Appendix 6

Employment land demand analysis (revised as of October 23, 2015)

Introduction

When making urban growth management decisions, Metro is required to complete a buildable land inventory for employment lands (includes vacant and redevelopment capacity). The buildable land inventory (BLI) methods and results are summarized in appendices 2 and 3, respectively. This report summarizes relevant economic data, key economic forecast assumptions, land use projection results (derived from MetroScope scenarios[1]) and compares a prospective employment forecast to the industrial and commercial capacity of the current urban growth boundary (UGB).

In an earlier draft, a correction was made to this report (9/23/14). That correction related to lands added to the urban growth boundary by the Oregon Legislature in March 2014 under House Bill 4078. At the request of city of Forest Grove staff, the revised report counted lands added near Forest Grove as industrial rather than residential with a small amount of commercial. When the revised regional numbers are rounded at a regional scale, this amounts to 200 additional acres of industrial land and 100 fewer acres of commercial land in the employment buildable land inventory.

The draft analysis included a range forecast and a regional residential needs assessment based on high, medium and low growth regional forecasts. At its September 15, 2015 work session, the Metro Council indicated that it intended to plan for the midpoint of the forecast range when making its 2015 urban growth management decision. This final analysis reflects that direction.

This report leaves intact the range forecast analysis and previous corrections as a reference to past analytics. The latest findings added to this report reference the Council direction to use the baseline forecast as well as direction to consider the likelihood of the disincorporation of the City of Damascus. MetroScope Scenario #1462 carries with it the foundation for the land use assumptions of the baseline or medium growth series. Scenario #1511 modifies #1462 and is the "Damascus disincorporation" scenario that assumes the city of Damascus is no longer an incorporated city at that its land supply assumptions partly revert back to unincorporated Clackamas County zoning and partly is annexed into the city of Happy Valley. [2] The Damascus disincorporation scenario affects the amount of buildable land inventory (BLI) assumed and leads to minor changes in growth allocations, but on a regional scale the impacts are not materially significant. **Please see the supplement, beginning on page 19, which provides a final reconciliation of regional employment land needs for the 2015 to 2035 planning**

[1] Three (3) scenarios – high growth forecast, medium-baseline growth forecast, and a low growth forecast scenario – were prepared as part of a "range forecast" assessment of a non-residential demand analysis.

[2] Appendix 15 assesses the regulatory impact on land supply and land use from a supposed city of Damascus disincorporation.

period that incorporates a "Damascus disincorporation" scenario and Metro Council direction to plan for the midpoint of the forecast range.

Background

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

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

The approach for estimating land supply (i.e., buildable land inventory measured in acres) includes various estimates of vacant land and identifying individual tax lots which have the potential to redevelop[4]. Additional steps are taken to "clean up" the inventory of vacant and redevelopable tax lots in order to account for environmental constraints and/or other issues that would make the tax lot entirely or partly undevelopable. This analysis concludes with a comparison of the land demand forecast and the supply / capacity estimates to determine whether a surplus or deficit exists for future commercial and industrial land needs.

Notes and caveats

- Demand for large industrial sites (sites over 25 net buildable acres) is described separately in Appendix 7.
- The growing trend in some industry groups (such as warehousing / distribution, selected producer goods industries and perhaps industries highly linked with maritime activities) toward increased mechanization and other labor saving techniques may underestimate land demand with this UGR analysis technique as industries that are becoming less reliant on employment may still actually have a need for more land. A methodology that utilizes employment growth (or loss) as an indicator

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

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

(or driver) may incorrectly associate land demand. However, alternative land demand estimation methodologies are not well-defined at this time, so using the employment forecast remains the best practice.

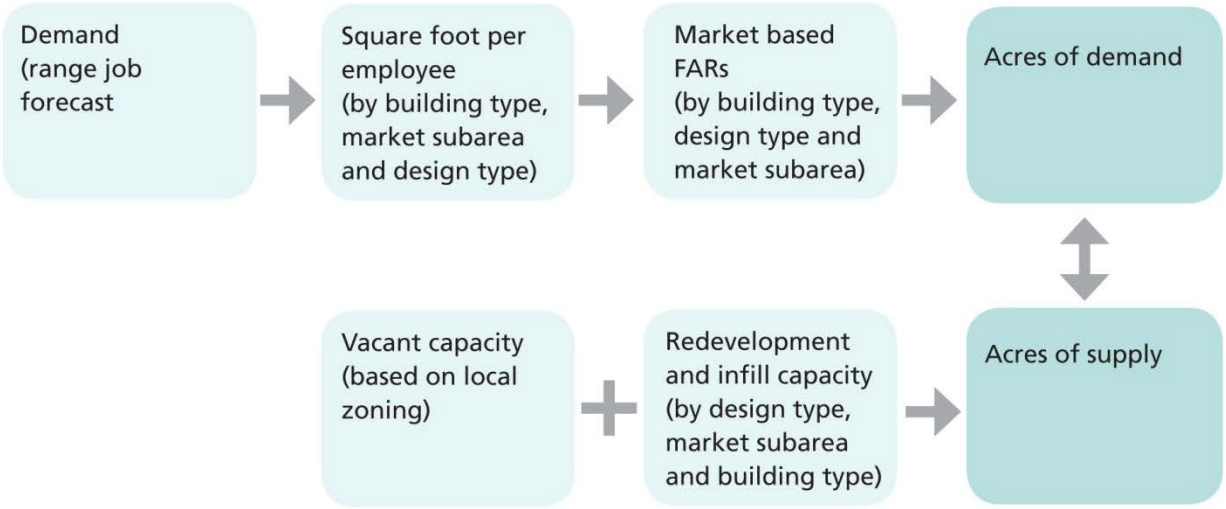
- The regional employment forecast could significantly diverge from future actual trends. The forecast is expressed as a range to acknowledge that uncertainty. In September 2015, the Metro Council directed staff to use the midpoint (baseline) of the forecast range for completing its analysis for the 2015 urban growth management decision.
- Factors (including future square foot per employee and floor area ratio) for conversion of employment forecasts to commercial and industrial land demand are based on what can be observed today and could be off significantly due to rapid technological change, other innovations and/or regulations in society that could cause these factors to shift significantly from current assumptions.
- There are some rigid assumptions about the distribution of jobs by geographic subareas, building types, and Region 2040 land use design types (i.e., corridors, main streets, centers etc.) which could be relaxed based on MetroScope scenario information, but are presently fixed to historical distributions in the current analysis.

General methodology: step by step instructions

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

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

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



Methodology step by step

Step 1: Capture rate and Metro UGB job forecast

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

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

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

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

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

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

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

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

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

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

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

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

arrived at as a result of running a MetroScope scenario with a specified set of economic and demographic forecast assumptions and current land use policies and statewide regulations and seeing how the combination of these assumptions determine future development trends[5].

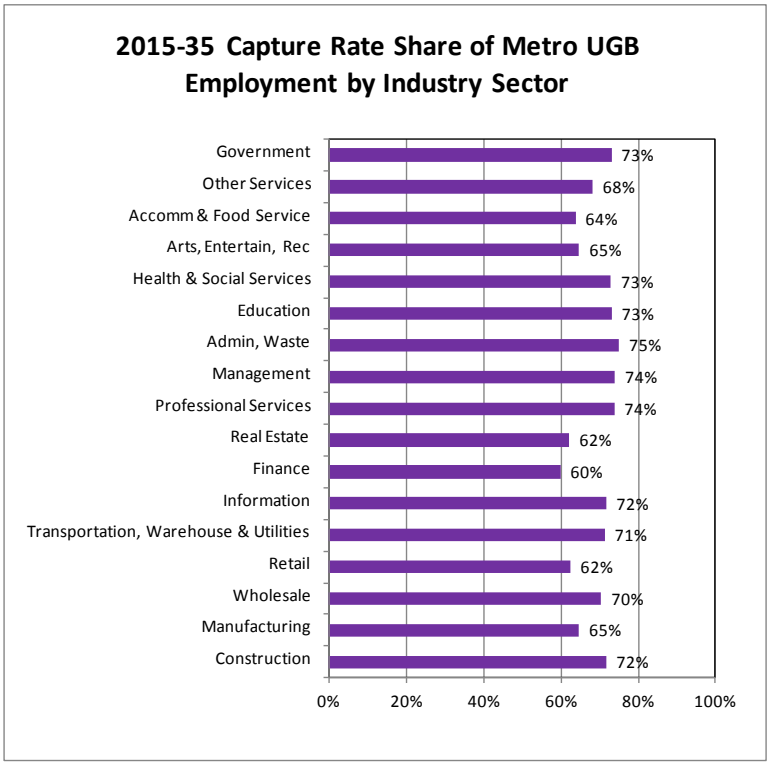


Figure 2: 2014 UGR Capture Rate Forecast Assumptions by Sector at forecast range midpoint (source: MetroScope Scen. #1462)

Step 2: Summarize employment by NAICS[6] into building types

Table 3: Metro UGB Employment Forecast at Midpoint (source: MetroScope Scen. #1462)

Building Type	Total Jobs in Metro UGB				Change	
	2010	2015	2035	2040	2015 - 2035	% APR
Office	253,506	290,162	392,878	418,186	102,717	1.5%
Institutional	100,636	109,678	150,766	159,925	41,089	1.6%
Flex	71,442	81,394	102,159	107,784	20,765	1.1%
General Industrial	87,557	100,094	120,108	126,557	20,014	0.9%
Warehousing/ Distribution	57,533	66,125	82,407	86,379	16,282	1.1%
Retail	180,544	206,095	265,969	280,514	59,875	1.3%
	751,218	853,546	1,114,287	1,179,345	260,741	1.3%

[5] Please see Appendix 11 for further MetroScope specification and forecast assumptions.
[6] NAICS stands for North American Industrial Classification System. It is a classification system to sort and organize employment into different industry categories based on similar production processes, technology and services.

Total excludes jobs in natural resources (i.e., agriculture and mining) as they are tabulated outside the Metro UGB as non-urban employment.

Table 3 is tallied from distributing individual NAICS employment (Metro UGB jobs) to each of the six building types.

Table 4: Distribution of Employment by building type (source: E. D. Hovee & Company, LLC, 2009)

		Distribution of Employment to building type						
NAICS	Sectors Represented	Office	Institution	Flex/BP	Gen Industrial	Ware-house	Retail	*check*
11 & 21	Ag, Mining *(excluded from UGB calc.)*							
23	Construction	14%	0%	18%	40%	18%	10%	*100%*
31-33	Manufacturing	8%	0%	24%	60%	8%	0%	*100%*
42	Wholesale Trade	8%	0%	22%	20%	40%	10%	*100%*
44-45	Retail Trade	5%	1%	6%	0%	12%	76%	*100%*
22, 48-49	Transportation, Warehouse & Utilitie	15%	0%	12%	13%	55%	5%	*100%*
51	Information	25%	0%	25%	40%	0%	10%	*100%*
52	Finance	72%	1%	5%	1%	1%	20%	*100%*
53	Real Estate	72%	1%	5%	1%	1%	20%	*100%*
54	Professional Services	72%	1%	5%	1%	1%	20%	*100%*
55	Management	79%	5%	8%	0%	0%	8%	*100%*
56	Admin, Waste	72%	1%	5%	1%	1%	20%	*100%*
61	Education	30%	53%	5%	1%	1%	10%	*100%*
62	Health & Social Services	30%	53%	2%	0%	0%	15%	*100%*
71	Arts, Entertain, Rec	35%	0%	10%	0%	0%	55%	*100%*
72	Accomm & Food Service	20%	1%	7%	1%	1%	70%	*100%*
81	Other Services	72%	1%	5%	1%	1%	20%	*100%*
92	Government	43%	35%	5%	1%	1%	15%	*100%*

(Note: the distribution of regional employment by building type does not change across scenarios.)

Step 3: Square Feet per employee (SFE) assumptions

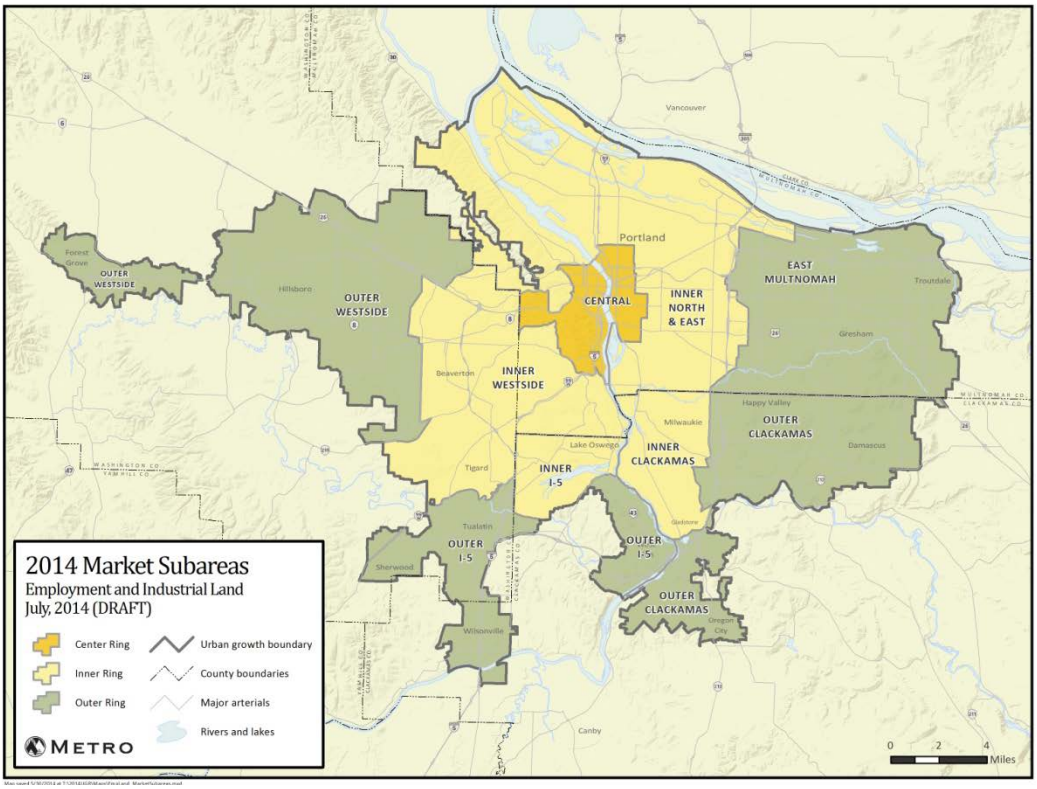
Individual building types, firms, industries and densities vary substantially from place to place. Balancing between complexity and accuracy, this analysis divides the Metro UGB into 3 major subareas: a central hub, an inner ring and an outer ring. The hub and each ring reflect a different employment density assumption to reflect differences in building types, firms, industrial composition and land use patterns in each. Map 1 illustrates the geographic subareas of these rings. The following table shows the square feet per employee (SFE) assumptions, which have been vetted by a technical review panel. It is worth noting that the job forecast does not differentiate between full-time and part-time jobs. Part-time employees often share space with other employees on different shifts, which may reduce the SFE assumption below what may be observed anecdotally.

Table 5: Square Foot per Employee Forecast Assumptions (updated by technical review panel)

CENTRAL AREA	2009 UGR	2014 UGR	
General Industrial	925	925	ind
Warehousing/ Distribution	800	800	ind
Flex	600	600	ind
Office	350	300	com
Retail	475	425	com
Institutional	600	450	com
INNER RING			
	2009 UGR	**2014 UGR**	
General Industrial	800	800	ind
Warehousing/ Distribution	1,250	1,250	ind
Flex	625	625	ind
Office	375	300	com
Retail	500	450	com
Institutional	625	500	com
OUTER RING			
	2009 UGR	**2014 UGR**	
General Industrial	600	600	ind
Warehousing/ Distribution	1,850	1,850	ind
Flex	990	990	ind
Office	375	350	com
Retail	550	500	com
Institutional	650	600	com

(Note: Square foot per employee assumptions – SFE for short – do not vary across scenarios.)

Map 1: Market Subareas (used in calculating and summarizing employment land need analysis)



Step 4: Distribute UGB employment forecast to subareas and design types

Information about employment forecast distribution to different subareas and design types is too detailed to summarize in this report, but the spreadsheet for these calculations may be provided upon request. This step takes the Metro UGB forecast by building type (shown in step two) and further disaggregates those figures into an employment forecast arrayed (9 by 8 matrix) by subareas (see Map 1) and 2040 land use design types for each of the six building types.

Step 5: Apply refill rate (NOT USED IN THIS ANALYSIS)

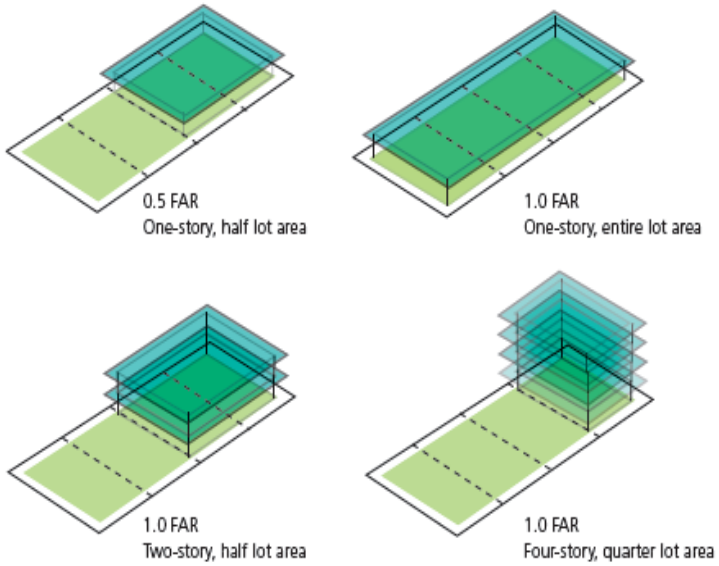
This step was used in past UGR analyses, but has been eliminated in the 2014 UGR. Instead, redevelopment supply is included in the buildable land inventory. The refill rate, formerly, was applied to the land demand forecast. For example, a general refill rate of 40 percent would reduce the amount of land need by 40 percent; the supply that the need would have been compared against would have excluded any direct measurement of redevelopment supply. Hence the old methodology compared a net demand (less refill) against vacant industrial and employment land supply.

Step 6: Apply FAR assumptions to employment forecast (by geographic subareas and 2040 land use design types)

Floor-area ratios (FAR) are used to describe site utilization. See Figure 3 for examples of different FAR concepts. FARs vary for different uses. For brevity, we show the FAR projections for each building type as follows with each arrayed by subareas (central, inner Westside, inner north & east, inner Clackamas, inner I-5, outer Westside, east Multnomah county, outer Clackamas, and outer I-5/I-205) and by 2040 design types (central city, corridors, regional centers, town centers, RSIA, industrial, employment, other neighborhoods). These FAR assumptions were vetted by a technical group consisting of public and private sector experts in industrial and commercial development.[7]

[7] A list of members from various technical review committees are shown at the end of the UGR summary document.

Figure 3: Illustration of floor-area ratio (FAR)



Floor Area Ratio Forecast Assumptions:

Table 6: General Industrial (Manufacturing) FAR

Subareas		Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central		1.00	0.50		0.60	0.50	0.50	0.50	0.50
Inner Westside			0.30	0.60	0.60		0.30	0.30	0.30
Inner North & East		1.00	0.30	0.60	0.60	0.30	0.30	0.30	0.30
Inner Clackamas			0.30	0.60	0.60	0.30	0.30	0.30	0.30
Inner I-5			0.30	0.60	0.60		0.30	0.30	0.30
Outer Westside			0.30	0.50	0.50	0.25	0.25	0.25	0.25
East Mult Co			0.30	0.50	0.50	0.25	0.25	0.25	0.25
Outer Clackamas					0.50	0.25	0.25	0.25	0.25
Outer I-5/205			0.30	0.50	0.50	0.25	0.25	0.25	0.25

Table 7: Warehouse and Distribution FAR

Subareas		Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central		1.00	0.50		0.60	0.50	0.50	0.50	0.50
Inner Westside			0.30	0.60	0.60		0.30	0.30	0.30
Inner North & East		1.00	0.30	0.60	0.60	0.25	0.30	0.30	0.30
Inner Clackamas			0.30	0.60	0.60	0.25	0.30	0.30	0.30
Inner I-5			0.30	0.60	0.60		0.30	0.30	0.30
Outer Westside			0.30	0.50	0.50	0.25	0.25	0.25	0.25
East Mult Co			0.30	0.50	0.50	0.25	0.25	0.25	0.25
Outer Clackamas					0.50	0.25	0.25	0.25	0.25
Outer I-5/205			0.30	0.50	0.50	0.25	0.25	0.25	0.25

Table 8: Tech/Flex and business parks FAR

Subareas		Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central		1.00	0.50		0.60	0.50	0.50	0.50	0.50
Inner Westside			0.30	0.60	0.60		0.30	0.30	0.30
Inner North & East		1.00	0.30	0.60	0.60	0.25	0.30	0.30	0.30
Inner Clackamas			0.30	0.60	0.60	0.25	0.30	0.30	0.30
Inner I-5			0.30	0.60	0.60		0.30	0.30	0.30
Outer Westside			0.30	0.50	0.50	0.25	0.25	0.25	0.25
East Mult Co			0.30	0.50	0.50	0.25	0.25	0.25	0.25
Outer Clackamas					0.50	0.25	0.25	0.25	0.25
Outer I-5/205			0.30	0.50	0.50	0.25	0.25	0.25	0.25

Table 9: Office FAR

Subareas		Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central		5.00	0.75		0.60	0.50	0.50	0.50	0.50
Inner Westside			0.45	0.60	0.60		0.30	0.30	0.30
Inner North & East		3.00	0.60	0.60	0.60	0.40	0.40	0.40	0.30
Inner Clackamas			0.45	0.60	0.60	0.25	0.30	0.30	0.30
Inner I-5			0.45	0.60	0.60		0.30	0.30	0.30
Outer Westside			0.45	0.50	0.50	0.25	0.25	0.25	0.25
East Mult Co			0.45	0.50	0.50	0.25	0.25	0.25	0.25
Outer Clackamas					0.50	0.25	0.25	0.25	0.25
Outer I-5/205			0.45	0.50	0.50	0.25	0.25	0.25	0.25

Table 10: Retail FAR

Subareas		Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central		1.00	0.40		0.40	0.50	0.50	0.50	0.50
Inner Westside			0.35	0.45	0.40		0.30	0.30	0.30
Inner North & East		1.00	0.35	0.45	0.40	0.25	0.30	0.30	0.30
Inner Clackamas			0.35	0.45	0.40	0.25	0.30	0.30	0.30
Inner I-5			0.35	0.45	0.40		0.30	0.30	0.30
Outer Westside			0.30	0.45	0.40	0.25	0.25	0.25	0.25
East Mult Co			0.30	0.45	0.40	0.25	0.25	0.25	0.25
Outer Clackamas					0.40	0.25	0.25	0.25	0.25
Outer I-5/205			0.30	0.45	0.40	0.25	0.25	0.25	0.25

Table 11: Institutional FAR

Subareas		Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central		5.00	0.75		0.90	0.50	0.50	0.50	0.50
Inner Westside			0.45	0.90	0.90		0.30	0.30	0.60
Inner North & East		5.00	0.60	0.90	0.90	0.40	0.40	0.40	0.80
Inner Clackamas			0.45	0.90	0.90	0.25	0.30	0.30	0.60
Inner I-5			0.45	0.90	0.90		0.30	0.30	0.60
Outer Westside			0.45	0.75	0.75	0.25	0.25	0.25	0.50
East Mult Co			0.45	0.75	0.75	0.25	0.25	0.25	0.50
Outer Clackamas					0.75	0.25	0.25	0.25	0.50
Outer I-5/205			0.45	0.75	0.75	0.25	0.25	0.25	0.50

(Note: FAR assumptions do not vary across scenarios.)

Step 8: Summarize land demand (in acres)

The demand forecast by building type is into two categories such that:

- industrial = general manufacturing + warehouse & distribution + tech flex
- commercial = office + retail + institutional.

The land demand forecast is tabulated for industrial and commercial and each is arrayed by nine subareas and eight design types (see Table 13). Table 13 shows results from the baseline medium growth scenario which details the number of acres demand between 2015 and 2035.

Similar tables for the high and low growth forecast scenario alternatives are depicted in Table 14 and Table 15. Table 12 summarizes the total forecast demand (in acres) for all 3 scenarios, with demand divided into industrial (i.e., manufacturing, warehousing/distribution and tech/flex) and commercial demand (i.e, retail, office and institutional).

Table 12: Summary of industrial and commercial land demand 2015 -2035 for the Metro urban growth boundary

Scenario Alternative	Industrial Demand (acres)	Commercial Demand (acres)
High Growth Forecast	6,491	5,727
Medium Growth Forecast	3,778	3,565
Low Growth Forecast	1,236	1,356

Table 13: Baseline - medium growth forecast scenario

Baseline - Medium Growth Scenario

Scenario: MetroScope UGR Forecast Scenario

medium scenario

Net Change: 2015-2035

Step 8 Summary: Total New Demand (ignoring vintage abandonment and refill) in Acres

All Uses Combined

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	644	238	35	-	3	20	15	131	202
Inner Westside	1,112	-	310	66	109	-	83	126	419
Inner North & East	1,923	1	410	63	48	910	63	108	320
Inner Clackamas	606	-	160	61	26	106	72	46	135
Inner I-5	481	-	95	42	50	-	6	135	153
Outer Westside	791	-	164	68	21	10	331	60	136
East Mult Co	684	-	39	40	18	78	175	50	285
Outer Clackamas	17	-	-	-	2	1	2	4	8
Outer I-5/205	1,085	-	133	17	68	4	331	310	222
Total	7,343	238	1,346	357	345	1,130	1,077	971	1,879

Central	644
Inner Ring	4,122
Outer Ring	2,577

INDUSTRIAL BUILDING TYPES

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	194	113	11	-	1	8	8	11	43
Inner Westside	525	-	171	26	18	-	61	78	171
Inner North & East	1,126	1	137	9	4	779	54	54	88
Inner Clackamas	319	-	96	9	4	89	55	23	43
Inner I-5	172	-	34	14	12	-	5	62	45
Outer Westside	492	-	83	13	6	7	289	42	51
East Mult Co	341	-	11	12	6	54	125	41	91
Outer Clackamas	10	-	-	-	1	1	1	2	5
Outer I-5/205	599	-	55	8	28	3	274	167	64
Total	3,778	114	599	91	80	941	872	480	602

Central	194
Inner Ring	2,142
Outer Ring	1,442

NON-INDUSTRIAL BUILDING TYPES

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	450	125	23	-	2	12	7	120	160
Inner Westside	587	-	139	40	91	-	21	48	248
Inner North & East	797	0	273	53	44	131	8	55	232
Inner Clackamas	287	-	65	53	21	17	17	22	92
Inner I-5	310	-	61	28	38	-	2	73	108
Outer Westside	299	-	81	55	15	4	42	18	84
East Mult Co	343	-	27	28	12	24	50	8	193
Outer Clackamas	7	-	-	-	1	0	1	2	3
Outer I-5/205	486	-	78	9	39	1	57	144	158
Total	3,565	125	747	266	265	189	206	490	1,277

Central	450
Inner Ring	1,980
Outer Ring	1,135

Table 14: High Growth Forecast Scenario Alternative

High Growth Scenario Alternative

Scenario: MetroScope UGR Forecast Scenario

high | scenario

Net Change: 2015-2035

Step 8 Summary: Total New Demand (ignoring vintage abandonment and refill) in Acres

All Uses Combined

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	1,059	394	59	-	5	35	27	207	333
Inner Westside	1,875	-	528	111	171	-	144	224	698
Inner North & East	3,168	1	654	98	75	1,524	111	180	525
Inner Clackamas	1,014	-	269	96	41	177	127	79	225
Inner I-5	803	-	158	68	82	-	11	232	252
Outer Westside	1,353	-	270	108	34	16	598	105	222
East Mult Co	1,123	-	60	64	28	130	298	82	459
Outer Clackamas	28	-	-	-	3	2	3	6	14
Outer I-5/205	1,795	-	213	28	110	7	563	514	360
Total	12,218	395	2,211	573	549	1,892	1,882	1,629	3,087

Central	1,059
Inner Ring	6,860
Outer Ring	4,299

INDUSTRIAL BUILDING TYPES

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	347	199	21	-	1	14	14	20	79
Inner Westside	923	-	307	45	30	-	108	143	290
Inner North & East	1,898	1	233	15	6	1,305	98	90	150
Inner Clackamas	555	-	169	14	7	149	97	42	76
Inner I-5	297	-	58	23	20	-	8	109	78
Outer Westside	872	-	143	21	10	10	525	77	86
East Mult Co	570	-	18	19	10	90	213	69	151
Outer Clackamas	17	-	-	-	1	1	2	3	9
Outer I-5/205	1,012	-	92	14	46	5	465	283	106
Total	6,491	200	1,042	151	133	1,573	1,531	836	1,025

Central	347
Inner Ring	3,673
Outer Ring	2,470

NON-INDUSTRIAL BUILDING TYPES

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	712	195	38	-	4	22	13	187	254
Inner Westside	952	-	221	66	141	-	36	81	407
Inner North & East	1,270	0	421	83	69	219	14	90	374
Inner Clackamas	460	-	100	82	34	29	29	37	149
Inner I-5	505	-	100	45	62	-	3	122	174
Outer Westside	481	-	127	87	24	6	73	28	136
East Mult Co	553	-	42	45	18	40	85	13	309
Outer Clackamas	11	-	-	-	1	0	1	3	5
Outer I-5/205	783	-	121	14	64	2	97	232	253
Total	5,727	195	1,169	422	416	318	352	794	2,062

Central	712
Inner Ring	3,187
Outer Ring	1,828

Table 15: Low Growth Forecast Scenario Alternative

Low Growth Scenario Alternative

Scenario: MetroScope UGR Forecast Scenario

low | scenario

Net Change: 2015-2035

Step 8 Summary: Total New Demand (ignoring vintage abandonment and refill) in Acres

All Uses Combined

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	232	85	10	-	1	5	3	54	73
Inner Westside	369	-	100	22	46	-	24	33	143
Inner North & East	715	0	169	26	20	328	17	39	115
Inner Clackamas	210	-	57	27	10	38	21	13	45
Inner I-5	164	-	33	16	19	-	2	42	53
Outer Westside	250	-	61	27	9	5	81	16	50
East Mult Co	254	-	17	16	8	27	56	19	110
Outer Clackamas	6	-	-	-	1	0	1	1	3
Outer I-5/205	394	-	54	6	26	1	110	112	83
Total	2,592	85	502	141	140	404	315	329	676

Central	232
Inner Ring	1,457
Outer Ring	903

INDUSTRIAL BUILDING TYPES

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	51	33	2	-	0	2	2	3	9
Inner Westside	154	-	45	8	6	-	18	19	59
Inner North & East	402	0	47	3	1	287	14	20	30
Inner Clackamas	99	-	27	4	1	33	15	6	12
Inner I-5	54	-	12	5	4	-	1	18	13
Outer Westside	137	-	27	6	2	4	70	9	19
East Mult Co	125	-	4	5	3	20	42	16	35
Outer Clackamas	3	-	-	-	0	0	0	1	2
Outer I-5/205	211	-	20	3	12	1	94	57	24
Total	1,236	33	184	34	30	347	256	148	204

Central	51
Inner Ring	709
Outer Ring	476

NON-INDUSTRIAL BUILDING TYPES

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	181	53	8	-	1	3	2	52	63
Inner Westside	214	-	56	14	39	-	6	15	84
Inner North & East	313	0	122	23	19	41	3	19	85
Inner Clackamas	111	-	29	23	9	4	5	7	33
Inner I-5	110	-	21	11	14	-	1	24	40
Outer Westside	113	-	35	22	7	1	11	7	31
East Mult Co	129	-	13	11	5	7	14	3	75
Outer Clackamas	2	-	-	-	0	0	0	1	1
Outer I-5/205	183	-	34	4	15	0	16	54	59
Total	1,356	53	317	107	110	57	59	181	472

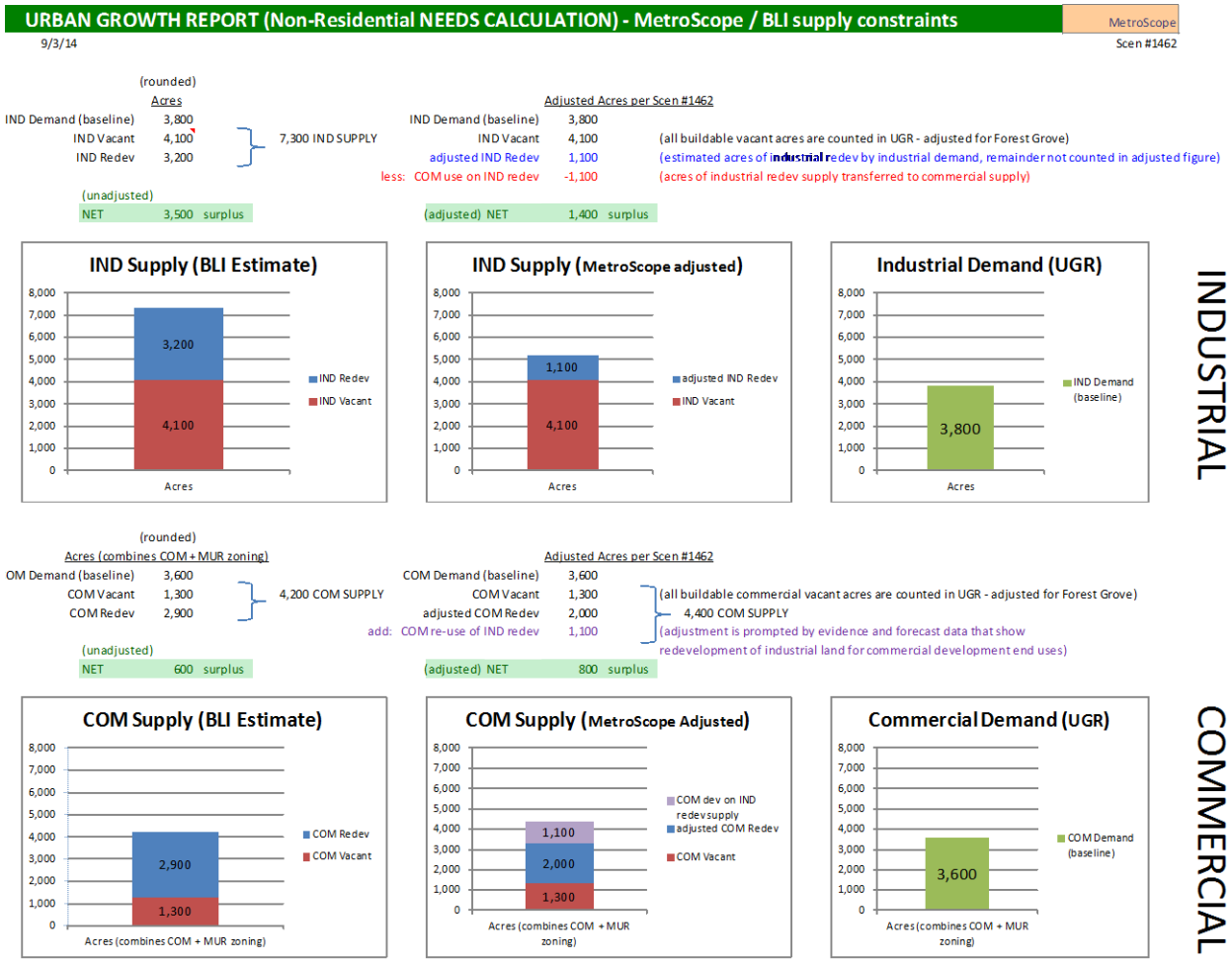
Central	181
Inner Ring	747
Outer Ring	427

Urban Growth Report Non-Residential Land Need Analysis

Under the baseline growth forecast, surpluses are shown for industrial and commercial need for the next 20 years (2015 to 2035). There are deficits for industrial and commercial land under the high

growth forecast. Please note that this section of this appendix has not been updated with revised assumptions about development potential in Damascus. This section is retained for context. Please refer to the supplement to this appendix for a final analysis of employment land needs.

Table 16: Baseline – Medium Growth Forecast UGR Needs Assessment (Supply and Demand)



- It should also be noted that a significant share of industrial redevelopment supply (potential) was shifted to commercial supply. This is an economic and real estate dynamic that can be observed in modeling as well as real life. Abandoned industrial sites that have the potential to be redeveloped - according to the forecast – in fact may not redevelop as future industrial uses but develop instead as future commercial uses[8]. This is reflected in the "transfer" of part of the redevelopment BLI from industrial into commercial as shown in the adjusted analysis (see Appendix 8 for additional information about this trend).

[8] A review of current employment counts for industrial areas in the region indicate a 50/50 mix of industrial and commercial jobs in industrial districts. Measured in terms of developed land area currently occupied by a business, the same 50/50 ratio exists. Firms operating in industrial district, regardless of employment type (i.e., commercial or industrial) exhibit the same job density of about 14 ½ jobs per acre.

- Note the reduction made to the industrial redevelopment supply in the adjusted analysis. To say it is redevelopable from only a supply-side analysis is insufficient. The rationale for this "supply correction" is that it is not sufficient to just estimate the potential for redevelopment based on just supply assumptions, but it is also necessary to consider sufficiency of demand before we count this as supply for the BLI.

Tables 17 and 18 depict the UGR results of a high and low growth forecast scenario alternative, respectively.

Table 17: High Growth Forecast Scenario UGR Needs Assessment

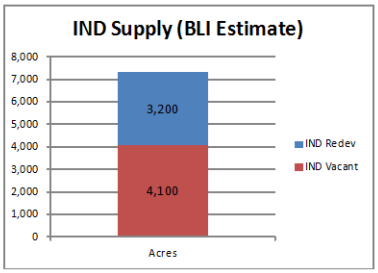
URBAN GROWTH REPORT (Non-Residential NEEDS CALCULATION) - MetroScope / BLI supply constraints — MetroScope

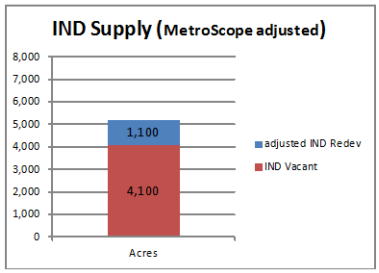
9/3/14 — Scen #1465

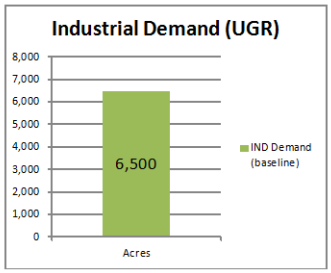
	(rounded) Acres
IND Demand (baseline)	6,500
IND Vacant	4,100
IND Redev	3,200
	7,300 IND SUPPLY
(unadjusted) NET	800 surplus

Adjusted Acres per Scen #1465

IND Demand (baseline)	6,500	
IND Vacant	4,100	(all buildable vacant acres are counted in UGR)
adjusted IND Redev	1,100	(estimated acres of industrial redev by industrial demand, remainder not counted in adjusted figure)
less: COM use of IND redev	-1,700	(acres of industrial redev supply transferred to commercial supply)
(adjusted) NET	-1,300 DEFICIT	





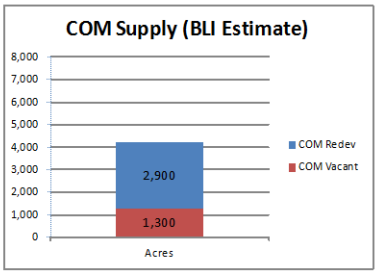


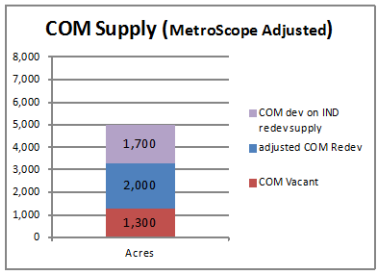
INDUSTRIAL

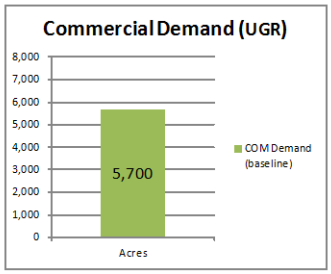
	(rounded) Acres
OM Demand (baseline)	5,700
COM Vacant	1,300
COM Redev	2,900
	4,200 COM SUPPLY
(unadjusted) NET	-1,500 DEFICIT

Adjusted Acres per Scen #1465

COM Demand (baseline)	5,700	
COM Vacant	1,300	(all buildable commercial vacant acres are counted in UGR)
adjusted COM Redev	2,000	5,000 COM SUPPLY
add: COM re-use of IND redev	1,700	(adjustment is prompted by evidence and forecast data that show redevelopment of industrial land for commercial development end uses)
(adjusted) NET	-700 DEFICIT	







COMMERCIAL

Table 18: Low Growth Forecast Scenario UGR Needs Assessment

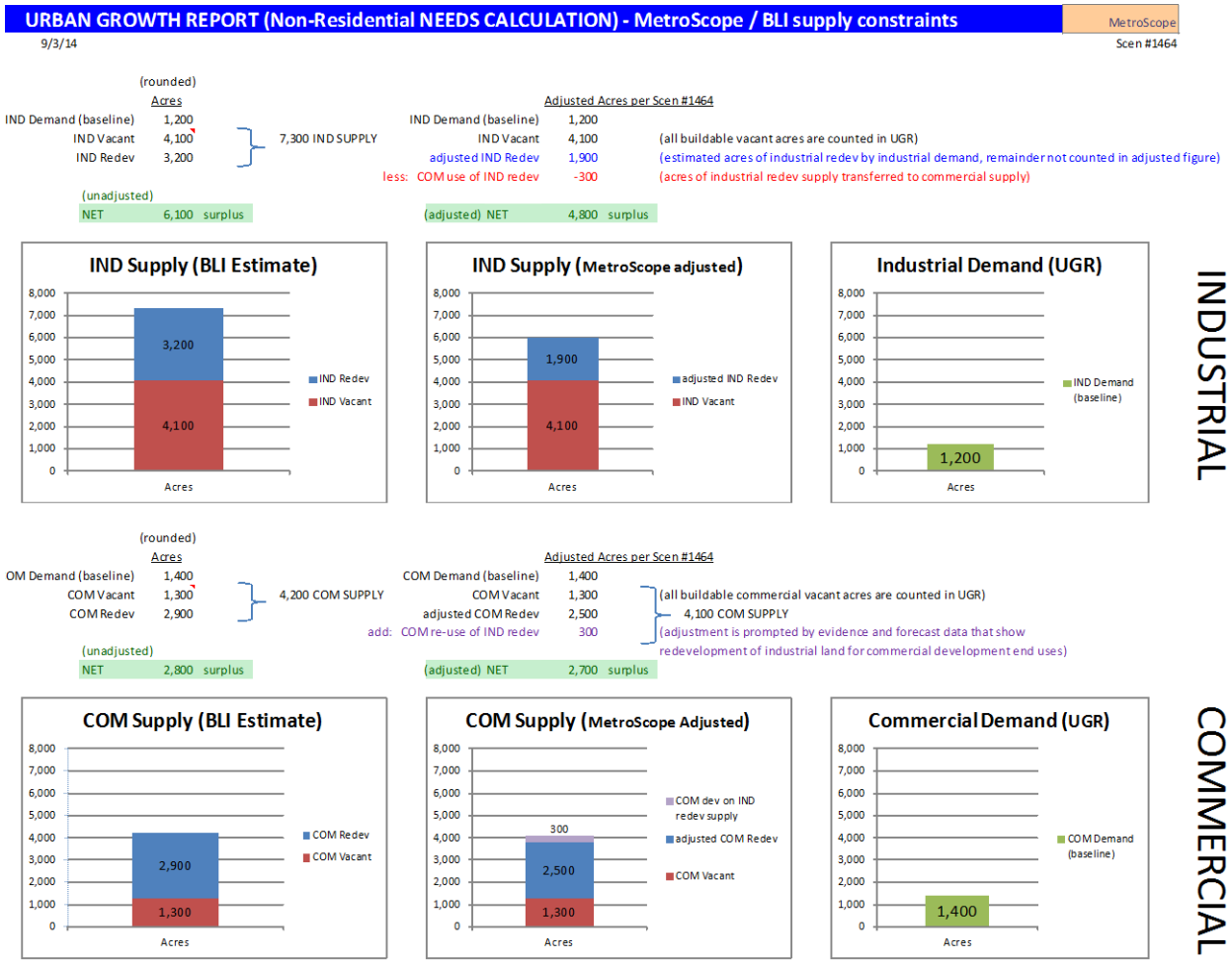


Table 19: UGR Needs Assessment Summary Table (acres)

Scenario Alternative	Industrial SUPPLY	Industrial DEMAND	Net (surplus/deficit)
High Growth Forecast	5,200	6,500	-1,300 (deficit)
Medium Forecast	5,200	3,800	+1,400 (surplus)
Low Growth Forecast	6,000	1,200	+4,800 (surplus)

Scenario Alternative	Commercial SUPPLY	Commercial DEMAND	Net (surplus/deficit)
High Growth Forecast	5,000	5,700	-700 (deficit)
Medium Forecast	4,400	3,600	+ 800 (surplus)
Low Growth Forecast	4,100	1,400	2,700 (surplus)

Note that the numbers in this table have not been updated to reflect revised assumptions about Damascus. It is retained here for context. Please refer to this appendix's supplement for final numbers.

Supplement (October 23, 2015):

Final analysis based on Metro Council direction to use the "middle" or "baseline" point forecast and to assume disincorporation of the City of Damascus

Introduction

This supplement is intended to serve as technical documentation for the final reconciliation of employment land needs for the Council's 2015 urban growth management decision. At a September 15, 2015 work session, the Metro Council directed staff that it intends to plan for the midpoint of the forecast range for its 2015 urban growth management decision. This supplement incorporates that direction as well as the implications of a Damascus disincorporation scenario as documented in Appendix 15. This supplement also seeks to respond to additional questions that have come up in the course of urban growth management discussions.

2035 Point Forecast

The results displayed in this final evaluation of the UGB's employment land need start from the perspective of the medium growth scenario (#1462) and final adjustment are made to the BLI and demand projections to account for the likely event that the city of Damascus is no longer an incorporated entity (scenario #1511).

The Metro Council has selected the baseline forecast series for its 2015 Urban Growth Boundary (UGB) management decision. In choosing the baseline forecast, the Metro Council implicitly endorses the model input assumptions and land development outlooks drawn from two land use scenarios (MetroScope scenario #1462[9] and #1511[10]). Specifications assumed in the scenario alternatives are described in Appendix 11 of the Urban Growth Report (UGR) and additional information regarding #1511 is discussed in Appendix 15.

Both scenarios are constructed on the basis of the medium growth forecast and nearly identical land supply assumptions. The main difference between the initial medium growth scenario (#1462) and the medium-growth Damascus disincorporation scenario (#1511) is a change in zoning regulations and fewer vacant acres assumed available to accommodate future development. The disincorporation scenario counts 514 fewer industrial acres and 450 acres fewer for commercial employment[11] in Damascus. However, at the gross regional level, the two land-use scenarios result in virtually identical

[9] Scenario #1462 is the medium (or baseline) forecast land use growth scenario.

[10] Scenario #1511 is almost identical to #1462. The same regional forecast and residential demand inputs are assumed. What differs is modifications to residential capacity assumptions, primarily the assumed disincorporation of the city of Damascus and subsequent housing supply adjustments.

[11] Source: appendix 15

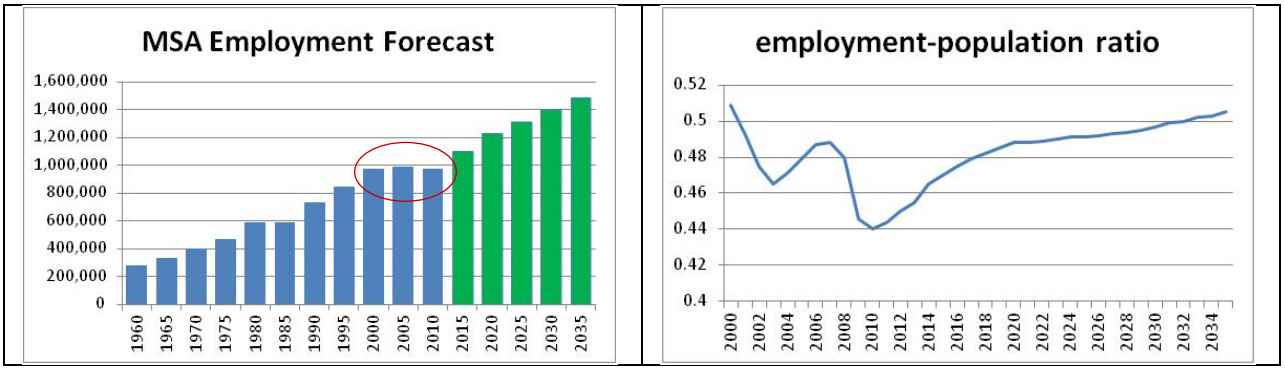
forecast outlooks, e.g., same employment capture rate, overall development density, and nearly identical land need.

The impact on job locations in and outside of the Metro UGB is very minimal between the two scenarios. The UGB has a total of about 3,500 fewer jobs in the Damascus disincorporation scenario as compared to the previous medium growth scenario. This difference is about 0.3% of total Metro UGB jobs in 2035 or equal to about 1% of the amount of future job growth projected to the Metro UGB.

The final demand estimated for the Metro UGB is 3,700 acres industrial and 3,570 acres commercial acres. Industrial supply is estimated at 4,690 acres and commercial supply is estimated at 3,850 acres. These supply estimates are final and incorporate the so-called "Damascus disincorporation" assumptions. A surplus is estimated for both industrial and commercial need for the planning period.

Coordination of population and employment

Jobs are forecasted to average about 1.7% growth per year while population is projected to average 1.1% annually. Between 2000 and 2014, the region saw economic growth stagnate while population continued to expand. Employment trends are forecasted to grow faster because of a rebounding business cycle and for employment levels to eventually "catch-up" to population.



The previous decade started with a national recession – born from the tragedy of 9/11 – and ended with the national economy mired in the Great Recession. From this very deep recession and abnormally slow recovery, we are now anticipating a much delayed economic rebound. MSA employment is projected to grow to 1.5 million jobs by 2035, an increase of 384,600 jobs, for an average annual growth rate of 1.7% per year. Metro UGB job growth is estimated to be about 260,800. Job growth in the region essentially flat-lined between 2000 and 2010, and in fact overall employment levels fell during this decade.

Although many residents became unemployed, there was little evidence that the workforce went away during the two recessions. In fact, population in the region continued growing, albeit at a much more measured pace. The working-age population rose, but labor force participation fell, leaving over a decade's worth of under-employed (and in some cases still unemployed workers who dropped out of the labor force) on the sidelines not participating in the economic recovery. Over the next 20-year

planning period, regional population is expected to average about 1.1% annually, and continuing to add to the size of the labor force.

It may seem contradictory for employment growth to exceed population growth, but we are making the case that an economy will gradually absorb the under-employed and sidelined workers. As the employment-population ratio suggests, the return to pre-recession levels will be incremental. On the whole, there is optimism that the linkage between population and job growth will normalize over the long haul but, meanwhile, household earnings in total will be more muted during this transition period. At the margin, the under-employed and out of work are expected to gradually become re-integrated into the economy.

Detailed Employment Projections: 2015 to 2035

Employment projections for the baseline growth scenarios are shown in Table 20. The table lists job growth for 2015 and 2035 by major industry categories for the MSA and the Metro UGB. A land use scenario was completed and estimates for the Metro UGB were tallied from this scenario (#1462). Based on the allocation of employment from scenario #1462, we calculate an employment capture rate of 68% for the Metro UGB for the planning period. This compares with an historical estimate (1970 to 2012) of 77%.

Table 20: baseline employment forecasts by sector for the greater Portland region (2015 to 2035)

	MSA Employment		Metro UGB Employment	
NAICS Industry	**2015**	**2035**	**2015**	**2035**
Natural Resources	1,440	1,280	867	937
Construction	59,920	99,270	43,503	71,598
Manufacturing, total	119,110	124,380	95,013	96,600
Wholesale Trade	60,220	79,550	50,704	63,359
Retail Trade	113,410	144,640	83,713	101,827
Transp., Warehousing, & Utilities	37,840	45,010	29,875	34,633
Information	23,470	35,570	19,312	27,886
Finance & Insurance	42,580	48,340	35,036	37,897
Real Estate	23,080	27,200	18,991	21,324
Professional, Scientific & Technical Ser.	65,620	97,680	53,995	76,577
Management of Companies	27,600	43,600	22,710	34,181
Administrative & Waste Mgmt.	68,370	110,390	56,257	86,542
Education (private)	27,580	32,580	23,590	26,910
Health Care	127,860	194,880	102,881	150,786
Arts, Entertainment & Rec.	16,660	21,830	12,297	15,368
Accommodations & Food Ser.	94,030	122,270	69,407	86,078
Other Services	38,020	54,730	27,509	38,755
Government	153,250	201,310	108,753	143,968

Source: MetroScope scenario #1462

The change in employment and the compounded average annual growth rate for the metropolitan area are illustrated in the Figure 4 and Figure 5.

Figure 4: change in employment by sector for the MSA (2015 - 2035)

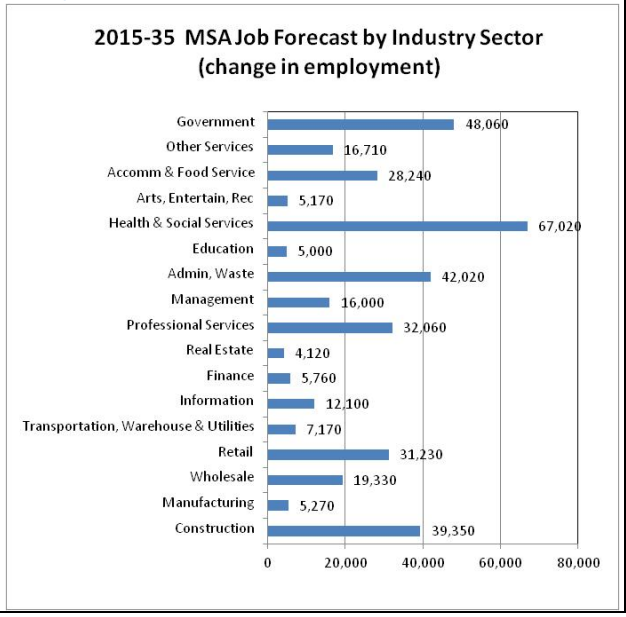
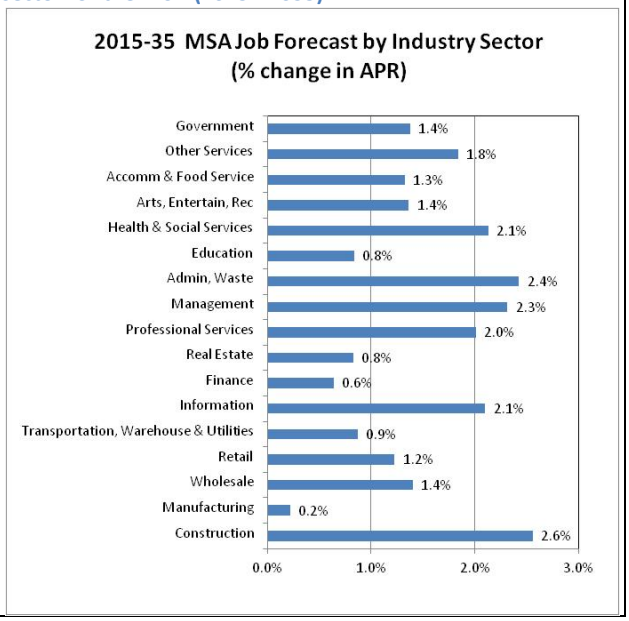
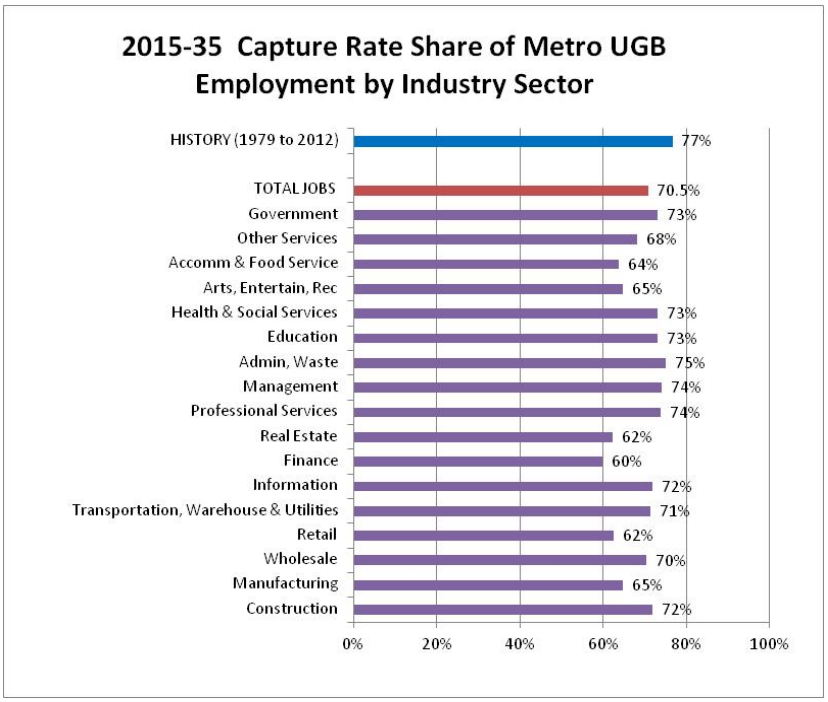


Figure 5: change in employment annual growth rate by sector for the MSA (2015 - 2035)



Detailed industry sector level capture rate between the Metro UGB and the metropolitan MSA figures are illustrated in Figure 6.

Figure 6: 2015-2035 capture rate share of Metro UGB by industry sector



Definition of capture rate =
(2035 UGB jobs – 2015 UGB jobs)
(2035 MSA jobs – 2015 MSA jobs)

Metro UGB jobs (2015 to 2035) by building type

The forecast employment land need is actually estimated at a building typology level. We aggregate the industry-level Metro UGB job forecasts by six (6) building types.

- Office
- Institutional
- Tech / Flex
- General Industrial
- Warehousing and Distribution
- Retail

Table 21 reveals the aggregation assumptions made to crosswalk regionwide employment from NAICS[12] industry categories to the building types.

Table 21: assumptions building type usage by sector

		Distribution of Employment to building type						
NAICS	Sectors Represented	Office	Institution	Flex/BP	Gen Industrial	Ware-house	Retail	*check*
11 & 21	Ag, Mining *(excluded from UGB calc.)*							
23	Construction	14%	0%	18%	40%	18%	10%	*100%*
31-33	Manufacturing	8%	0%	24%	60%	8%	0%	*100%*
42	Wholesale Trade	8%	0%	22%	20%	40%	10%	*100%*
44-45	Retail Trade	5%	1%	6%	0%	12%	76%	*100%*
22, 48-49	Transportation, Warehouse & Utilitie	15%	0%	12%	13%	55%	5%	*100%*
51	Information	25%	0%	25%	40%	0%	10%	*100%*
52	Finance	72%	1%	5%	1%	1%	20%	*100%*
53	Real Estate	72%	1%	5%	1%	1%	20%	*100%*
54	Professional Services	72%	1%	5%	1%	1%	20%	*100%*
55	Management	79%	5%	8%	0%	0%	8%	*100%*
56	Admin, Waste	72%	1%	5%	1%	1%	20%	*100%*
61	Education	30%	53%	5%	1%	1%	10%	*100%*
62	Health & Social Services	30%	53%	2%	0%	0%	15%	*100%*
71	Arts, Entertain, Rec	35%	0%	10%	0%	0%	55%	*100%*
72	Accomm & Food Service	20%	1%	7%	1%	1%	70%	*100%*
81	Other Services	72%	1%	5%	1%	1%	20%	*100%*
92	Government	43%	35%	5%	1%	1%	15%	*100%*

[12] NAICS stands for North American Industrial Classification System. For more information and definitions about NAICS, please see: http://www.census.gov/eos/www/naics/ .

Table 22 provides a summary of the forecast tabulated by building type for the Metro UGB.

Table 22: Metro UGB employment forecast by building type

Building Type	Total Jobs in Metro UGB		
	2010	2015	2035
Office	253,506	290,162	392,878
Institutional	100,636	109,678	150,766
Flex	71,442	81,394	102,159
General Industrial	87,557	100,094	120,108
Warehousing/ Distribution	57,533	66,125	82,407
Retail	180,544	206,095	265,969
	751,218	853,546	1,114,287

Metro UGB density assumptions

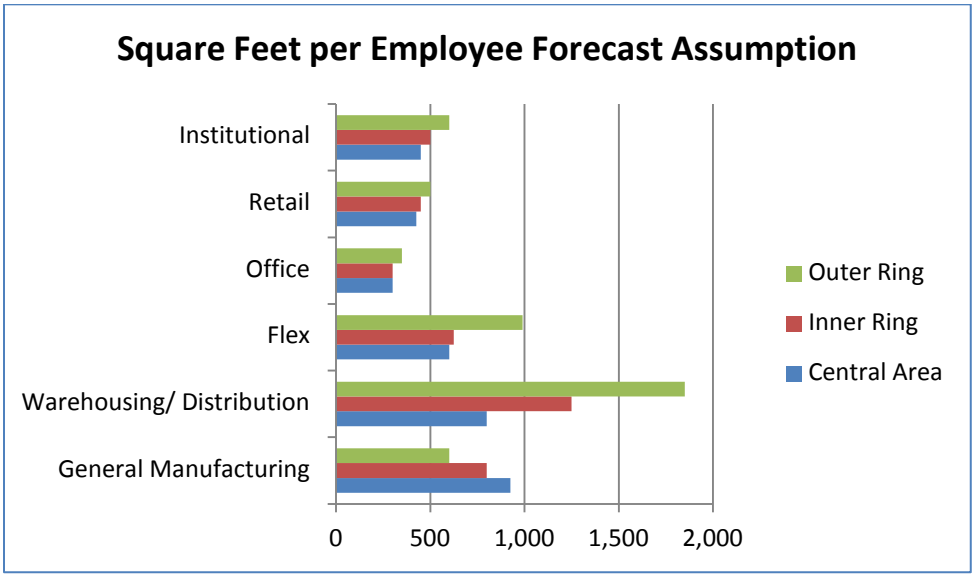
The next step is to assert a set of density assumptions to the building types and Metro UGB employment forecast. The component densities are based on historical data and expert opinions about the future density trends. These assumptions were reviewed by local developers and planners who are familiar with existing development forms and knowledgeable about trends in future densities. The analysis tries to be as geographically and conceptually specific as possible, but it is unavoidable and impractical to project future employment land needs without a few simplifying assumptions, aggregations and generalizations. The analysis attempts to incorporate differences in subarea densities to the calculation of need. For this, we divide the UGB into three subareas and assume variations in density for each subarea, and within each subarea we further delineate future development density by 2040 design type. The densities we assume are too cumbersome to display outside a spreadsheet, but for transparency, Table 23 summarizes the weighted average composites for the density assumptions by square feet per employee and FAR at the regional scale.

Table 23: composite weighted average density forecast rates

COMPOSITE WEIGHTED AVERAGE DENSITY FORECAST RATES			
	SQ. FT. / EMP	FAR	Jobs/Net Acre
General Industrial	780	0.32	18.0
Warehousing/ Distributing	1,300	0.30	10.1
Tech / Flex	740	0.32	18.8
Office	320	0.48	65.2
Retail	460	0.38	35.9
Institutional	520	0.60	50.1

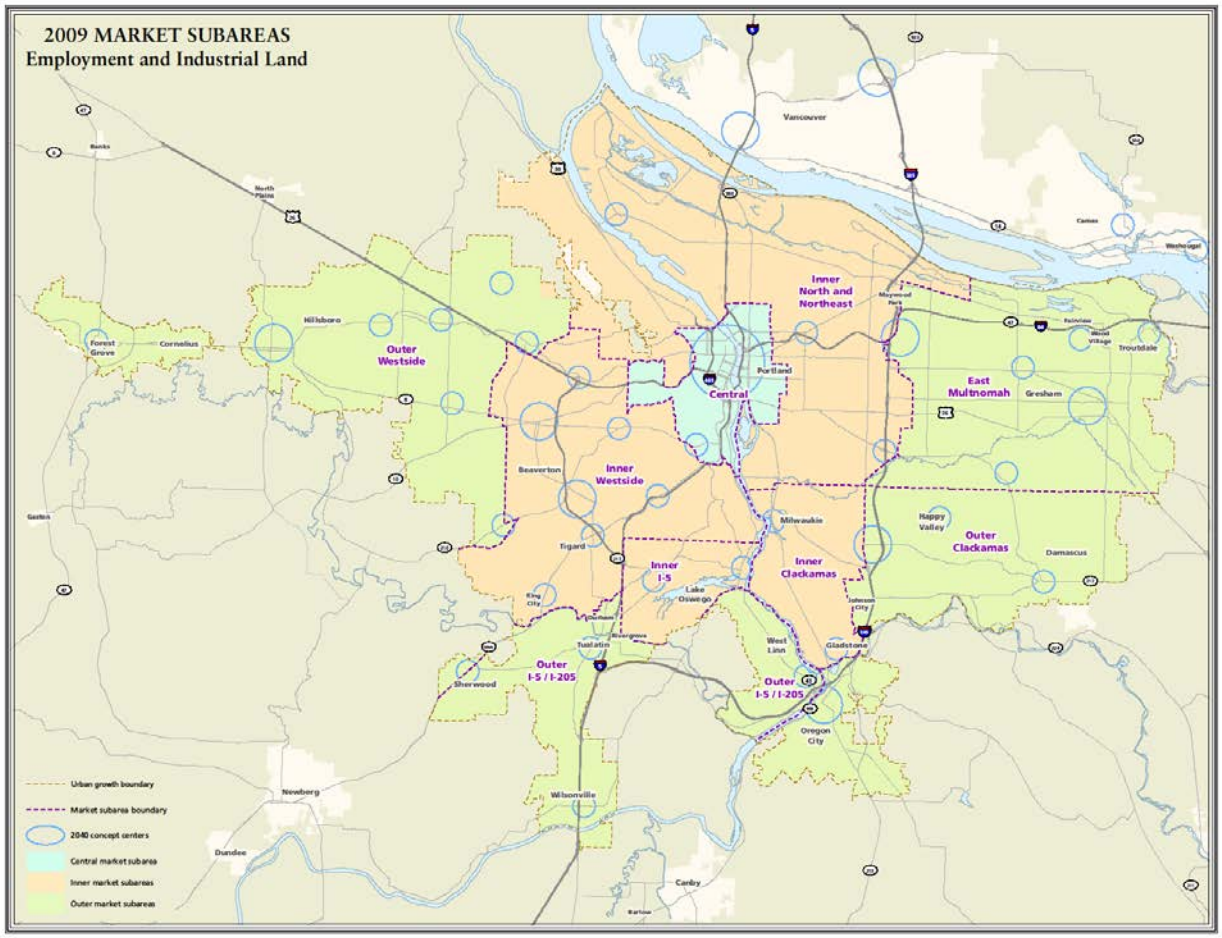
	Jobs/Net Acre
commercial density	50.9
industrial density	16.1
overall all jobs density	28.9

Figure 7: square feet per employee forecast assumptions by building type and subarea



Map 2 delineates which areas of the Metro UGB belong to the central area or an inner or outer ring of the region. These subareas were created from aggregations of geographic units based on census tracts delineated by the U.S. Census Bureau.

Map 2: employment analysis market subareas



Metro UGB acres demanded

The baseline medium growth forecast and land use scenarios drive the estimates of employment land need for the Metro UGB. The growth scenarios estimate how much regional growth will be distributed to the Metro UGB. The Metro UGB employment forecast is additionally divided into three large subareas and 2040 design types. This geographic distinction, in theory, allows more sensitivity in the density assumptions that convert employment into land demand estimates.

Table 24: Industrial Demand Estimates – Metro UGB (2015-2035)

General Industrial

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	68	36	5	-	0	2	4	3	18
Inner Westside	180	-	69	8	4	-	23	34	43
Inner North & East	294	0	33	2	1	202	23	12	22
Inner Clackamas	106	-	35	1	1	22	22	10	15
Inner I-5	51	-	8	2	3	-	2	22	14
Outer Westside	161	-	21	1	1	0	113	17	9
East Mult Co	69	-	1	1	1	11	32	9	13
Outer Clackamas	2	-	-	-	0	0	0	0	1
Outer I-5/205	134	-	10	2	4	1	70	38	10
Total	1,065	36	182	16	13	239	288	146	146

Warehouse and Distributing

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	55	37	2	-	0	3	2	2	9
Inner Westside	202	-	57	10	8	-	25	23	80
Inner North & East	574	0	61	5	1	422	20	27	38
Inner Clackamas	136	-	37	5	2	49	21	7	15
Inner I-5	70	-	15	7	5	-	2	24	17
Outer Westside	158	-	33	8	3	6	75	9	25
East Mult Co	166	-	5	6	4	28	55	22	46
Outer Clackamas	4	-	-	-	0	0	0	1	2
Outer I-5/205	277	-	26	3	16	2	126	74	30
-	1,642	37	235	44	39	510	325	189	263

Flex

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	71	40	4	-	0	3	3	6	15
Inner Westside	143	-	46	8	6	-	14	21	48
Inner North & East	259	0	44	3	2	155	11	15	29
Inner Clackamas	77	-	24	3	2	18	12	6	12
Inner I-5	51	-	12	4	4	-	1	17	14
Outer Westside	173	-	30	5	2	1	102	16	17
East Mult Co	106	-	4	4	2	15	37	10	32
Outer Clackamas	3	-	-	-	0	0	0	1	2
Outer I-5/205	188	-	19	3	9	1	78	55	24
Inner I-5	1,071	40	182	31	28	193	259	145	193

Source: MetroScope scenario #1462

Table 25: Commercial Demand Estimates – Metro UGB (2015-2035)

Office

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	134	30	11	-	1	9	5	24	54
Inner Westside	250	-	53	20	21	-	13	30	112
Inner North & East	282	0	66	12	9	77	5	27	86
Inner Clackamas	110	-	20	13	7	11	11	13	35
Inner I-5	141	-	32	13	15	-	1	41	39
Outer Westside	116	-	27	17	4	1	29	6	32
East Mult Co	137	-	6	10	3	15	33	4	67
Outer Clackamas	3	-	-	-	0	0	0	1	2
Outer I-5/205	196	-	19	3	17	1	37	62	55
-	1,371	30	234	88	78	115	135	208	482

Retail

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	255	81	7	-	1	1	1	89	75
Inner Westside	215	-	42	11	54	-	1	4	104
Inner North & East	352	0	136	33	31	16	0	13	123
Inner Clackamas	110	-	16	29	12	2	2	2	47
Inner I-5	100	-	9	5	16	-	0	11	59
Outer Westside	124	-	27	32	8	2	5	8	42
East Mult Co	132	-	13	11	3	2	3	1	98
Outer Clackamas	2	-	-	-	0	0	0	1	1
Outer I-5/205	184	-	43	3	10	0	3	39	86
Inner I-5	1,474	81	293	123	136	22	16	169	635

Institutional

Subareas	Subarea Total	Central	Corridors	Regional Center	Town Center	RSIA	Industrial	Employment	Other
Central	61	14	5	-	1	2	1	7	31
Inner Westside	122	-	44	10	15	-	7	14	32
Inner North & East	162	0	71	8	4	38	3	15	23
Inner Clackamas	67	-	29	11	3	4	5	7	9
Inner I-5	69	-	19	10	7	-	1	20	10
Outer Westside	59	-	28	6	4	0	8	3	10
East Mult Co	74	-	9	7	5	7	14	4	28
Outer Clackamas	1	-	-	-	0	0	0	0	1
Outer I-5/205	106	-	15	3	12	0	17	42	16
Inner I-5	720	14	220	55	51	52	55	113	160

Source: MetroScope scenario #1462

Table 26: UGB employment land demand forecast (2015-2035)

	Industrial Demand (ACRES)		Commercial Demand (ACRES)
Industrial		Commercial	
General	1,065	Office	1,371
Warehousing & Distr.	1,642	Retail	1,474
Tech / Flex	1,071	Institutional	720
subTOTAL	3,800 (rounded)	subTOTAL	3,600 (rounded)
adj. Damascus (scen. #1511)	-100	adj. Damascus (scen. #1511)	-30
TOTAL	3,700 (rounded)	TOTAL	3,570 (rounded)

Final industrial and commercial demand projections are adjusted to account for the impact of the Damascus disincorporation assumption.

Adjusted Supply Estimates (BLI) – Metro UGB

Industrial and commercial supply estimates are based on an adjusted buildable land inventory that takes into account the assumed Damascus disincorporation. We summarize this capacity from the standpoint of the detailed BLI shown in Appendix 3 and then adjust the totals to account for the disincorporation.

Figure 8: Industrial buildable acres by jurisdiction

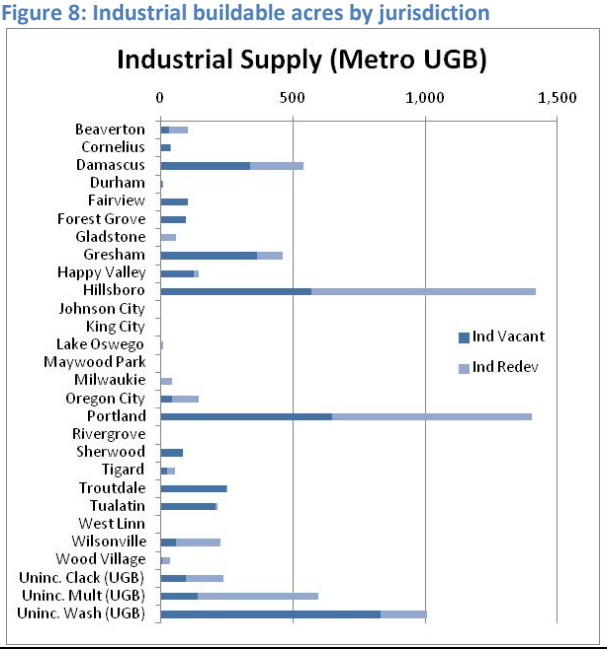
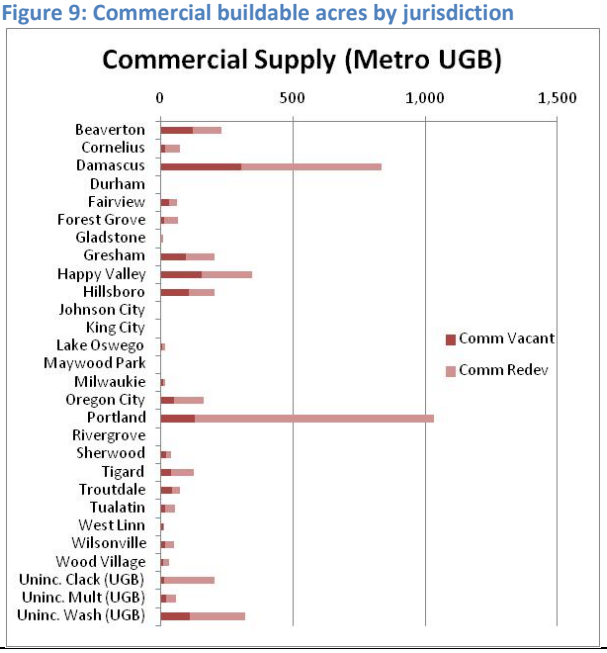


Figure 9: Commercial buildable acres by jurisdiction



Source: appendix 3 (does not include Damascus disincorporation)

The industrial and commercial supply acreage estimates for the Metro UGB as derived from the BLI (before adjusting for Damascus disincorporation assumptions):

- 4,100 (rounded) vacant industrial acres
- 3,200 (rounded) industrial redevelopment acres
- 1,300 (rounded) vacant commercial acres (includes capacity estimates from MUR districts)
- 2,900 (rounded) commercial redevelopment acres

As discussed elsewhere in this appendix, the commercial and industrial redevelopment supply exceeds an expected 20- year land development horizon. In order to pare down the redevelopment supply, a technical advisory committee suggested using the results from a land use scenario to re-size the redevelopment supply. This approximates a 20-year supply and only affects the redevelopment portion of the BLI. Vacant is fully counted in the supply analysis.

This resizing is summarized in Table 27. The industrial redevelopment supply is reduced to 1,100 acres from an initial screening of 3,200 acres. Another 1,100 industrial acres was found to be absorbed during the planning period by commercial redevelopment on industrial zoning. From the commercial redevelopment supply, the ledger shows 2,000 acres of redevelopment supply from an initial screening of 2,900 acres of potential redevelopment supply. 1,100 acres is “transferred” from the industrial ledger

over to the commercial side of the ledger. As noted elsewhere in this appendix and documented in Appendix 8, the trend of commercial employment in industrial zones has been observed.

Table 27: summary of 20-year employment land supply inside the UGB

	Industrial Supply (ACRES)		Commercial Supply (ACRES)
Industrial		Commercial	
Vacant	4,100	Vacant	1,300
Redevelopment	1,100	Redevelopment	2,000
less: commercial use	-1,100	Add: commercial use of industrial redev	1,100
subTOTAL	4,100	subTOTAL	4,400
adj. Damascus	-510	adj. Damascus	-450
TOTAL	4,690	TOTAL	3,950

Final industrial and commercial supply estimates are adjusted to account for the impact of the Damascus disincorporation assumption.

Employment land need reconciliation

As summarized in Table 28, reconciling the middle forecast demand projections of industrial and commercial land and the same with the buildable land supply, the assessment of employment land need shows a surplus for the planning period.

Table 28: reconciliation of employment land supply and demand for the Metro UGB (2015 - 2035)

	Industrial Need (ACRES)		Commercial Need (ACRES)
Industrial DEMAND	3,700	Commercial DEMAND	3,570
Industrial SUPPLY	4,690	Commercial SUPPLY	3,950
NEED estimate	990	NEED estimate	380
	(surplus)		**(surplus)**