job growth at rates of approximately 3% per year – accounting for virtually all of the region's net added jobs.
2. *Increased intensity of development and employment activity has occurred for the central city, centers and corridors (urban 2040 design types) but with surprisingly weak job gains.* Floor area ratios (FARs) as an indicator of building intensity (measuring building square feet divided by site area) have increased substantially for regional centers, town centers and corridors. However, urban design type employment growth has increased at below region-wide rates for all but town centers.
3. *Conversely, industrial and employment areas have experienced strong jobs gains but at largely unchanged levels of development intensity.* While a substantial source of this job growth has occurred with industrial-related uses (especially in industrial areas), the majority of the employment gain realized across all employment land has come from service sector jobs. Development intensity as measured by FAR continues at just under 30% of site area.
4. *Building intensity (FAR) rather than job intensiveness of building space utilization can be expected to serve as the major driver of changing employment 'footprint' in the years ahead.* The standard measure of employment intensiveness – jobs per acre – is the mathematical product of jobs per square foot of building area *multiplied by* FAR of building development on-site. National literature, combined with experience of the Portland metro area, suggests that while there may be some shifts in employee use of building space, the major determinant of job density on site will come from increased FAR. This can occur via means such as greater building coverage of the site, more multi-level buildings, and improved utilization of higher ceiling (high-cube) buildings for industrial applications.
5. *Business community commitment is evident for realization of the region's 2040 vision accompanied by incremental change.* Focus group participation demonstrates a Portland metro area business culture that thinks long-term – more so than many business counterparts across the U.S. or globally. This commitment is evidenced by rapid adoption of green business and development practices and by support for maintaining the region's



livability to attract and retain labor force. Caution is also exemplified by the statement: “Don’t require the full-build now.” Rather, make incremental changes creating new market opportunities while staying the course toward achievement of the longer term 40-50 year vision.

6. *While a major focus of Metro’s urban growth report will be on assuring adequacy of development capacity for job growth, there are issues beyond land supply that will affect regional job outcomes.* Job characteristics of interest that have been identified but are beyond the direct scope of this research process include such metrics as wage levels, value of regional output, technological and capital intensiveness of the region’s industrial base, education levels, infrastructure readiness and ability to respond to as yet unforeseen opportunities.

Local jurisdictions may appropriately address many of these factors including jurisdiction specific aspirations through Goal 9 Economic Opportunity Analyses. Metro is charged with taking a broader regional view to assure that the full range of current and future job needs can be adequately addressed in a manner that also meets the adopted Region 2040 vision.

7. *Looking to the future, there appears to be no single economic driver of job growth for the Portland metro region.* While the Portland metro area experienced substantial high-technology growth in the 1990s, there is no similar readily discernable sector-driven source of job growth post-2000. However, some metro areas of the country can point to major traded sector activities or employers serving as engines for economic prosperity.

For example, Seattle has experienced substantial job growth driven with recognized employers in aerospace, software and internet retail, biotechnology, and national / international consumer retailing – and has an in-place public/private economic development strategy through the region-wide *Prosperity Partnership*. By contrast, the Portland metro area does not yet have in place a comprehensive economic development strategy with accompanying regional business cluster priorities.

Consistent with this overview, the remainder of this interim report now turns to more detailed discussion of employment demand factors and trends, variables affecting location decisions, focus group research, summary implications and next steps.

## **EMPLOYMENT DEMAND FACTORS & TRENDS**

The first work task in the trends analysis was to review employment trends and associated site demand factors – by industry sector, market subareas and design types. This review covers much of the most recent cycle of the national and regional economy – over the 2000-2006 time period.

Results of this trends analysis are intended to serve as background considerations for a new demand assessment paradigm. This demand paradigm involves allocation of regional forecasts over 5-, 20- and 50-year time periods by market subarea and design types.

The trends analysis is conducted both from employment and development perspectives. While agricultural employment and land remains important to areas outside of the region's urban growth boundary (UGB), the focus of this analysis is on job sectors requiring urban land. Principal findings from this analysis are summarized as follows.

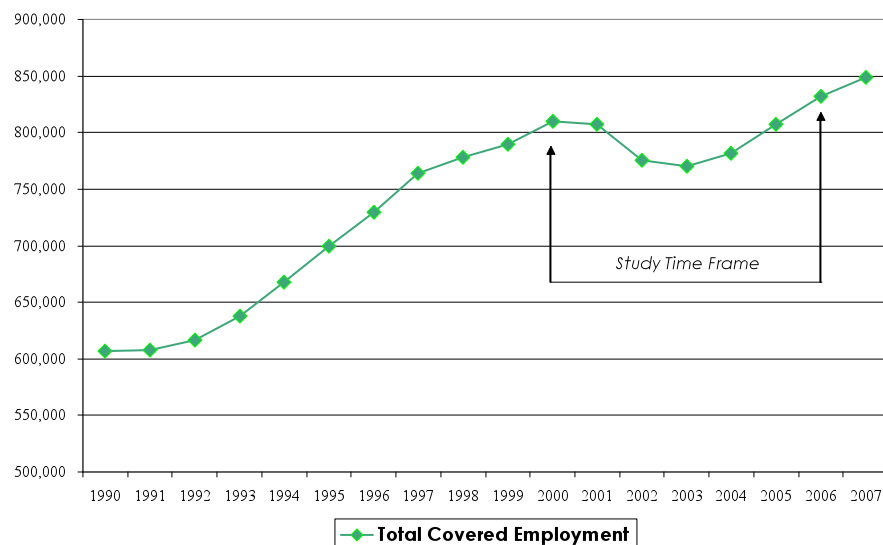
## Employment Trends

As of 2006, the tri-county region had an estimated 842,000 non-agricultural jobs. Employment in the tri-county area represents 83% of the job base for the seven-county Primary Metropolitan Statistical Area (PMSA), with the bulk of remaining jobs located in Clark County, Washington.

Between 2000 and 2006, the region added approximately 22,500 jobs – representing a

0.5% annual job growth over a period marked by an economic downturn and subsequent recovery. Employment growth was far weaker in this most recent cycle than the 2.9% annual job growth experienced during the previous decade of the 1990s. Job gains in the 1990s were also relatively high by comparative standards – about one-third higher than the rate of growth in the preceding decade of the 1980s.

**Tri-County Total Employment Trends 1990-2007**



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

**Trends by Industry Sector.** Industry shifts in the region's employment reflect the evolution of business job classification, as well as actual job losses and gains. Several key trends are noted:

- The service sector is associated with by far the largest growth and in 2006 accounted for 56% of the tri-county's covered employment.
- Health care and social assistance has dominated service sector job growth, with a net gain of 17,000 jobs.
- The industrial sector comprises 30% of tri-county jobs, a decline from this sector's 32% share in 2000. Manufacturing, a subset of the industrial sector, is indicated with a net loss of 6,700 jobs over the 2000-2006 time period.
- Jobs associated with retail (excluding dining) also declined – a reversal of prior experience in the 1990s.

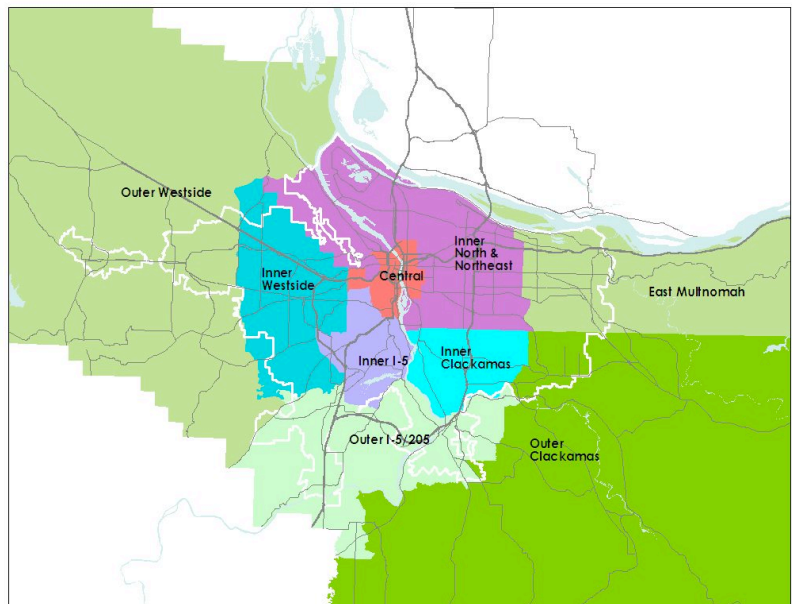
**Market Subareas.** For this analysis, the three-county Metro region has been divided into nine geographic subareas and further aggregated to three overall *ring geographies*:

- ✓ *Central* (also a Subarea of its own)
- ✓ *Inner ring* (Inner North & East, Inner Westside, Inner I-5 and Inner Clackamas)
- ✓ *Outer ring* (Outer Westside, East Multnomah County, Outer Clackamas and Outer I-5/205).

Key trends for these market subarea geographies are noted as follows:

- About one-half of the tri-county region's 2006 employment is located within the largely developed inner ring geography, with the remainder divided between the central and outer rings.
- The central and inner ring geographies are losing jobs while outer ring geographies have added jobs at a pace above 3% per year.
- Within the inner ring, the Central and Inner North & Northeast subareas show the largest job loss, especially for industrial jobs.
- In contrast, outer ring subareas added industrial jobs – enough to off-set about 65% of inner/central ring losses (but still resulting in a Portland tri-county region industrial employment decline).
- Retail job growth also appears to be migrating to the outer ring subareas (+3,200 jobs), enough to off-set about 50% of inner/central ring employment decline.
- While outside of the direct purview of this report, Clark County also reported rapid job growth during this time period of 2.2% annually, well above the overall job growth rate indicated for the Oregon side of the tri-county region.

### Tri-County Market Area Geographies

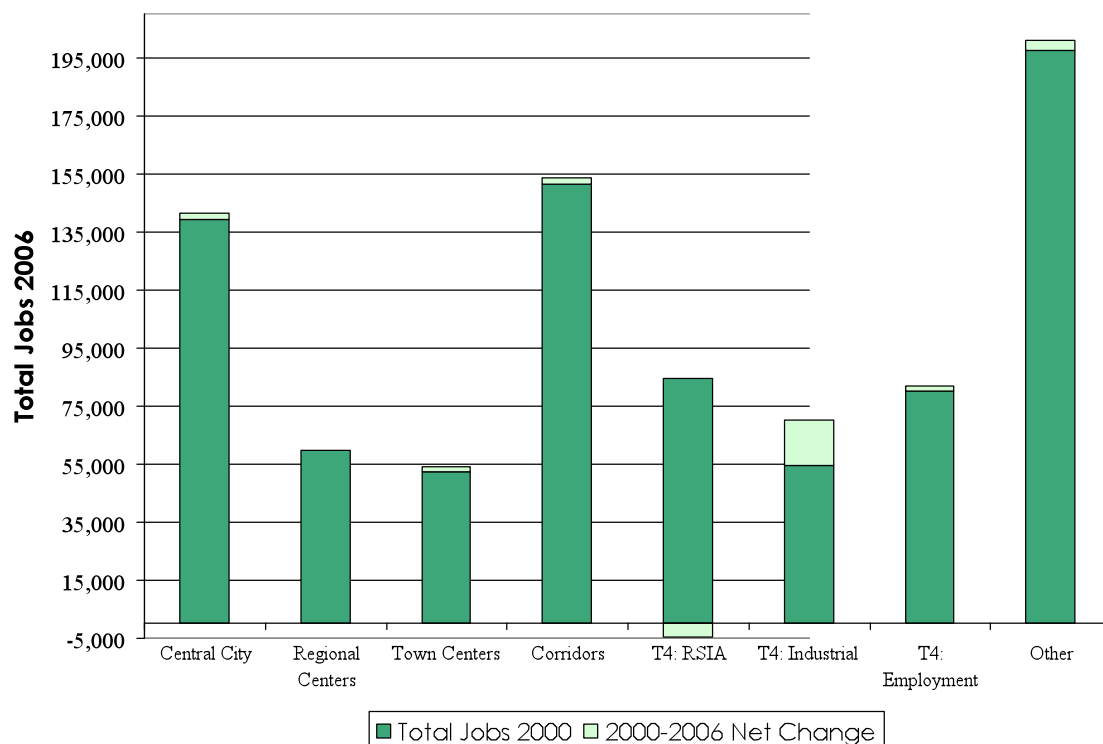


Legend: With the above map, tri-county *inner ring* geographies are indicated by purple/blue shades with *outer ring* geographies shown in green shades. The urban growth boundary (UGB) is indicated with the white line.

**Employment by Design Type.** The region's 2040 Growth Concept calls for development to be focused in centers and corridors and with employment and industrial lands. To better understand how successful current policies have been and to develop a basis for further policy discussion we analyzed job growth by 2040 Design Types:

- *Urban-focused* 2040 Design Types report job growth, but at rates below the 0.5% annual growth rate experienced region-wide. An exception is noted for Town Centers which grew at an equivalent pace. Service and public sector jobs fueled the job growth occurring in the other 2040 Design Types (city center, regional centers and corridors).
- Industrial Areas are associated with the strongest growth rates, averaging 4.5% per year. The largest share of the growth has occurred for industrial jobs. About 30% of net new jobs locating in Industrial Areas were non-industrial (primarily service sector) jobs. Employment Areas experienced slower job growth and Regionally Significant Industrial Areas (RSIAs) reported some job base erosion from 2000-2006.
- *Other areas* (not covered by 2040 design types) currently account for about one-quarter of all metro area employment but very little of the job growth experienced post-2000.

### Jobs by Design Type (2000-2006)



Note: The central city, regional centers, town centers and corridors represent adopted 2040 urban design types. Regionally significant industrial areas (RSIAs), industrial areas and employment areas are part of the Title 4 industrial and employment lands process.

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

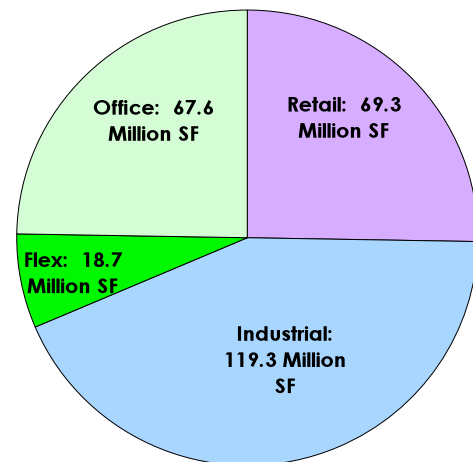
## Development Trends

Development of industrial, commercial and mixed use building space for employment use has been evaluated at a subregional level using proprietary CoStar real estate industry data.

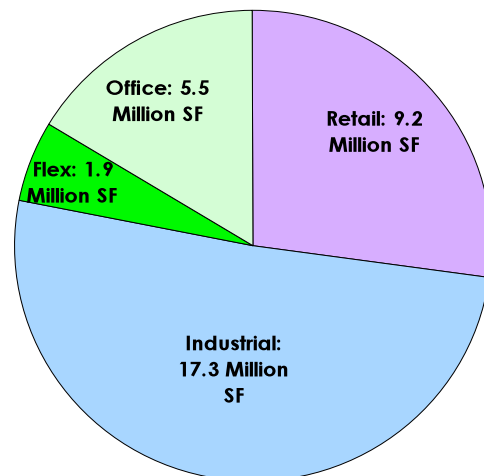
**Industrial & Commercial Development Trends.** As of January 2009, the Portland metro region has an estimated 275 million square feet of industrial and commercial building space (as tracked by the national/regional real estate data organization CoStar):

- An estimated 34 million square feet has been added post-2000 – with industrial and retail sectors increasing their respective shares of the total identified space inventory.
- Industrial space represents 43% of the region’s total employment space inventory and 51% of new construction. Flex space (typically with 50%+ office use) remains a small component of the over-all industrial market, with about 16% of the overall industrial inventory.
- The single largest share of new office product – 41% of all recent development – has located within the inner ring.
- Retail space has also become an increased share of the region’s employment building inventory. New retail development has favored outer ring subareas, which have captured close to 50% of post-2000 retail development
- Overall, this analysis suggests that the development of industrial and commercial *real estate product* has out-paced job gains since 2000 throughout the region.

**Employment Real Estate Inventory (January 2009)**



**Inventory Additions (Post-2000)**

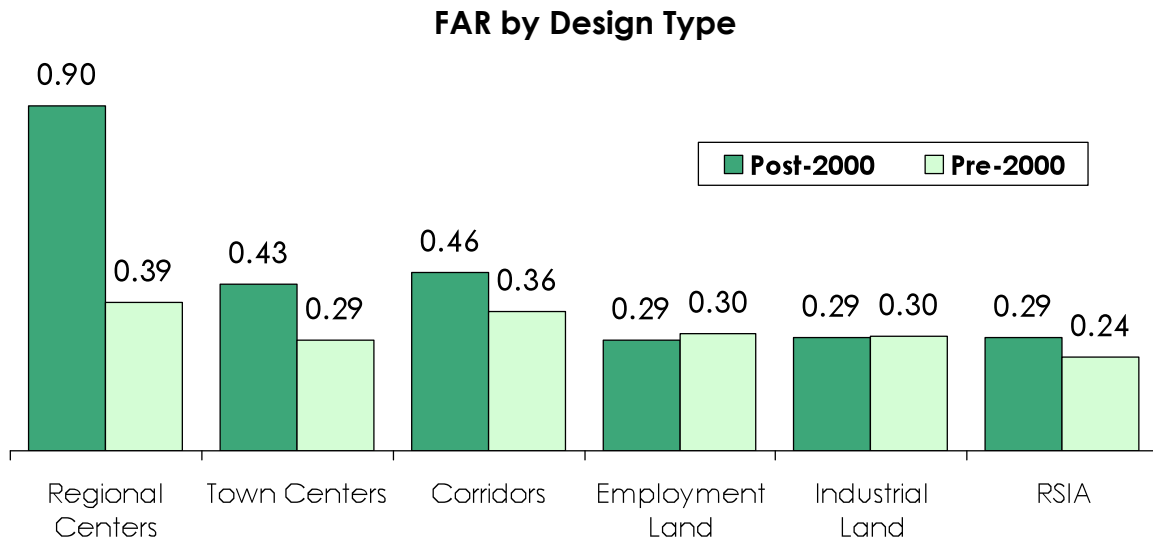


Source: CoStar, E. D. Hovee & Company, LLC.

### **Intensity of Employment Development.**

An important focus of this analysis has been on floor area ratios (FARs) as a measure of industrial/commercial development density. FARs are calculated by dividing building square footage by land square footage:

- Densities for urban focused design types have increased since 2000 across the region. However, only the Central area of the region currently achieves FARs averaging above 1.0.
- Industrial and employment area densities have experienced little overall FAR change since 2000 – but remain relatively stable at close to 0.30.



Source: Metro Data Resource Center RLIS and E. D. Hovee & Company, LLC.

## Demand Factors

Several added and related demand factors have been considered with this trends analysis:

- Based on a partial sampling of tax lots developed since 2000, more than one-half (53%) occurred on previously developed sites (with 47% on vacant sites). *Redevelopment rates* appear to be greatest for central and inner ring geographies.
- Within the larger four county metropolitan region (including Clark County), *retail demand and supply* appear to be in near balance – with the region about 4% below national retail standards as of 2008. Of specific note is that this metro region deviates from national norms with respect to spending patterns by specific retail category.
- The Metro 2035 forecast indicates that about 20% of net new jobs can be expected in institutional categories of *health care and education*. Between 60-80% of this demand is expected to be accommodated by larger employers of 50+ jobs. Substantial growth is anticipated for outer ring geographies in response to patterns of population growth.
- *Industrial building and site utilization* appears to be increasingly oriented to warehouse and distribution – accounting for an estimated 45% of industrial job growth. High tech uses are currently expected to account for another 45%, construction 39% and other manufacturing 4% of net job increases to 2035.

## VARIABLES AFFECTING LOCATION DECISIONS

A key component of this research has been to identify existing and emerging factors that affect business location decisions. This has been a primarily qualitative assessment conducted as a literature review – from regional, national and global perspectives. The analysis includes risks and opportunities to the Portland metro area economy, followed by real estate product specific assessments and then looks out over 5-, 20- and 50-year time horizons.

## Global Risks & Opportunities

As the events of the last two years demonstrate, there are new and increasingly global risks as well as opportunities that can be expected to shape the metro area economy in the years ahead. While the current severity of the challenge is viewed as short-term, it is increasingly clear that longer term prospects are altered as well.

Key risks and opportunities are summarized as including:

- Financial market instability (including the risk of on-going global instability beyond the current economic downturn)
- Housing market recovery (likely affecting consumer wealth, spending and job choices over at least the next five years)
- Fiscal environment (including issues related to federal and state tax structure and a state that is still highly resource dependent)
- Global positioning (including issues related to dollar volatility, the growing importance of global pathway cities, changing role of China and emerging economies, and outsourcing)
- Going green (addressing issues including climate change, energy and water conservation)
- Development costs (relative to supportable market values both short and longer term)
- Demographics (related both to an aging population and effects of migration)

## Industrial & Commercial Real Estate

Trends and outlook for industrial, commercial office and retail development have been assessed in the context of these global risks and opportunities.

**Industrial.** Key real estate products encompassed by industrial development include warehouse/distribution, manufacturing and tech-flex space. The Portland metro area has the advantage of being positioned at close to the top tier of the strongest industrial markets in the U.S. (with moderate levels of vacancy as of 2008). A competitive advantage is that the Portland metro area remains price competitive with other major west coast and other comparable communities – less so with central/southeast U.S. and offshore alternatives.

Emerging trends that can be expected to affect industrial development globally and in this metro area include:

- Continued off-shoring of commodity production, less so for high value niche products (including some indications that off-shoring may be reversed)
- Supply-chain management to further reduce inventory costs
- Radio frequency identification (RFID) as a means to better track inventory supporting more high-cube distribution and cross-dock freight handling
- Shortened product life cycles with more rapid transition from R&D to prototype testing and commodity production with increasingly international supply chains
- Geographic concentration and specialization of industry sectors with regional anchors

- Mass customization that is reliant on virtual market information and high technology applications even for small lot, niche product manufacturers
- Early global interest in opportunities for vertical manufacturing and distribution, especially in high cost international locales of Asia and Europe

**Office Commercial.** Office space has traditionally been characterized as comprising Class A (investment grade), Class B (smaller/older) and Class C (including historic) properties. Compared to the rest of the U.S., the Portland metro area has maintained relatively strong occupancy. As in other metro markets, central business district (CBD) properties are generally faring better than suburban counterparts.

Emerging trends of potential importance for office space in the years ahead include:

- Continuing emphasis of technology (with smart buildings, now green design)
- Impetus for corporate campuses and office decentralization
- Business mergers and acquisitions coupled with globalization
- More aggressive consideration of techniques to reduce square footage per employee such as office “hoteling”
- Link to education for a well-trained, creative class workforce
- Small business space including growth of alternative concepts such as work/live

**Retail Commercial.** For more than a generation, the real estate industry has classified retail centers by size and market area served, including convenience/neighborhood, community and regional centers. Different variations of these center types have also developed. Until recently there has been less attention on urban street retailing which is of growing importance in the Portland metro area.

While the Portland region has the second smallest amount of retail space per capita among the 25 largest metro areas in the U.S., total retail sales are roughly in balance with demand. Over at least the short term, store closings currently being experienced may well be accompanied by longer term consolidation of national chains. There is a flight to stores offering value (by customers) and to retail spaces offering quality with value (by store tenants).

The literature review suggests several broader trends of continuing importance longer-term:

- Continued morphing of retail centers into power, lifestyle, hybrid center and transportation-integrated retail concepts
- Greater acceptance of downtown and urban retailing, including more vertical stacking
- Growing importance of cross-channel shopping and continued impact of on-line shopping, which currently account for about 7% of retail sales

**Institutional.** Education, health care, corrections, and other public/private (including non-profit) institutional activity represents a form of real estate development that is often overlooked and not well-tracked with no readily definable market activity. While much of the national literature takes on more of a case study approach, overall trends of importance to watch include:



- Changing demographics – notably the aging of the population and extent to which growth continues in suburban fashion or is re-directed to existing urbanized areas
- Private redevelopment partnerships – including potential for broader economic development roles by major metro area institutions
- Redevelopment of unconventional sites – especially as many education and health care facilities are in quasi-residential settings or near major employment nodes

**Mixed Use.** As with institutional use, mixed use is not yet well-tracked as a separate market or investment product. Product types include residential with retail, office with retail and unconventional/niche opportunities including:

- Growing acceptance of suburban mixed use at high-demand locations – especially combinations of office, retail and/or housing
- Retail and medical office mixed use – as when more medical activities move into a pharmacy or multi-shop setting as retail clinics
- Redevelopment of obsolete public (as well as private) property – ranging from decommissioned military bases to surplus school sites and hospital facilities

## Summary Outlook (5-, 20-, 50-Year Horizons)

A summary of the 5-, 20- and 50-year outlook for these product types is provided by the following matrix chart. As is becoming increasingly apparent, the next five years can be expected to be largely about economic recovery, setting the stage for a longer term path of more sustainable growth and development.

Mid-term (20-year) prospects take advantage of significant pending demographic changes and required public-private implementation (as with infrastructure reinvestment). Long-term (40-50 year) prospects, while least certain, offer the widest set of opportunities for reinvention of the jobs/land paradigm necessary to accommodate substantially greater regional job base but with less development and land “footprint” per job.

Reaching to 2040 and beyond represents an appropriate time frame for full realization of the region’s growth concept vision. This is also the time frame over which an intentional strategy could serve to solidify a Portland metro sustained advantage as a distinctive, sustainable global pathway for jobs meeting shared region-wide needs and aspirations.

## Summary Outlook (5-, 20-, and 40-50 Year Horizons)

<u>Real Estate Type</u>	<u>5-Year</u>	<u>20-Year</u>	<u>40-50 Year</u>
<b>Industrial</b>	<ul style="list-style-type: none"> <li>• Price advantage</li> <li>• Export driven</li> <li>• Large sites a bonus?</li> </ul>	<ul style="list-style-type: none"> <li>• Build from existing clusters (green)</li> <li>• 2nd tier distribution</li> </ul>	<ul style="list-style-type: none"> <li>• World class higher ed</li> <li>• Multi-level industrial?</li> </ul>
<b>Office</b>	<ul style="list-style-type: none"> <li>• Slowed development</li> <li>• Urban market recapture</li> <li>• LEED bonus</li> </ul>	<ul style="list-style-type: none"> <li>• Depends on young creatives</li> <li>• More mixed use / TOD</li> </ul>	<ul style="list-style-type: none"> <li>• Flexible live-work</li> <li>• Education link for income growth</li> </ul>
<b>Retail</b>	<ul style="list-style-type: none"> <li>• More stability than nation?</li> <li>• Flight to quality &amp; value</li> </ul>	<ul style="list-style-type: none"> <li>• Reuse of dated centers</li> <li>• TOD opportunity</li> </ul>	<ul style="list-style-type: none"> <li>• Outer ring urban formats</li> <li>• Online &amp; multi-channel integration</li> </ul>
<b>Institutional</b>	<ul style="list-style-type: none"> <li>• Constrained funding</li> <li>• Plan for mid-term</li> </ul>	<ul style="list-style-type: none"> <li>• Aging boomers</li> <li>• Satellite facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Increased share of job base</li> <li>• Densification of use</li> </ul>
<b>Mixed Use</b>	<ul style="list-style-type: none"> <li>• Slowed development</li> <li>• Public-private stimulus?</li> </ul>	<ul style="list-style-type: none"> <li>• Rebound opportunity</li> <li>• Extension beyond Central City</li> </ul>	<ul style="list-style-type: none"> <li>• Portland's global pathway opportunity</li> </ul>

## FOCUS GROUP RESEARCH

Metro, in cooperation with the business community, commissioned focus group research to obtain business and industry perspectives on emerging trends in building space needs and changing regional competitive advantage. The following eight focus groups were conducted and led primarily by Adam Davis of Davis, Hibbitts & Midghall:

- Biotech/medical
- Distribution/logistics
- Food/beverage
- High tech
- Metals/machinery
- Business locators
- Retail
- Regional service providers

There were 47 participants with these eight groups. While not designed to measure with statistical reliability the attitudes of a particular group, focus group research is valuable in providing the perspectives of the population from which the sample was drawn.



Photos courtesy of Davis, Hibbitts & Midghall.

Findings are organized to cover discussion of building and space needs, emerging trends, development patterns, advantages and disadvantages of doing business in the Portland metro area, and on-going competitive advantage for the region.

## **Building & Space Needs**

Participants noted the following needs, first for building space, then location and site needs:

### *Building Space:*

- Rapid industrial change – as land and building space is increasingly expensive
- Hi-cube distribution – on the horizon for mid-large firms
- “New age shop” for manufacturing – as companies of all sizes invest in technology
- Diversity of office needs – but with common themes of more collaboration and conferencing
- Retail shift to smaller store concepts – especially grocery and for the near-term

### *Location/Site:*

- Regional competition for industrial sites – extending at least from Longview to Salem
- For sites of 20+ acres, increasing need to look outside the Portland tri-county region
- Distribution requirement for freeway access (with I-5 as the preferred corridor)
- Clustering for competitive advantage – exemplified by clusters including high tech, metals and professional services
- Labor force as a growing driver of facility siting decisions
- Customer/client businesses driven for closer proximity to population
- Little eagerness for brownfield redevelopment, due to liability issues
- Greater impetus for businesses to stay in the same site footprint in order to mitigate neighborhood and cost issues

## **Emerging Trends**

- Transit now important across all business groupings, especially for employees
- Transit-oriented development (TOD) interest – but a source of frustration for at least some commercial/industrial firms in this region
- Auto orientation still critical for customer and patient access, with parking needed but a major cost and with recognition that auto reliance varies widely across the region
- Work force accessibility a critical concern – key to attracting young talent which is easier due to this region’s quality of life draw
- Going green of broad interest – especially when supported by customers, clients, workers and/or investors

## Development Patterns

- Multi-story development works best for office and administrative functions
- Diverse opinions on retail suitability for 2+ stories – but most likely at higher value and urban or constrained sites
- Manufacturing typically holding at 1-2 floors – more for admin / R&D functions
- Multi-level economics are not workable for distribution yet (despite global experience), but hi-cube distribution accomplishes similar results of reduced land footprint
- Great impetus for more and more efficient building on site, adaptive reuse, and multi-level parking on constrained sites

## Advantages & Disadvantages

Focus group participants were asked a two-part question: *What are the primary advantages (and disadvantages) of the Portland metro area as a place for your business to grow?*

Responses are organized in terms of comments most frequently heard across most or all of the focus groups. Also identified are less frequently mentioned items that are nonetheless of great importance in at least some of the focus group discussions.

<u>Advantages</u>	<u>Disadvantages</u>
<b><i>Most frequently mentioned</i></b>	
<ul style="list-style-type: none"><li>• Talented work force ('the cutting edge is from Oregon')</li><li>• Multi-modal access</li><li>• Quality of life (urban, recreation)</li><li>• Relationships (business-to-business &amp; customer)</li></ul>	<ul style="list-style-type: none"><li>• Poor market proximity (no critical mass)</li><li>• Shallow labor pool (skill positions)</li><li>• Limited, high cost sites</li><li>• Transportation congestion (freight, passenger)</li><li>• Public policy issues (taxes, fees, permitting, infrastructure)</li></ul>
<b><i>Less frequently mentioned</i></b>	
<ul style="list-style-type: none"><li>• Sustainability commitment (business, environmental, land use)</li><li>• Reasonable cost of doing business</li><li>• Population growth (good demographics)</li><li>• Gateway location (especially Port-related)</li></ul>	<ul style="list-style-type: none"><li>• Cost of doing business (cost of living)</li><li>• Limited investment capital (and need for incentives for some industries)</li><li>• Industrial encroachment &amp; gentrification</li></ul>

## Competitive Advantage

The last question raised in the focus group discussions was: *What message do you have for Metro and local jurisdictions about what to do in a changing world to assure that the Portland metro area remains competitive as a place for businesses in your industry group to expand or locate?*

Key themes heard in both written responses and ensuing discussion are summarized to include:

- More land in the right place(s) – with in-place infrastructure
- Increased focus on sustainability – as a necessary cost of doing business
- Economic stability of Portland – a plus compared to the rest of the west coast
- Addressing issues of congestion – on local streets as well as the freeway system
- Taxes, fees, permitting – consider streamlining
- Value capture as a mechanism for infrastructure funding – as for new employment land brought into the UGB
- Encouragement of high end jobs – with greater focus on wage levels
- Flexibility in policy application
- Paying attention to the short as well as long-term – taking incremental steps to achieve the long-range vision

## SUMMARY IMPLICATIONS & NEXT STEPS

While the results of the employment trends analysis, national literature on factors affecting location, and focus groups can be viewed separately, the real value lies in looking for broad themes and implications suggested from multiple avenues of research. Of special importance to the work ahead are implications for a new employment paradigm, intensity of employment land use, and resulting next steps.

### Implications for a Regional Employment Paradigm

Key implications of work completed to date for the remainder of this employment and economic trends analysis are summarized by the following chart. These implications are particularly relevant for the formulation of a new demand paradigm: to address needs for substantial job growth in the years ahead but with less *footprint* impact for each job created on the metro region's urban landscape.

Each of the three research paths taken with this trends analysis project suggests both opportunities and challenges ahead for improved intensity of employment use. The data analysis helps to identify trends that are most distinct to the Portland metro region while the literature review draws on emerging national and global themes that can be expected to serve as external forces shaping local and regional opportunities. Business outreach exemplified by the focus groups and business roundtable can yield results in suggesting options for refining and achieving the 2040 vision on the ground, one step at a time.

<u>Drawn From</u>	<u>Implication</u>
<b>Employment Demand Factors &amp; Trends</b>	<ul style="list-style-type: none"> <li>• Less NAICS/sector focus – more on market subareas &amp; design types</li> <li>• Capacity <i>feedback</i> loop – affecting tri-county/UGB capture</li> <li>• Job to site demand driven by FAR</li> <li>• Good opportunity for urban/commercial FAR increase; not proven for industrial</li> <li>• Stronger refill opportunity for central &amp; inner ring geographies</li> </ul>
<b>Variables Affecting Location Decisions</b>	<ul style="list-style-type: none"> <li>• Building reuse and unconventional site use for emerging industries</li> <li>• Role of incentives and infrastructure investment</li> <li>• Institutions as <i>anchor</i> for outer ring development</li> <li>• Role of <i>world class</i> work force training and higher education</li> </ul>
<b>Focus Groups</b>	<ul style="list-style-type: none"> <li>• Multiple ways to less site footprint (including industry)</li> <li>• Reserving capacity for major planned industrial campus</li> <li>• <i>Green</i> as a distinct competitive edge (transportation, design, operating efficiencies, a way of doing business)</li> </ul>

## Intensity of Employment Land Use

The data, literature and focus group research for this employment and economic trends analysis has identified multiple factors that affect employment land use. While some factors are of perhaps greater importance to the Portland metro region, most are being played out in other metro regions across the U.S. or globally, albeit in varying ways.

Some factors point toward opportunities for increased density of employment while others may provide impetus to reduced on-site density. Examples include opportunities for more multi-level development and improved jobs capture for 2040 urban design types.

Also noted is that some factors are common across all industrial, commercial and mixed-use real estate while others are specific to individual project types. For example, employment intensity of industrial use is specifically linked to factors such as the proportion of manufacturing, warehouse/distribution, administrative and R&D jobs at a particular plant site.

A preliminary review of factors identified to date is provided by the matrix chart on the following page. Added discussion of these or other detailed factors will be important to achieve a new demand paradigm as the next step of an updated jobs forecast allocation process for the metro region. While some features can be built into a scenario encouraging greater intensity of employment activity than has been the case in recent years, further research and policy discussion can be expected beyond the completion of this trends analysis.

## Factors Affecting Density of Employment Land Use

Increased Density	Reduced Density
<b>Across all Real Estate Product Types</b>	
<ul style="list-style-type: none"> <li>• Attract an increased percentage of jobs to urban design types (especially office / institutional)</li> <li>• Multi-story development</li> <li>• Change from surface lot to structured parking</li> <li>• Reduction in auto dependence (with more transit, bike, pedestrian options)</li> <li>• Reduced landscaping / open space buffer</li> <li>• Higher land cost or existing site constraints</li> <li>• Green design goal for reduced carbon footprint</li> <li>• UGB triggers (large served sites for employers otherwise not accommodated in metro region)</li> </ul>	<ul style="list-style-type: none"> <li>• Increased per square foot cost of construction for multi-story development (especially when construction type changes)</li> <li>• Employer substitution of capital / equipment for labor</li> <li>• Campus-oriented development</li> <li>• Environmental / open space set asides</li> </ul>
<b>Industrial Development</b>	
<ul style="list-style-type: none"> <li>• Increase in proportion of administrative versus production and/or warehouse space</li> <li>• Multi-story business park / flex space</li> <li>• Going vertical (even within one story – for distribution &amp;or manufacturing)</li> <li>• Process re-engineering for increased efficiency per square foot of building area</li> <li>• Just-in-time inventory management</li> <li>• Supportive mixed use on or near site (e.g. child-care, dining, fitness)</li> </ul>	<ul style="list-style-type: none"> <li>• Vintage relocation from older multi-story to modern single level industrial facilities</li> <li>• Process automation with more production output per worker &amp; per square foot of floor area</li> <li>• Land-banking (to protect future expansion options)</li> <li>• Security issues (for separation from other uses)</li> <li>• Buffering needs (with nearby incompatible uses as with residential)</li> </ul>
<b>Office Development</b>	
<ul style="list-style-type: none"> <li>• Transition from private office to open space layout (reduced office space per employee)</li> <li>• Telecommuting / shared office space (hoteling)</li> </ul>	<ul style="list-style-type: none"> <li>• Increased allocation of conference &amp; collaborative work space</li> <li>• Ground floor use for customer visibility &amp; access</li> <li>• Office uses moving to lower density, less costly building types (e.g. retail, business park space)</li> </ul>
<b>Retail Development</b>	
<ul style="list-style-type: none"> <li>• Reduction in back of house storage requirements (e.g. just in time inventory)</li> <li>• Transportation-integrated &amp; cross-channel retail</li> </ul>	<ul style="list-style-type: none"> <li>• Warehouse style store formats</li> <li>• Automated checkout</li> </ul>
<b>Institutional Use</b>	
<ul style="list-style-type: none"> <li>• Improved profile / customer appeal of more urban multi-story facilities</li> <li>• Greater use of unconventional &amp; adaptive reuse sites</li> </ul>	<ul style="list-style-type: none"> <li>• Required auto accessibility for substantial ground floor customer uses (as with reception/ emergency areas in medical institutions)</li> </ul>
<b>Mixed Use</b>	
<ul style="list-style-type: none"> <li>• Encouragement of customer-oriented service / office uses to locate above ground floor retail</li> <li>• Shared parking opportunity</li> <li>• Live-work options</li> </ul>	<ul style="list-style-type: none"> <li>• Residential displacement of zoned job capacity</li> <li>• Primary or exclusive focus on residential mixed use options (with less emphasis on job development)</li> </ul>

## Findings & Policy Questions

Substantive work steps remaining with this employment and economic trends analysis will assess options covering the following regional priorities:

- New Employment Paradigm
- New Development Capacity & Inventory Approach
- Framing Choices for Job Needs

Based on the work completed to date, a major challenge with a changing jobs paradigm is to determine market and policy mechanisms that can be effective with improved jobs performance for 2040 urban design types while concurrently achieving better site utilization with industrial and employment lands. This discussion can be expected to engage multiple groups and constituencies. Policy discussion may be focused on two main questions:

**1. *What is the vision for the region's economy?*** Key aspects of this question useful to frame this region-wide discussion include:

- Recognition that issues extending beyond regional and local jurisdiction land supply also affect job outcomes – in terms both of the number and characteristics of future regional employment. These issues range from questions of appropriate job metrics (such as wage levels) to priority business clusters important for regional economic vitality.
- Appropriateness of global/national benchmarking for the Portland tri-county region. More specifically, the question posed is whether and how this region aims to conform to standards of other comparable regions or forge ahead to create and sustain its own unique market niche in the U.S. and internationally.

**2. *How are economic opportunities best realized in the context of the 2040 regional vision?*** Findings pertinent to this second question include observations of:

- No clear economic driver for long-term job demand. In a period of slower short and long-term growth, an important question is whether the region would benefit from a more intentional strategy that targets characteristics of desired jobs – reaching beyond current Metro metrics of job numbers and industry (or sectoral) mix.
- Continued if not enhanced opportunity to focus on strategies for achieving better job performance in the central city, centers and corridors while focusing on more efficient site use in employment and industrial areas. These strategies not only coincide with the adopted Region 2040 vision but also offer prospects for a more carefully articulated regional advantage. Playing to the metro area's strengths is important for the task of economic recovery over the next five years and for sustained vitality extending toward longer term 20- and even 40-50 year time horizons.



**To:** Malu Wilkinson, Metro and Eric Hovee

**Date:** April 3, 2009

**From:** Todd Chase, AICP, LEED

**CC:** Justin Healy, Real Urban Geographics

**RE** Revised Draft Employment Areas Vacant Land Supply Findings, revised

---

## Introduction

This memorandum provides revised draft preliminary land supply findings and current land inventory estimates for land that has been considered by Metro to be available for potential employment growth. The preliminary land supply findings are intended to provide a draft estimate of the gross buildable land area for areas within the Urban Growth Boundary (UGB) area (tri-county area) that are planned for industrial, employment, commercial, public facilities, or mixed-use developments (per the 2040 Regional Framework Plan and local zoning codes).

This land inventory includes an analysis of tax lots that were characterized as vacant or partially vacant by Metro Regional Land Information System. While this land supply tabulation is intended to be an approximate indicator of vacant and partially vacant employment lands within the existing UGB, it is not intended to reflect vacant land absorption over a fixed time period. Comparisons with prior UGB land supply estimates and studies are difficult to make due to changes in tax lot boundaries (i.e., tax lot line boundary adjustments), zoning changes, and corrections made to prior vacant land mapping assumptions. This analysis includes adjustments to the prior 2007 Metro Vacant land inventory database, with current assumptions as of December 2008. Attempts have been made to remove tax lots from the vacant buildable land inventory if construction has been completed (as of December 2008), but not for tax lots with construction underway or development applications approved or pending approval.

The steps used to conduct this analysis are generally laid out as follows.

**Step 1** Meet with Metro staff to confirm current GIS data assumptions, and available GIS analysis layers that should be used in this analysis.

**Step 2** Prepare draft buildable lands maps for the tri-county UGB region that depict prior 2007 vacant and part vacant land inventory assumptions for industrial, employment, commercial, public facilities, and or mixed-use areas.

**Step 3** Distribute draft buildable land maps to local jurisdictions and the Port of Portland for review and comment. Reviewers were asked to provide comments on specific tax lots, and to define any areas that are deemed to be “special planning areas” with expected levels of future development and employment growth. Please refer to separate Memorandum from Miranda Bateschell of Metro to local jurisdictions dated November 26, 2008.

**Step 4** Compile comments from local jurisdictions for each tax lot, and incorporate comments into the GIS data base. Note, 22 of 23 jurisdictions along with the Port of Portland did provide some level of review and comment on the draft employment land inventory assumptions. This effort resulted in comments that helped to verify new development projects with buildings that have been constructed as of December 2008. Map reviewers also provided comments regarding current zoning, and ownership considerations (such as whether the tax lot is owned a school or parks district), and noted whether tax lots should be “added” or removed” from the vacant land inventory.

**Step 5** Estimate the buildable land area for each tax lot by analyzing GIS data pertaining to environmental features that would constrain the amount of potential site development on vacant and part vacant areas. For purposes of this analysis, the City of Portland and Washington County identified vacant tax lots to be included in this analysis. The City of Portland and Washington County also identified environmental constraints, which is used for this work to calculate net buildable land area. For areas, outside Washington County and the City of Portland, the environmental constraints were calculated for each site using estimates for land area that is constrained by the following: Metro Title 3 designation (waterways, wetlands, riparian buffers) or applicable local significant resource overlay zone (applicable to Wilsonville); slopes over 10% for tax lots with industrial land use classifications, or 25% for tax lots with other employment and mixed use land use classifications.

**Step 6** Remove “developed” tax lots and tax lots that no longer have an “employment land use” classification inventory (based on comments). Also, remove tax lots with less than 0.2 buildable acres after accounting for environmental constraints<sup>1</sup>. This step resulted in a total of 649 tax lots with 1,127 net buildable acres being removed from the draft land supply inventory. The primary reason for removing vacant lands in tax lots with less than one acre in size was most often attributed to adjustments needed to be made to delete “slivers” of vacant lands that resulted after accounting for environmental constraints. For tax lots over one acre in size, the land being removed from the inventory primarily reflects recent construction of public, private and non-profit developments, and some local zone changes (noted and recorded as of December 2008). Additional analysis of the tax lots over one acre, reveals that approximately 20% of the land removed is attributed to public and non-profit development activity (churches, schools, etc.) and 80% to private development activity. The

---

<sup>1</sup> Unlike the prior Regional Industrial Land Study for the Portland-Vancouver Region (1999-2003) reports, and subsequent vacant industrial land supply updates (2007), this analysis has been expanded to include all types of employment land (industrial, commercial, mixed-use, public facilities, etc.) and includes tax lots of less than 1.0 acre in size.

amount of land removed or added due to changes in land use zoning is not known at this time because of the methodology used to assimilate the data.<sup>2</sup>

As indicated in **Table 1**, after accounting for the inventory being removed, the amount of remaining vacant employment land inventory includes approximately 3,286 tax lots with a total of 12,151 net buildable acres inside the existing Metro UGB area.

**Table 1**  
**Portland Metropolitan Region (tri-county) Urban Growth Boundary**  
**Estimated Employment Land Supply, December 2008**  
 (net buildable acres including land within flood plains)

	Less than 1 ac.		More than 1 ac.		Total	
	tax lots	acres	Tax lots	acres	Tax lots	acres
Estimated Inventory Before Analysis	1,327	691	2,608	12,587	3,935	13,278
Inventory Removed*	386	83	263	1,044	649	1,127
<b>Remaining Inventory After Analysis</b>	<b>941</b>	<b>608</b>	<b>2,345</b>	<b>11,543</b>	<b>3,286</b>	<b>12,151</b>

\* represents tax lots removed from Metro's draft vacant and part vacant land supply inventory based on jurisdiction input, or size thresholds (removes tax lots with less than 8,712 square feet of buildable land area). Compiled by FCS GROUP based on Metro GIS data and jurisdiction/Port input.

**Step 7** Sort tax lots into Tiers based on an analysis of tax lot location, existing building and land value, environmental development constraints, infrastructure availability, transportation access, local land use designation and “land banking” issues. For purpose of this analysis, a transportation deficiency was noted for tax lots within 1/4 mile of major arterial roadway with a peak-hour volume-capacity ratio greater than 1.0 ( $V/C > 1.0$  as defined by the current Metro Regional Transportation Plan traffic model). Land use policy constraints were identified for tax lots that have not been annexed or zoned by local jurisdictions, and for sites with identified restrictions (based on map review comments reflecting brownfields, aviation flight protection overlay zone, or marine-use restrictions). The current assessed market value for building improvements helped determine if a site is considered as vacant or part vacant. For purposes of this analysis, tax lots with less than \$25,000 in building valuation are assumed to be vacant, and tax lots with more than \$25,000 are assumed to be part vacant.

The general land use classifications included in this vacant employment land analysis include tax lots that have the following local land use classifications, which are defined within the Metro Regional Land Information System, GIS database as “GEN ZONE CLASS” or 2040 Design Type “DESGNTYP” if no local urban zoning has been established.

<sup>2</sup> It should be noted that jurisdictions did not provide a consistent set of comments for all tax lot that were to be removed from the land supply inventory nor provided a consistent means to measure the amount of land removed due to re-zoning vs. new development. However, based on the comments that we did receive, the vast majority (over 90% of the land area of all removals) were attributed to new developments, not land banking nor re-zoning.

A summary of the relevant 2040 Design classifications considered in this vacant land inventory are provided in **Table 2**.

**Table 2**  
**2040 Design Types Evaluated in this Vacant Land Analysis**

2040 Design Type	Expected/Planned Uses
Central City	Includes Downtown Portland and portions of the South Waterfront and Lloyd District, which function as the major regional center. Expected uses include a broad mix of high-rise development for employment, housing, and institutional uses; with urban amenities and public open spaces.
Regional Centers	There are 7 regional centers outside the Central City, including: Hillsboro; Gresham; Gateway (east Portland); Downtown Beaverton; downtown Oregon City; Washington County Town Center; and Clackamas Town Center. Expected uses include a broad mix of low and mid-rise developments with employment, housing, and institutional uses; and urban amenities and public open spaces.
Town Centers	Town Centers are located in small to mid-size cities, and provide local shopping, employment, cultural and recreational opportunities. Expected uses include low- to mid-rise developments for retail, employment, housing and institutional uses, and public open spaces. Examples include: downtown Lake Oswego, Forest Grove, Hillsdale and Gladstone.
Corridors	Located along transit routes, Corridors are less dense than centers, but can include nodes of relatively higher density developments. Expected developments include row-houses, duplexes and low- to mid-rise office buildings, along with neighborhood retail/services.
Station Communities	Generally located within 1/2 mile from light-rail, commuter rail or high capacity transit, these areas include nodal developments with excellent pedestrian and transit access. Expected uses include a mix of mid- to high rise developments, with retail, employment and housing.
Main Streets and Neighborhood Centers	Traditional "main streets" served by transit with a strong business and civic community that generally serves local neighborhoods and travelers. Expected uses include a mix of low- to mid-rise developments, with a mix of retail, services, employment, and housing. Examples are found in Hillsboro, Milwaukie, Oregon City, and Gresham.
Employment Areas	Areas set aside or planned for a mix of light industrial and office developments, with good transportation access. Expected uses include light industrial and "flex" developments, campus office, and medical office, with ancillary retail/services.
Industrial and Regionally Significant Industrial Areas (RSIA)	Areas set aside or planned primarily for industrial uses and activities. Located near existing/planned highways, rail corridors, and marine/air freight handling areas, these industrial areas are critical for regional commodity flows and access to national and international markets. Expected uses include low- to mid-rise industrial developments (warehousing distribution, manufacturing, processing, etc.), corporate headquarters, and ancillary retail/services. RSIA has more restrictive limitations on non-industrial activities than found in Industrial Areas.
Inner and Outer Neighborhoods	Primarily includes low-rise residential neighborhoods with public parks and open spaces. May include neighborhood retail/services and institutional uses (ie., schools and churches) in low-rise environment.

Relevant local general zoning classifications considered in this vacant employment land inventory are listed in **Table 3**.

**Table 3**  
**General Local Zoning Classifications Evaluated in this Vacant Land Analysis**

Land Use Classification		Expected/Planned Uses
CC	Central Commercial	Range of mid to high-rise commercial uses; typically associated with CBD's and downtowns, including retail, service and/or office uses.
CO	Office Commercial	Range of low-rise offices and businesses, such as professional and medical offices, often in "campus" settings.
COM	Commercial	Retail, service and/or office uses.
IH	Heavy Industrial	Light and heavy industrial uses with intensive activity, such as chemical and food processing, heavy manufacturing, assembly, and intermodal shipping; uses may have noxious externalities.
IL	Light Industrial	Light industrial uses, such as warehousing distribution, light manufacturing, processing, fabrication and assembly. May allow corporate headquarters and ancillary commercial services.
IND	Industrial	Light and/or heavy industrial uses, such as manufacturing, fabrication, processing, assembly and warehouse distribution.
MUE	Multiple Use Employment	Broad range of uses, including office, retail, warehouse distribution, and light industrial activities.
MUR	Mixed Use Residential	Low to high-rise residential housing, with ancillary retail, service and office uses
PF	Public Facilities	Broad range of government buildings, public facilities and institutions, such as public works yards, treatment plants, and schools.

**Step 8:** In addition to deducting selected environmental constraints from the gross buildable land supply (please refer to Step 7), this vacant land analysis also deducted land for future public right-of-way (streets and pedestrian corridors). The analysis utilized current Metro Urban Growth Report assumptions for planned future right of ways to be: 18.5% of gross buildable area for tax lots larger than one acre; 10% of gross buildable area for tax lots between 3/8 acre and one acre; and 0% for tax lots under 3/8 acre.

The current 2009 Employment Land Supply Tier classifications and applicable constraints are summarized in **Table 4**.

**Table 4**  
**2009 Vacant Employment Land Supply Classifications**

<b>Tier</b>	<b>Title</b>	<b>Applicable Constraints</b>	<b>Development Readiness</b>
<b>A</b>	<b>Vacant, Unconstrained</b>	<b>Must be over 1 net buildable acre with no known constraints*</b>	<b>Great</b>
<b>B</b>	<b>Vacant, Constrained</b>	<b>Must be over 1 buildable acre, and have one or more constraints listed in Note 1.</b>	<b>Good</b>
<b>C</b>	<b>Infill, with 0.2 to 1 acre in size (Vacant or Part Vacant)</b>	<b>Tax Lots with 0.2 to 1 acre, and already annexed.</b>	
<b>D</b>	<b>Part Vacant, with constraints</b>	<b>Portion of existing tax lot that is (net of existing building and parking), over 1 acre, and be already annexed**</b>	
<b>E</b>	<b>Vacant, but lacks urban services, infrastructure and current zoning</b>	<b>Vacant, over 1 acre, but lacks needed infrastructure, and requires annexation and current zoning before development can commence*</b>	<b>Fair</b>
<b>F</b>	<b>Part Vacant or Redevelopable, but lacks urban services, infrastructure and current zoning</b>	<b>Part vacant land, over 1 acre, but lacks needed infrastructure, and requires annexation and current zoning before development can commence**</b>	<b>Poor</b>
<b>G</b>	<b>Infill, with 0.2 to 1 acre in size, but lacks urban services and infrastructure and current zoning (Vacant or Part Vacant)</b>	<b>Small areas of vacant or part vacant land outside existing service district, lacks needed infrastructure, and requires annexation and current zoning before development can commence.</b>	

**Notes:**

1) applicable constraints include one or more of the following: Title 3 Environmental designation (waterways, wetlands, riparian buffers, etc.) or applicable local significant resource overlay zone; slopes over 10% for industrial lands or 25% for other employment and mixed use lands; transportation deficiency (within 1/4 mile of major arterial roadway with V/C>1.0 (defined by Metro RTP); lack of adequate sewer or water infrastructure, lack of local zoning consistent with urban employment-related development, or known land use/policy constraints (such as sites designated as "brownfields", aviation flight protection overlay zone, or marine-use restrictions); or tax exempt tax lot status.

\* Tax lot building market value is less than \$25,000, according to County Assessor records, 2008.

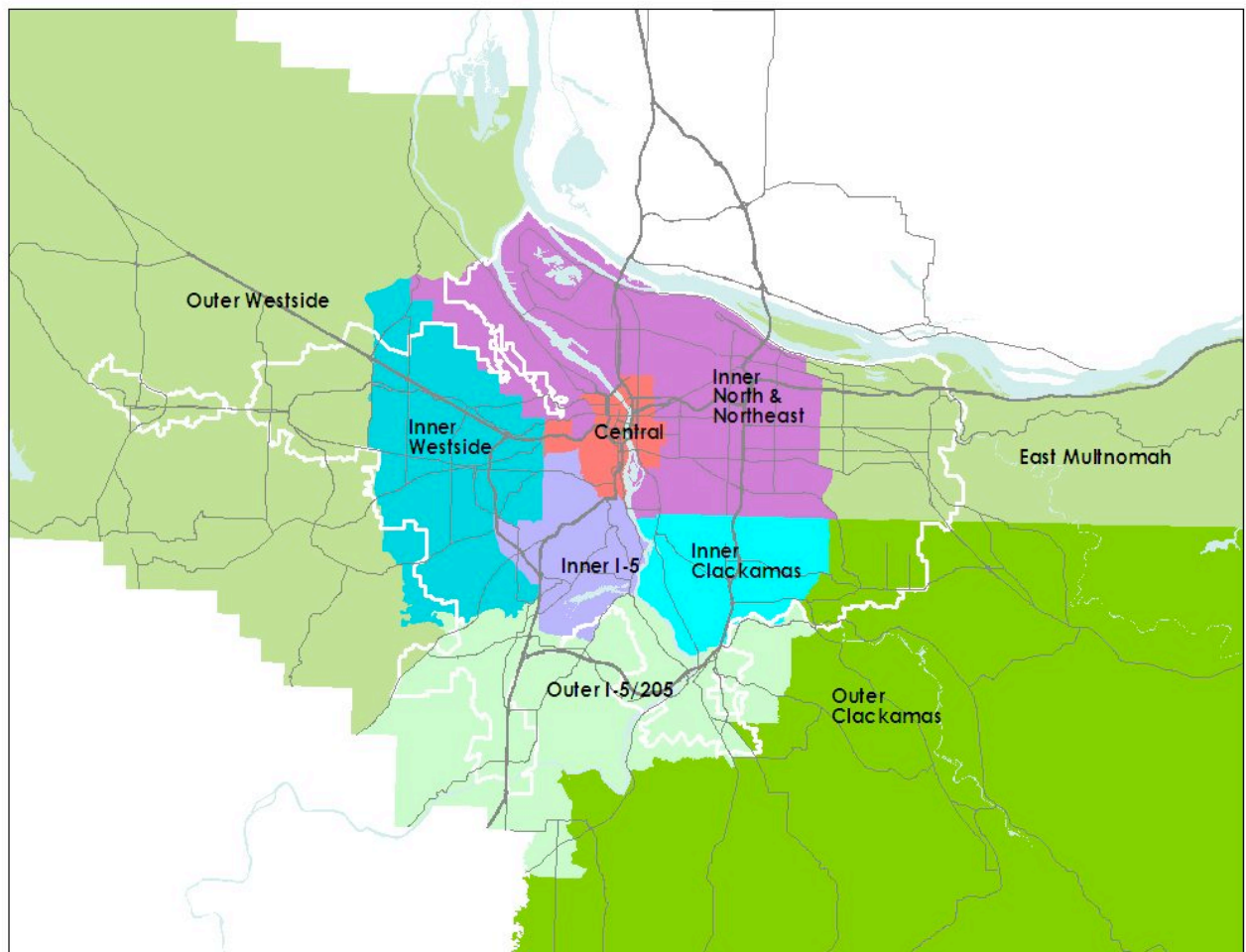


**\*\* Tax lot building market value is more than \$25,000, according to County Assessor records, 2008.**

### Preliminary Findings

In addition to the work undertaken to derive Tier designations, this vacant employment land supply analysis groups vacant lands by generalized land use classification, parcel size, and market geography. This approach provides a useful means for understanding the amount of land supply as well as its ability to accommodate near-term and long-term employment growth throughout the region. The vacant land supply is reported for nine tri-county market geographies. These areas are depicted in **Figure 1**.

**Figure 1 Tri-County Market Geographies**



The draft land supply findings are reported in the following tables:

Table 5: Regional UGB Area Total Vacant Land Supply by Tier

Table 6: Tier A Vacant Land Supply by Market Geography

Table 7: Tier B Vacant Land Supply by Market Geography

This document provides more emphasis on the Tier A and Tier B land supply because that is the vacant land supply that is deemed to be ready for new development in the short-term. The other land supply Tiers (C-G) may also be developed, but offer additional challenges or impediments to development relative to the Tier A and Tier B land. Hence, the majority of the Tier C-G tax lots are most likely to develop after the short-term period (after year 5). Please refer to **Appendix A** for a more detailed breakdown of estimated net buildable land area for each of the market areas shown in Figure 1.

It should be noted that the vacant employment land supply estimates contained in this memorandum and Appendix A are limited to the land use classifications listed in Table 1 and Table 2. In addition to these employment land use classifications, we have also identified approximately 238 net acres of “Rural” land use classifications within the Inner North & East Market Geography. These lands are primarily concentrated in West Hayden Island, and were previously classified as “Regionally Significant Industrial Area 2040 Design Type” in 2002, but that designation was subsequently amended to a “Rural Design Type.” Planning decisions regarding the future use of West Hayden Island are still pending local and regional review and approvals.

### **Next Steps**

The next steps in the vacant employment land analysis includes estimating the near-term development capacity potential that could be accommodated on vacant Tier A and Tier B lands within the existing tri-county UGB.