

Appendix 4

Housing Needs Analysis (revised as of October 26, 2015)

Introduction

Metro is required under state law to complete a buildable land inventory (which includes vacant, infill and redevelopment capacity) and an assessment of housing need at least every 6 years¹. The buildable land inventory (BLI) methods and results are summarized in appendices 2 and 3, respectively. The historic data on housing trends required by statute are reported in Appendix 5. This report summarizes relevant Census data, key forecast assumptions, forecast results (derived from MetroScope scenarios²) and compares a prospective housing demand forecast to the residential growth capacity of the current urban growth boundary.

The draft analysis released in July 2014 included a range forecast and a regional residential needs assessment based on high, medium and low growth regional forecasts. This report leaves intact the range analysis as a reference to past analytics and provides a supplement summarizing a residential needs analysis based on the Metro Council's direction that it intends to plan for the midpoint of the forecast range. **Please refer to the supplement, beginning on page 49, which responds to recent topics of discussion at MTAC, MPAC, and the Metro Council and provides a final reconciliation of regional housing needs for the 2015 to 2035 planning period that incorporates a "Damascus disincorporation" scenario and Metro Council direction to plan for the midpoint of the forecast range.** Additional clarifications are included throughout the document.

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

- Eliminated the "refill rate"³ in the calculation of housing need.
- Replaced the residential *refill rate* with direct measures of residential infill and redevelopment supply estimates; now included in the single family buildable land inventory (BLI) as *infill* capacity and the multifamily BLI as *redevelopment* capacity. The buildable land inventory was determined independently of this housing needs analysis as an initial analytical step. The methodology for how Metro estimated buildable land for single family infill and multifamily redevelopment as well as vacant land is spelled out in the *BLI methodology* whitepaper (see Appendix 2).

¹ HB 4078 (2014) Section 5 amends ORS 197.299 directing Metro to complete a BLI and housing needs analysis not later than six (6) years – instead of previously five (5) years.

² 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 residential demand analysis.

³ Previous Urban Growth Reports used a refill rate to describe the share of future residential growth that would be accommodated through redevelopment and infill. The refill rate was expressed as a percent share of demand and was not tied to the buildable land inventory.

- Only a portion (about half) of the buildable land inventory is expected to be market feasible in the 20-year planning timeframe. This report describes how 20-year estimates were made. MetroScope scenario #1462 is used to inform how much redevelopment and infill capacity will be absorbed during the 20 year planning period. Mimicking how real estate markets function to absorb redevelopment and infill supply, the needs assessment links household demand and supply feedbacks. At the higher end of the forecast demand range, there is increased market utilization of redevelopment and infill supply.
- Synchronized the BLI database with MetroScope Urban Growth Report (UGR) scenario(s) – thus enabling a tightly integrated MetroScope scenario(s) to fit with the UGR framework.⁴ This will lead to better coordination between the UGR and subsequent forecast allocation work. The MetroScope scenario(s) used in the analysis are intended to represent a continuation of currently adopted policies⁵.
- Used the capture rate (i.e., the future share of residential growth and development in the Metro UGB relative to the MSA total) that is an output of a MetroScope scenario for making housing needs calculations (instead of using historically observed capture rate figures as with past UGRs). The capture rates used in this analysis are somewhat higher than historic observations (around 70% depending on scenario vs. 62.8% historical reading). The analysis for the Council point forecast decision asserts a 72.1% capture rate (MetroScope scenario #1462).
- Required data on historic residential development trends are reported in a separate report (Appendix 5).

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

- Using a range forecast to acknowledge uncertainty in the regional forecast.
- Assuming *no changes* to currently adopted plans and zoning designations.
- Buildable lands for residential uses are inventoried by housing location, type and density.
- Number of needed (i.e., demanded) housing units are reported by price / rent ranges and average density.

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

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

- The analysis reflects varied housing demand for different household sizes, incomes, and ages. What's newly incorporated in the analysis is a "preference structure" for housing demand that reflects more of what is buildable under allowed zoning conditions.
- Manufactured homes (a construction technique, not a housing type) are assumed to be available to be placed in any jurisdiction in Metro which allows/permits for appropriate residential development densities.

Data, Forecast and Methods

Prospective Buildable Land Inventory (BLI)

- The BLI is considered a year 2014 estimate of residential and non-residential (employment) supply. The inventory has been reviewed and accepted by local jurisdictions. Data are individual tax lots and stored in a master geodatabase capable of being queried for the UGR and suitable for a MetroScope scenario.
- The BLI consists of identified *vacant* tax lots plus *infill* and *redevelopment* tax lots deemed capable of supporting residential development in the future under existing plans and zone designations.
- The BLI is deemed prospective because redevelopment and infill are not certainties (for that matter, development of vacant land or development of land in urban growth boundary expansion areas is not a certainty).⁶ To the extent we can forecast where redevelopment happens, we utilize MetroScope – an integrated land use model – to make future estimates of the amount of realizable redevelopment and infill to count in the UGR inventory.
- The infill and redevelopment supply inventory was designed to be ahead of the 20-year market for MetroScope modeling purposes. The rationale for this is to assume for the model a 20-year land supply on hand at the end of the 20-year forecast horizon.
- For purposes of evaluating the Metro UGB, the geography of the supply inventory is clipped to the current UGB and the timeframe for the supply has to be estimated for a 20-year inventory, particularly for infill and redevelopment supply.
- For MetroScope modeling, we utilize the longer time frame and additional BLI data estimates which include Clark County, rural and neighboring city capacity estimates. We necessarily include this information so that we can model the Metro UGB *capture rate* forecast from a seven-county MSA (Clackamas, Columbia, Multnomah, Washington and Yamhill counties in Oregon and Clark and Skamania counties in Clark).
- In summary, MetroScope, a market-based land use and integrated with a transportation model, is used to estimate how much of the infill and redevelopment capacity can be counted on as *market-clearing* in the next 20 years. We count 100 percent of identified vacant land in the BLI,

⁶ Eligibility requirements for infill and redevelopment are spelled out in Appendix 2.

but will only count a fraction of the infill and redevelopment capacity in the BLI for the UGR need analysis in accord with forecast information derived from a MetroScope Scenario⁷.

Forecast

- The regional range forecast (high, baseline and low growth scenarios) for population and employment, 2015 to 2035, is documented in Appendices 1a, 1b, 1c, and 1d. Housing demand is derived from these growth range scenarios represented by the population and employment drivers for each forecast range and interval.
- The population forecast is integrated with the employment forecast so that economic trends affect the migration component of population. Natural population increases (births – deaths) are estimated from birth and death rates found in the 2012 National Population Projections (source: Census data). Rates are adjusted so that they calibrate with birth and death rates of the last 10 years for the region.
- Population forecast is converted into households by income bracket, age bracket (age is of the head of household), and household size (we call this set of household characteristics or household profile: an HIA distribution or matrix)
- HIA households are converted into types of housing demand (i.e., needed housing by tenure and structure type).

Housing needs general methodology

1. Determine the portion of households in the regional MSA household forecast that is likely to locate in the Metro UGB. A MetroScope scenario predicts the outcome of residential capture rate. The capture rate measures the proportion of future housing development (i.e., growth) in the Metro UGB relative to growth in the MSA for years 2015 to 2035. Other things being equal, the capture rate varies according to the demand forecast (within the range).
2. Sort year 2015 and 2035 projected households in the Metro UGB into socio-economic classes by: a) household size, b) income bracket, c) age bracket. This is a “3 dimensional matrix” of household size-income-age. Household size has 5 attribute levels. There are 8 income brackets and 5 age brackets. (We call this the 5 x 8 x 5 HIA matrix.)
3. Estimate the growth by HIA class for 2015 to 2035 to array the 20 year growth in households in size, household income and age brackets. An HIA class in the matrix represents households in the same socio-economic strata based on household size, income and age bracket characteristics.
4. Relate a set of residential housing preferences to each HIA class for tenure (own or rent) and housing structure type (single family or multi-family). Residential preference patterns for each HIA class are based on findings from a MetroScope scenario. Each HIA class is found to have proportional affinities to OSF (owner single family), OMF (owner multi-family), RSF (renter single

⁷ Additional MetroScope details may be found in Appendix 11.

family), and RMF (renter multifamily). These affinities are preferences used going forward to predict – by tenure and structure type – the Metro UGB housing demand forecast (see: Table 3).

5. Complete a gap analysis of projected housing need by type (SF – single family and MF – multi-family) against the BLI (sorted by SF and MF), shown in Figures 10 to 12.

Residential Needs Assessment Methodology: step by step

Step 1: Capture rate and Metro UGB job forecast

From the regional MSA jobs forecast, we compute how much population (i.e., number of households) growth will locate inside the Metro UGB. A MetroScope UGR scenario provides residential location choice projections for population and households so we can compute Metro UGB household shares. The Metro Council selected to base its 2015 UGB growth management decision on the baseline (or medium) growth forecast. MetroScope scenario #1462 provides numerical growth assumptions for projected development trends inside the Metro UGB. Table 1 presents the MSA and UGB household estimates and projections for the baseline growth forecast.

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

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

- Total projected housing demand for the Metro UGB (2015 to 2035) is *197,400* dwelling units. Please note that, in a supplement to this document, this amount of housing demand gets amended to 195,400 after consideration of a Damascus disincorporation scenario, as documented in Appendix 15.
- Percentage of Metro UGB growth was determined from MetroScope Scen. #1462 (baseline scenario)
- MSA forecast for 7 counties includes Columbia, Clackamas, Multnomah, Washington and Yamhill counties in Oregon plus Clark and Skamania counties in Washington State.
- 6.9 percent vacancy rate (source: U.S. Census, 2010)
- 4.0 percent vacancy rate (source: 2009 UGR assumption)
- Implied captured is 72.1 percent for years 2015 to 2035 (the baseline - medium growth scenario)

Step 2: Sort Metro UGB housing forecast into HIA classes

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

Step 3: Estimate the growth in households by HIA⁸

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

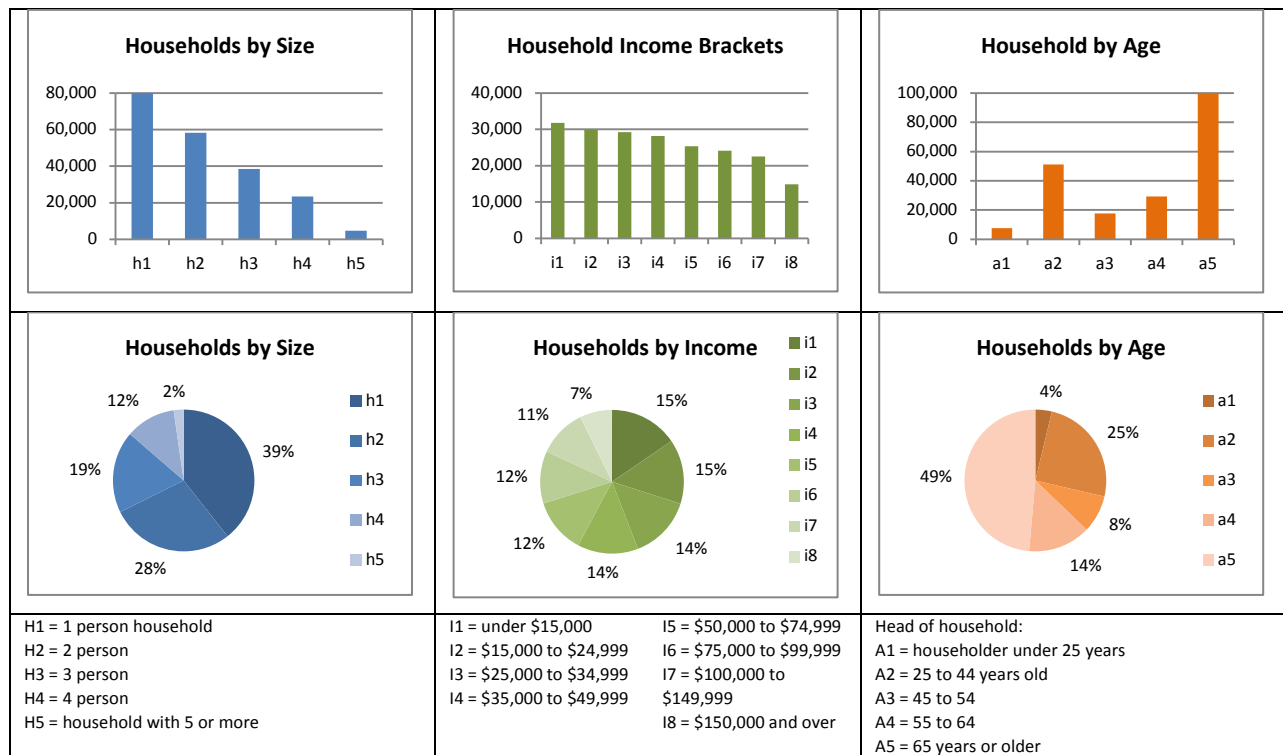


Figure 1: 2015 to 2035 HIA forecast marginal distributions (source: MetroScope Scen. #1462 (#1511 uses same demand inputs))

- Figure 1 summarizes the Council-directed midpoint forecast and thus serves as the underlying economic and demographic forecast underpinnings for the residential housing demand analysis.
- 68 percent of future households are expected to be of 1 or 2 persons. This is consistent with overall projected declines in average household sizes from 2.61 (in 2015) to 2.47 (in 2035) for the MSA region. Despite a decline in average household size, the absolute number of households with 3 or more persons increases in number by 2035 as compared to 2010 figures. Thus, there is a need for additional housing to meet the needs for smaller households (of 1 or 2

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

person) and a need for housing to meet the needs of families and households of 3 or more. We estimate a net new housing need of about 130,000 dwelling units for smaller households. Further, we estimate a net new housing need for about 70,000 new dwelling units to meet the housing needs of families (and larger non-family households). This is according to tabulations of the net change in the population forecast by household size.

- Overall, the regional forecast anticipates proportionally fewer households in the middle income bracket with the numbers proportionally bifurcating into both lower and upper end income brackets in general. Lower income bracket households (indicated by income brackets 1, 2 and 3) account for about 45% of all household growth between 2015 and 2035. Moderate to middle income households (indicated by income brackets 4 to 7) represent about 48% of net new households. High income households (in bracket 8) are about 7% of new householders added between 2015 and 2035. The larger marginal increase in lower income households is expected to drive a relatively higher proportional demand for less expensive and smaller housing units going forward.
- The influence of the baby boom generation is felt by the large proportion of older householders at the margin (50 percent of the net change in population and households are in the retirement age group – 65 years and older, another 14% in pre-retirement – ages 55 to 64.) An increase in median age of the population is expected due to the increase proportion of retirement age householders, yet the number of householders in younger age categories is also expected to increase in absolute numbers. These younger householders (between 25 and 54 years of age) represent households still in their root setting years and make up 32% of net new householders. Householders under 25 make up the balance (4%). Households in their root setting years are generally households starting families and growing in household size which means demand for larger housing units. Older householders and retirement age householders tend to still have very high propensity for larger housing units because of accumulated assets and generally higher average earnings.

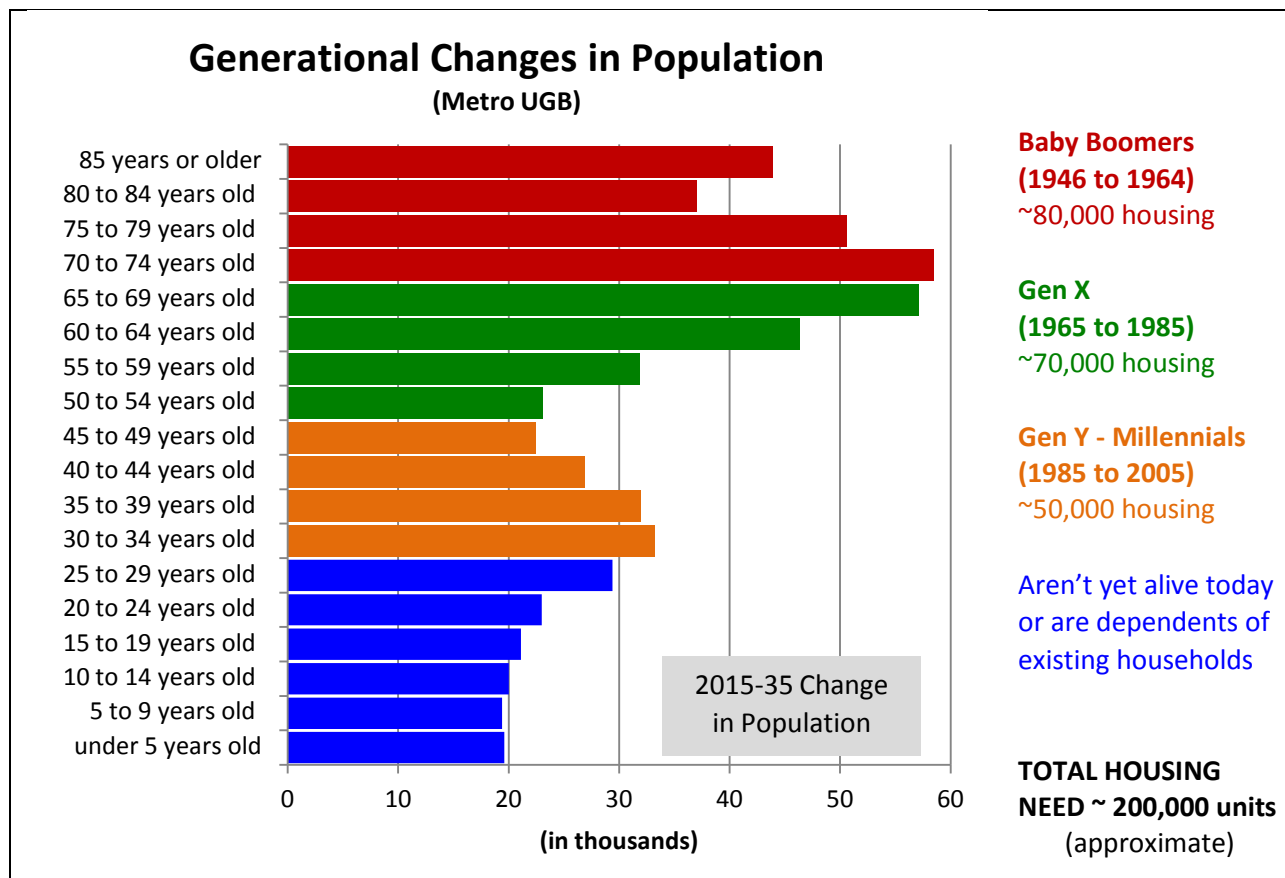


Figure 2: Groupings of age cohorts by Generation (approximate) – medium baseline scenario (scen #1462)

- As Figure 2 illustrates, there will be more demand for housing by structure type (i.e., SF or MF) and tenure (i.e., own or rent) of all types for each generation in the future. The numbers going forward (2015 to 2035) indicate an approximate need for more housing units to accommodate the needs for the increase in baby boomers, Gen X, and Millennials.
- By 2035, the last of the baby boomers will all be of retirement age and the leading edge of the Gen X generation will also be entering retirement. Current Census information indicates homeownership remains fairly high and doesn't begin tapering off until residents reach ages 80-85. At 85 years and older, the current cohort data show homeownership still above 50%. Baby boomers are said to be healthier than previous generations. With healthier lifestyles, it is conceivable (likely) that baby boomers and subsequent generations may age in place longer and maintain a higher ownership rate than current peers. This potentially argues for longer delays before senior householders choose to relinquish their single family home in favor of living in multifamily dwelling units or perhaps a group quarter living arrangement. However, the Joint Center for Housing Studies of Harvard University (2015) states that "by 2025, the large and growing population of seniors is likely to drive up demand for alternative housing arrangements that offer a combination of affordability, accessibility, and supportive services."⁹

⁹ (Joint Center for Housing Studies of Harvard University, 2015)

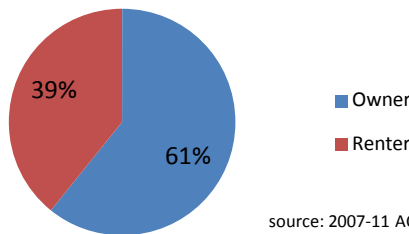
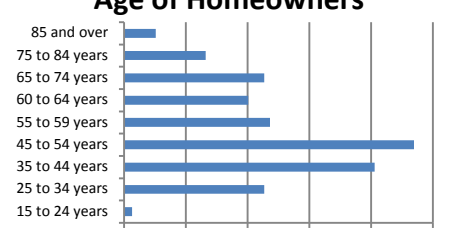
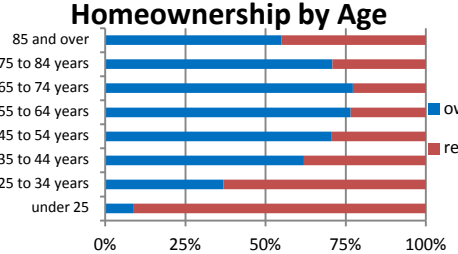
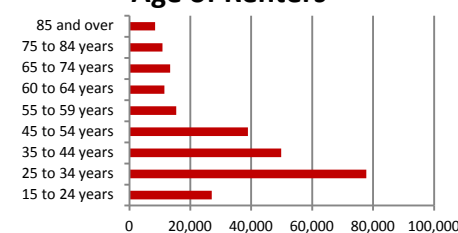
- There has been nascent talk that Millennials (or even the tailing end of Gen Xers) are changing their “preferences” for structure type and opting for life in apartments. However, it is still early in their life cycle with many of them delaying when they marry and have kids. Census data would suggest that once couples form families, their preferences switch dramatically in favor of “single family style” development forms¹⁰. However, it is also unclear whether preferences for single-family homes could be outweighed by preferences for more urban neighborhoods.
- Millennials are also showing the following characteristics as compared to previous generations:
 - Higher preferences for living in or near walkable urban centers (Rappaport, 2015) (National Association of Realtors, Portland State University, 2015);
 - Higher preferences (a majority) for attached housing such as townhouses, apartments and condominiums where they can walk to shops (National Association of Realtors, Portland State University, 2015);
 - Higher student loan debt (Joint Center for Housing Studies of Harvard University, 2015);
 - Having fewer children, and having them later in life (U.S. White House Council of Economic Advisors, 2014);
 - Being more likely to stay in urban areas after having children later in life (Portland State University Population Research Center, 2014);
- Developers nationwide are responding to the preferences and income levels of the Millennials and others by reducing their housing production and focusing on apartments. “[Nationwide] developers also responded to soaring demand by steadily expanding the multifamily housing supply, adding 1.2 million apartment starts to the mix since 2010. Despite this massive expansion of the stock, rental markets continued to tighten in 2014... With no signs of a slowdown in renter household growth, rental markets are likely to remain tight in the near term. If job growth continues, rental demand could get another lift as increasing numbers of young adults move out of their parents’ homes and into their own... But the robustness of the multifamily market has not been enough to lift overall construction volumes anywhere near their historic average... Virtually all the weakness is due to low levels of single-family construction” (Joint Center for Housing Studies of Harvard University, 2015).

Steps 4 and 5 are detailed later in this report, after providing 2010 Census data as a contextual backdrop to the housing need forecast.

¹⁰ It is possible that family-friendly housing, instead of developing horizontally as single family detached units or single family attached units as row houses, could develop vertically as mid-to-high-rise apartments and condo units in more urban locations with 3 or more bedrooms to accommodate households with children. Presently, we see very little inventory and construction of the “vertical family-friendly” development form. However, enrollment trends demonstrate a “return-to-the-city” trend that is manifesting itself around the U.S., with a 5 percent increase in enrollment at Portland Public Schools from 2008 to 2013.

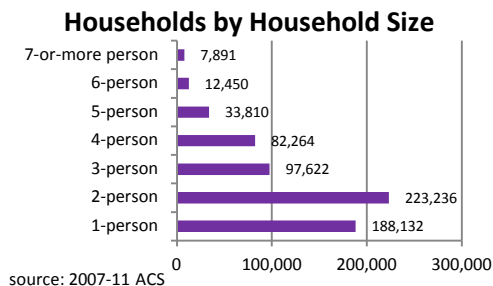
2010 Census of Population and Housing – the current housing story

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

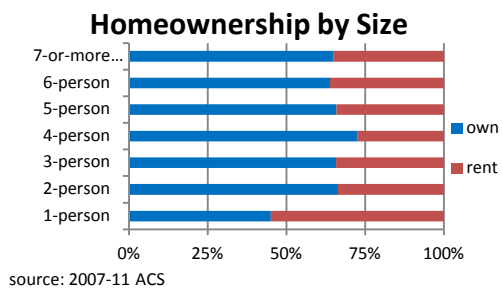
Tenure (own / rent) and Age	
<ul style="list-style-type: none"> Homeowners held a 22 percentage point edge over the number of renters in the Tri-counties (Clackamas, Multnomah, and Washington). 392,300 owners 253,100 renters 	<p style="text-align: center;">Housing Tenure</p>  <p style="text-align: right;">source: 2007-11 ACS</p>
<ul style="list-style-type: none"> Absolute number of home owners peaked at middle age (45 to 54 year) The drop in home ownership numbers in seniors came from a decline in the number of householders. Retirees (65 and over) who owned homes outnumbered renters 2 to 1 	<p style="text-align: center;">Age of Homeowners</p>  <p style="text-align: left;">source: 2007-11 ACS</p>
<ul style="list-style-type: none"> Share of home ownership by age rose and peaked up to age 75 before edging lower. Ownership tapered slightly faster at 85 years and over (perhaps age becomes an issue in the upkeep and maintenance of owned homes). Ownership share in the oldest cohort was more than half (55 percent). 	<p style="text-align: center;">Homeownership by Age</p>  <p style="text-align: left;">source: 2007-11 ACS</p>
<ul style="list-style-type: none"> Renters were more apt to be younger (under 35 years). The proportion of renters fell off with age, presumably when they were more likely to be married or starting families. 	<p style="text-align: center;">Age of Renters</p>  <p style="text-align: left;">source: 2007-11 ACS</p>

Tenure and household size

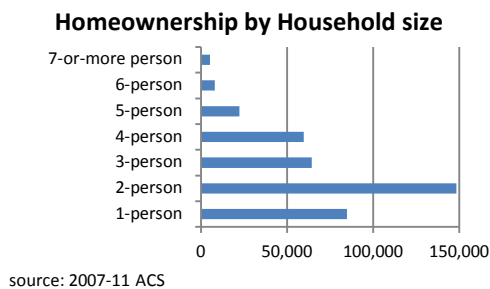
- 645,405 households in the 3-county area.
- 411,400 households were 1 or 2 person (64% of all households)
- Household size was related to tenure choice.
- 45 percent of single-person households owned (55 percent rent).



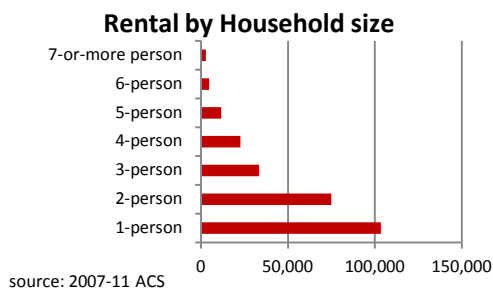
- Home ownership increased with larger households (up to 4-person households, 73 percent own)
- Households with 2 or more residents were more likely to own (about 66 percent).



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



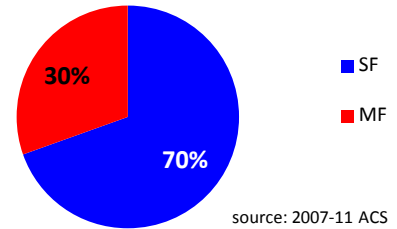
- Majority of renters were 1 or 2 person households.
- 75,000 households with 3 or more persons rented.



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

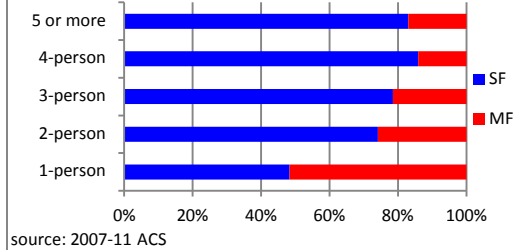
- 70 percent of households occupied a form of single family housing.
- Single family units are defined in these charts as: 1-unit detached or attached, and / or mobile, manufactured home

Housing Type: SF & MF splits



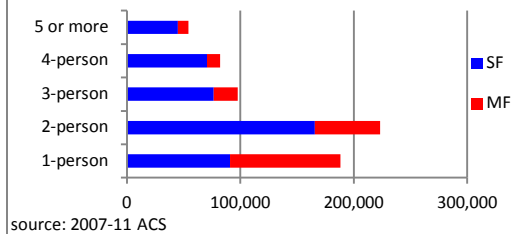
- Larger households were more likely to occupy single family housing.
- About half of the 1-person households occupied single family housing.

Housing Type by Household Size



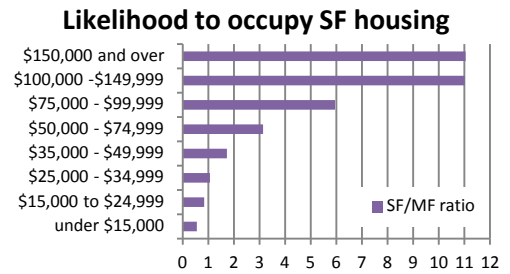
- This graph shows the relationship between household size and housing type for the 3-county area.

Housing Type & Household Size



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

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



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

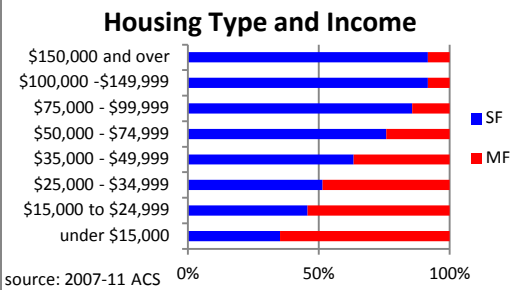


Table 2: 2010 Census, comparing household size, income, and age against demand by structure type and tenure relationships

RESIDENTIAL HOUSING BY SOCIOECONOMIC CLASS (source: Census 2010)											
geography: Tri-county (Clackamas, Multnomah, Washington)										6/11/14	
time span: 2010 data											
Demand for:											
		Household by size		SF	MF	%SF	%MF	own	rent	%own	%rent
1 person	h1	29%	189,322	95,722	93,600	51%	49%	87,178	102,144	46%	54%
2 persons	h2	35%	225,656	169,783	55,872	75%	25%	153,365	72,291	68%	32%
3 persons	h3	15%	98,293	73,814	24,479	75%	25%	61,828	36,465	63%	37%
4 persons	h4	12%	77,962	64,847	13,115	83%	17%	54,713	23,249	70%	30%
5 or more persons	h5	8%	54,173	44,532	9,640	82%	18%	35,263	18,910	65%	35%
		100%	645,405	448,698	196,707	70%	30%	392,346	253,059	61%	39%
Demand for:											
		HH by income bracket		SF	MF	%SF	%MF	own	rent	%own	%rent
under \$15,000	i1	13%	83,675	32,424	51,251	39%	61%	22,977	60,699	27%	73%
\$15,000 to \$24,999	i2	11%	70,983	35,184	35,798	50%	50%	27,055	43,928	38%	62%
\$25,000 - \$34,999	i3	11%	70,453	38,706	31,747	55%	45%	31,374	39,079	45%	55%
\$35,000 - \$49,999	i4	15%	97,762	64,976	32,786	66%	34%	54,569	43,193	56%	44%
\$50,000 - \$74,999	i5	19%	122,254	95,367	26,887	78%	22%	83,000	39,253	68%	32%
\$75,000 - \$99,999	i6	12%	78,025	68,211	9,813	87%	13%	62,688	15,337	80%	20%
\$100,000 - \$149,999	i7	12%	75,719	70,307	5,412	93%	7%	67,646	8,074	89%	11%
\$150,000 and over	i8	7%	46,534	43,522	3,011	94%	6%	43,037	3,496	92%	8%
		100%	645,405	448,698	196,707	70%	30%	392,346	253,059	61%	39%
Demand for:											
		HH by householder age		SF	MF	%SF	%MF	own	rent	%own	%rent
under 25 years old	a1	5%	33,679	23,491	10,187	70%	30%	19,961	13,718	59%	41%
25 to 44 years old	a2	34%	217,562	151,567	65,995	70%	30%	131,488	86,074	60%	40%
45 to 54 years old	a3	21%	135,907	94,629	41,278	70%	30%	83,335	52,572	61%	39%
55 to 64 years old	a4	19%	121,777	84,411	37,366	69%	31%	74,303	47,474	61%	39%
65 years or older	a5	21%	136,480	94,599	41,881	69%	31%	83,258	53,222	61%	39%
		100%	645,405	448,698	196,707	70%	30%	392,346	253,059	61%	39%

source: U.S. Census and Metro Research Center

SF = 1 unit attached or detached, mfg. home

MF = multifamily unit, apartment or condo

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

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

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

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

UGR MetroScope scenario results

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

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

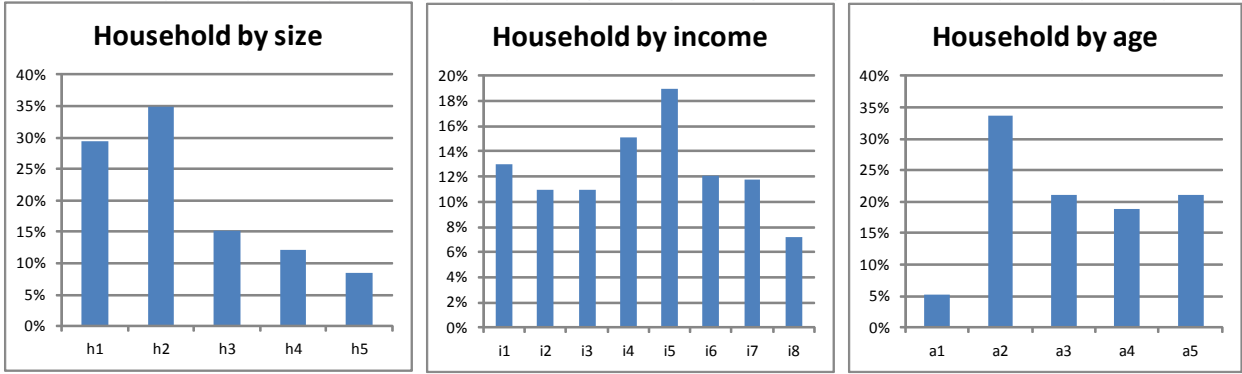


Figure 3: 2010 Household characteristics

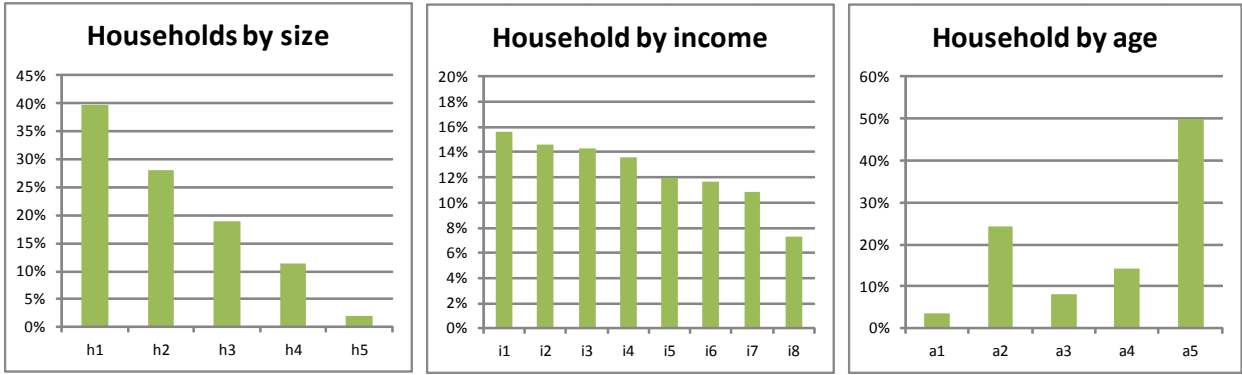


Figure 4: Change in Household characteristics (2015 to 2035) – baseline medium growth scenario

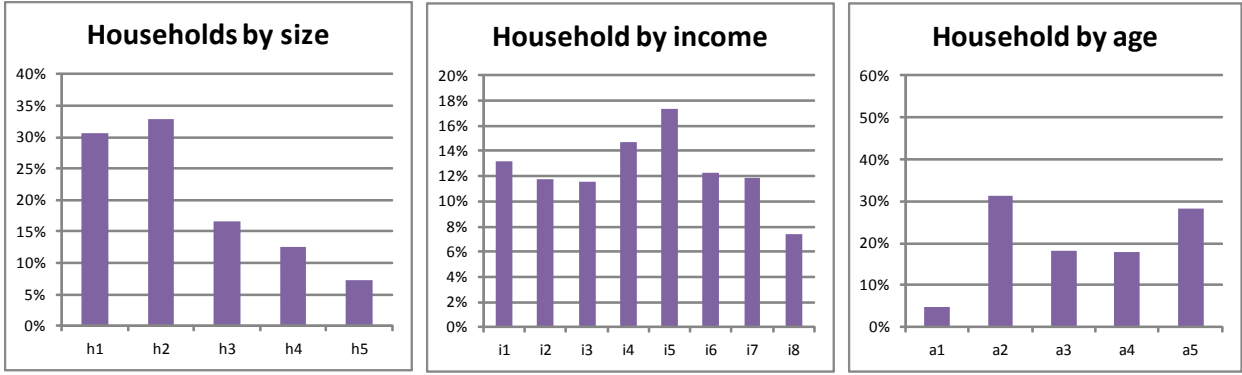


Figure 5: 2035 Household characteristics – baseline medium growth scenario

According to the baseline medium growth forecast scenario:

- 68 percent of new households are expected to be 1 or 2 person. Figure 4 shows proportionally larger increases in 1 and 2 person households. In 2010, 64% of the households in the three-county area included one or two people.
- Average household size in the Tri-county is expected to fall from 2.54 (in 2010) to 2.48 (in 2035); marginal household size projected to be 2.30.

- Partly due to the increase in numbers of 1-person households, there will be a larger share of lower income households – making up 45% of net new households, see Figure 4 income brackets i1, i2, and i3 which are households with under \$35,000.
- The lower to middle income category (i4 and i5 - \$35,000 to \$74,999) loses share between 2015 and 2035, particularly indicative of the on-going economic pressures on middle-income households throughout the United States, Figure 4.
- Largest increase in number of households by age will be seen in the retired cohort (65 years and older), Figure 4.

Step 4: translate the household forecast into housing demand by type and tenure

Table 3 summarizes anticipated demand for housing based on MetroScope Scen. #1462 results¹¹ (the baseline medium scenario). The tables and figures shown derive from the baseline medium growth scenario. The values in the HIA matrix shown in Table 3 will necessarily show a shift in housing demand between tenure and structure type between the low, medium and high growth scenarios. The resulting shift in housing demand preferences in the Metro UGB for 2015 to 2035 is in part due to the obvious difference in population growth rates in the low, medium and high. The change is not only in demand, but the response in the consumer supply for housing must shift between the low to medium to high scenarios to accommodate increased housing demand outlook.

Several factors lead to uneven distributions of housing and types of housing around the region:

- The buildable land inventory is unevenly distributed around the region and allows different types of housing in different locations
- Transportation accessibility varies (street networks differ)
- Real estate values and neighborhood quality measures are not the same across the region
- Redevelopment and public investments are more prevalent in some cities than others.

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

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

RESIDENTIAL FORECAST PROJECTIONS BY SOCIOECONOMIC CLASS (MetroScope basis)											
geography: Metro UGB										8/29/14	
time span: 2015 to 2035											
Scen #1462 (medium)											
Households by size											
				Demand for:							
				SF	MF	%SF	%MF	own	rent	%own	%rent
1 person	h1	40%	78,593	13,077	65,516	17%	83%	38,419	40,174	49%	51%
2 persons	h2	28%	55,315	20,398	34,916	37%	63%	40,716	14,599	74%	26%
3 persons	h3	19%	37,126	22,855	14,270	62%	38%	27,166	9,960	73%	27%
4 persons	h4	11%	22,482	17,123	5,359	76%	24%	17,867	4,615	79%	21%
5 or more persons	h5	2%	3,884	3,471	413	89%	11%	3,756	128	97%	3%
		100%	197,400	76,926	120,474	39%	61%	127,923	69,477	65%	35%
HH by income bracket											
				Demand for:							
				SF	MF	%SF	%MF	own	rent	%own	%rent
under \$15,000	i1	16%	30,797	5,423	25,374	18%	82%	10,301	20,496	33%	67%
\$15,000 to \$24,999	i2	15%	28,916	8,435	20,481	29%	71%	14,947	13,969	52%	48%
\$25,000 - \$34,999	i3	14%	28,297	9,288	19,009	33%	67%	16,300	11,997	58%	42%
\$35,000 - \$49,999	i4	14%	26,887	9,444	17,443	35%	65%	18,151	8,736	68%	32%
\$50,000 - \$74,999	i5	12%	23,696	9,045	14,650	38%	62%	18,209	5,487	77%	23%
\$75,000 - \$99,999	i6	12%	22,975	12,067	10,909	53%	47%	17,798	5,178	77%	23%
\$100,000 - \$149,999	i7	11%	21,371	12,486	8,885	58%	42%	18,168	3,203	85%	15%
\$150,000 and over	i8	7%	14,461	10,738	3,723	74%	26%	14,050	411	97%	3%
		100%	197,400	76,926	120,474	39%	61%	127,923	69,477	65%	35%
HH by householder age											
				Demand for:							
				SF	MF	%SF	%MF	own	rent	%own	%rent
under 25 years old	a1	4%	7,159	256	6,903	4%	96%	616	6,543	9%	91%
25 to 44 years old	a2	24%	48,049	11,876	36,173	25%	75%	20,714	27,334	43%	57%
45 to 54 years old	a3	8%	15,827	3,206	12,621	20%	80%	10,382	5,445	66%	34%
55 to 64 years old	a4	14%	27,901	10,635	17,266	38%	62%	20,716	7,185	74%	26%
65 years or older	a5	50%	98,464	50,953	47,511	52%	48%	75,495	22,968	77%	23%
		100%	197,400	76,926	120,474	39%	61%	127,923	69,477	65%	35%

source: Metro Research Center

SF = 1 unit attached or detached, mobile home

MF = multifamily unit, apartment or condo

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

Table 4: Baseline - medium growth scenario

Residential Demand by Value Class										
5/19/2014										
MetroScope UGR Scenario #1462 Results										
2015										
UGB 2015										
Value Class	Total Residential Demand (units)				Residential Prices		Est. Monthly Rent			
	Owner Single Family	Owner Multi-family	Renter Single Family	Renter Multi-family	Owner Single Family	Owner Multi-family	Rental Single Family	Rental Multi-family		
1	32,134	3,981	2,304	17,174	\$ 85,062	\$ 82,228	\$ 594	\$ 341		
2	34,995	2,971	9,215	32,778	120,071	116,423	790	384		
3	41,831	3,116	6,715	28,651	146,220	146,930	969	449		
4	41,709	1,910	8,045	26,407	174,310	166,718	1,136	502		
5	45,403	2,308	5,827	21,694	211,744	203,193	1,314	570		
6	46,250	1,771	9,891	26,187	240,862	228,855	1,505	647		
7	43,644	1,112	10,938	24,263	308,826	278,718	1,814	763		
8	45,834	1,104	14,451	18,389	485,427	434,509	3,168	1,167		
	331,800	18,273	67,386	195,543						
	54%	3%	11%	32%						
2035										
UGB 2035										
Value Class	Total Residential Demand (units)				Residential Prices		Est. Monthly Rent			
	Owner Single Family	Owner Multi-family	Renter Single Family	Renter Multi-family	Owner Single Family	Owner Multi-family	Rental Single Family	Rental Multi-family		
1	36,699	14,726	2,454	27,487	\$ 126,987	\$ 105,755	\$ 764	\$ 467		
2	44,988	15,488	8,464	40,720	182,219	162,159	956	522		
3	46,189	11,101	5,430	36,715	225,363	210,320	1,113	591		
4	55,806	10,406	7,340	37,894	268,789	245,241	1,338	678		
5	53,118	8,079	7,735	34,186	321,264	297,240	1,587	774		
6	59,070	6,749	9,220	32,249	368,411	344,918	1,892	895		
7	53,702	3,203	10,059	29,589	454,937	429,537	2,309	1,065		
8	59,853	3,940	16,393	31,048	734,872	699,781	4,091	1,636		
	409,425	73,692	67,095	269,888						
	50%	9%	8%	33%						

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

The MetroScope scenario model uses 400 types of households¹² 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 (described as “value class” in some tables in this report). The value classes roughly correspond to income bracket, but are not precise because the classes also consider the impact that household size and age may have on residential preferences. These eight value classes thus correspond to household types and are ranked roughly commensurate with income generally increasing from value class one to value class eight. (see Table 4)

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

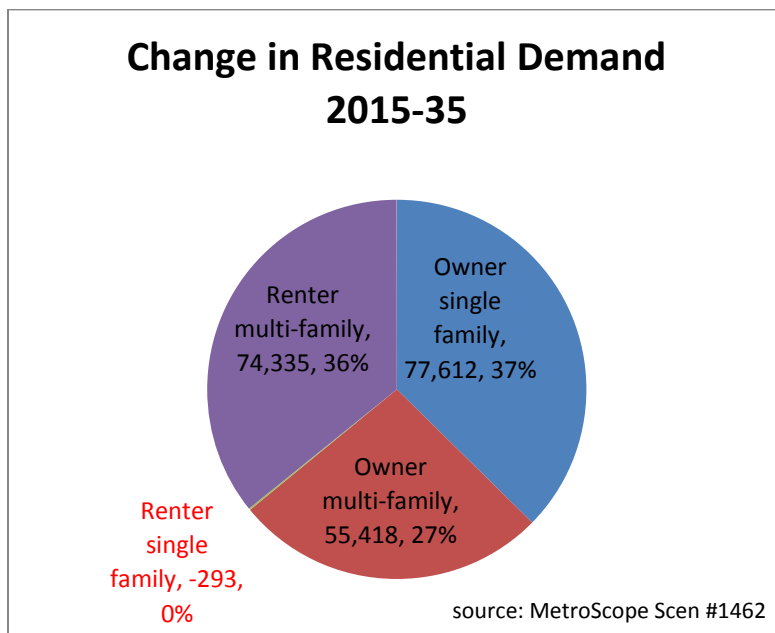


Figure 6: change in residential demand by type and tenure in the Metro UGB (2015-2035)

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

¹² Household refers to the residents, not the residence. Although when we forecast which households demand which type of housing and tenure, the unit of measure switches to housing units. The difference between households and housing units is defined by an occupancy factor.

- There is little change expected in the renter single family market between 2015 and 2035 as evidenced in the 0 percent change shown in Figure 6.

Residential buildable land inventory capacity

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

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

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

Table 5: 2014 Buildable Land Inventory by Regionalized Zone Class Designations

Current Dwelling Unit Capacity (as of September 2014)			
	Redevelopment	Vacant	Total
SFR1	595	1,718	2,313
SFR2	636	1,938	2,574
SFR3	4,158	4,984	9,142
SFR4	1,096	1,577	2,673
SFR5	11,183	8,904	20,087
SFR6	11,183	6,046	17,229
SFR7	12,632	11,079	23,711
SFR8	9,332	5,625	14,957
SFR9	4,373	1,724	6,097
SFR10	2,772	1,703	4,475
SFR11	0	0	0
SFR12	2,655	975	3,630
SFR13	0	0	0
SFR14	4,791	509	5,300
SFR15	4,704	1,131	5,835
SFR16	0	0	0
MFR1	3,010	1,485	4,495
MFR2	8,234	2,314	10,548
MFR3	9,915	4,569	14,484
MFR4	2,802	584	3,386
MFR5	31,873	2,140	34,013
MFR6	0	0	0
MFR7	27,833	2,383	30,216
MUR1	2,458	2,329	4,787
MUR2	479	985	1,464
MUR3	1,583	1,874	3,457
MUR4	3,170	704	3,874
MUR5	4,164	2,451	6,615
MUR6	2,838	2,886	5,724
MUR7	2,871	978	3,849
MUR8	3,446	663	4,109
MUR9	94,834	4,898	99,732
MUR10	33,618	8,934	42,552
UGB total	303,238	88,090	391,328
	Redev	Vacant	Total
SFR	70,110	47,913	118,023
MFR	83,667	13,475	97,142
MUR	149,461	26,702	176,163
	303,238	88,090	391,328

Glossary of Regionalized Zone Class Designations

Single Family Residential Zone Classes (SFR)

SFR# where # = specified units per net acre

Multi-family Residential Zone Classes (MFR):

MFR1: 4 to 15 units per net acre

MFR2: 16 to 20

MFR3: 21 to 25

MFR4: 26 to 30

MFR5: 31 to 35

MFR6: 36 to 45

MFR7: 46 to 85

Mixed Use Residential Zone Classes (MUR):

MUR1: 4 to 15 units per net acre

MUR2: 16 to 20

MUR3: 21 to 25

MUR4: 26 to 30

MUR5: 31 to 35

MUR6: 36 to 45

MUR7: 46 to 65

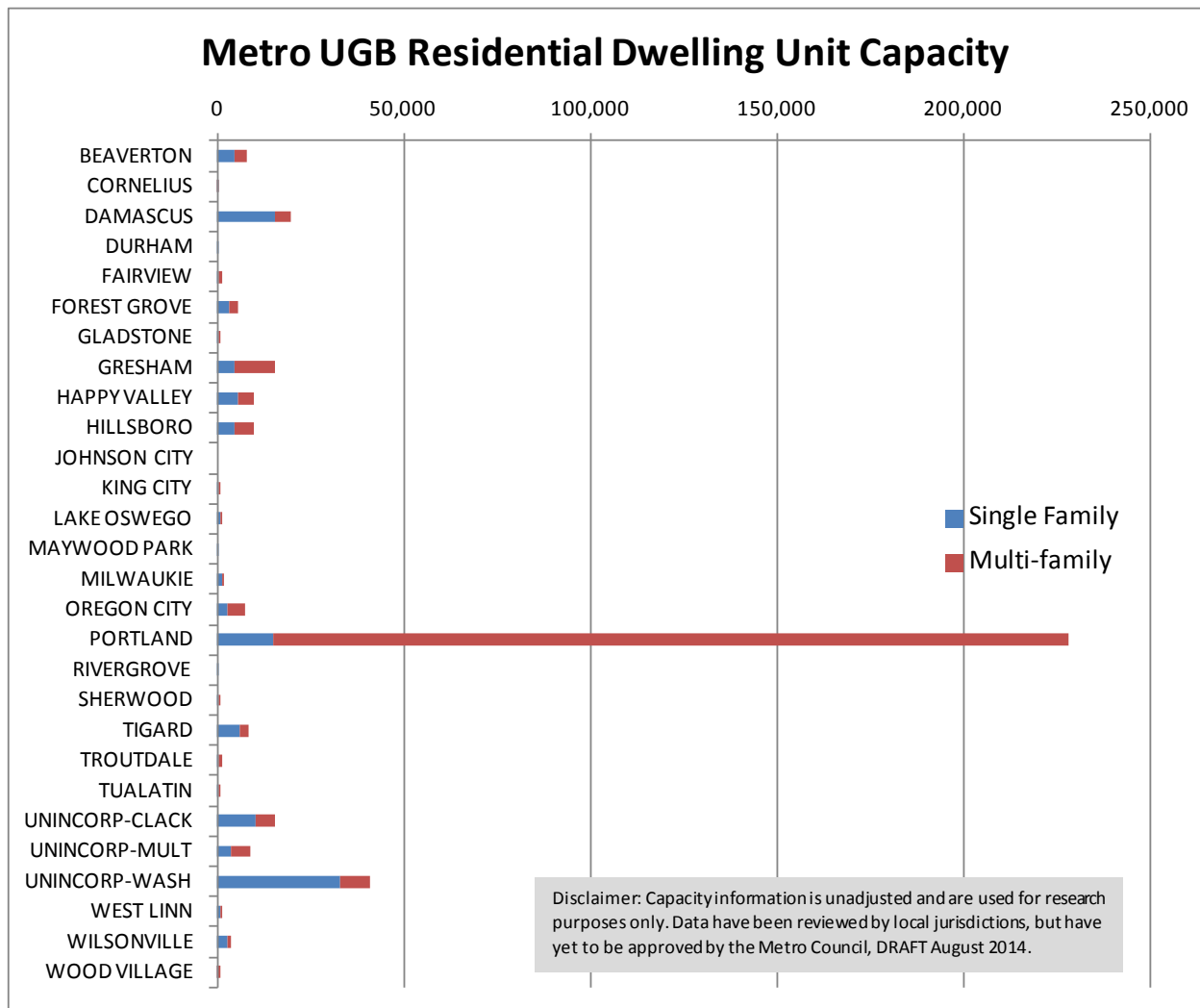
MUR8: 66 to 100

MUR9: 101 to 125

MUR10: 126 to 700

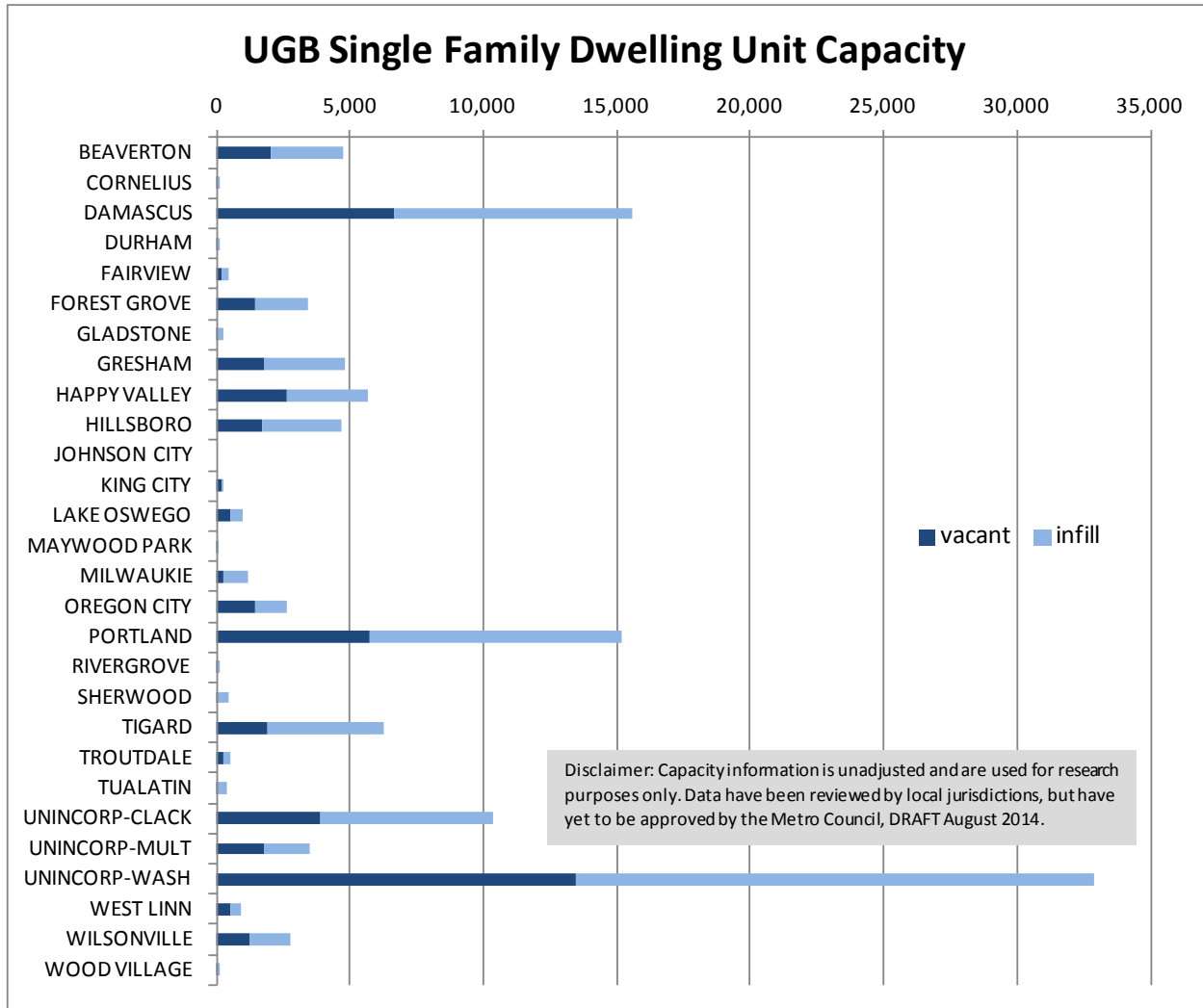
Table 5 enumerates the distribution of residential capacity by generalized regional zone classes in the Metro UGB. The majority of the region’s potentially developable supply of housing is found in single-family infill (18 percent) and multifamily redevelopment (60 percent). For reasons described later in this report, not all the infill and redevelopment inventory is counted in this UGR analysis. The rest is vacant capacity, which is all counted in the UGR analysis. Figure 7 illustrates the buildable land inventory capacity by jurisdiction for single family and multifamily housing. Figure 8 and Figure 9, respectively, illustrate the single-family and multifamily capacity broken out by infill and vacant for each local jurisdiction.

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



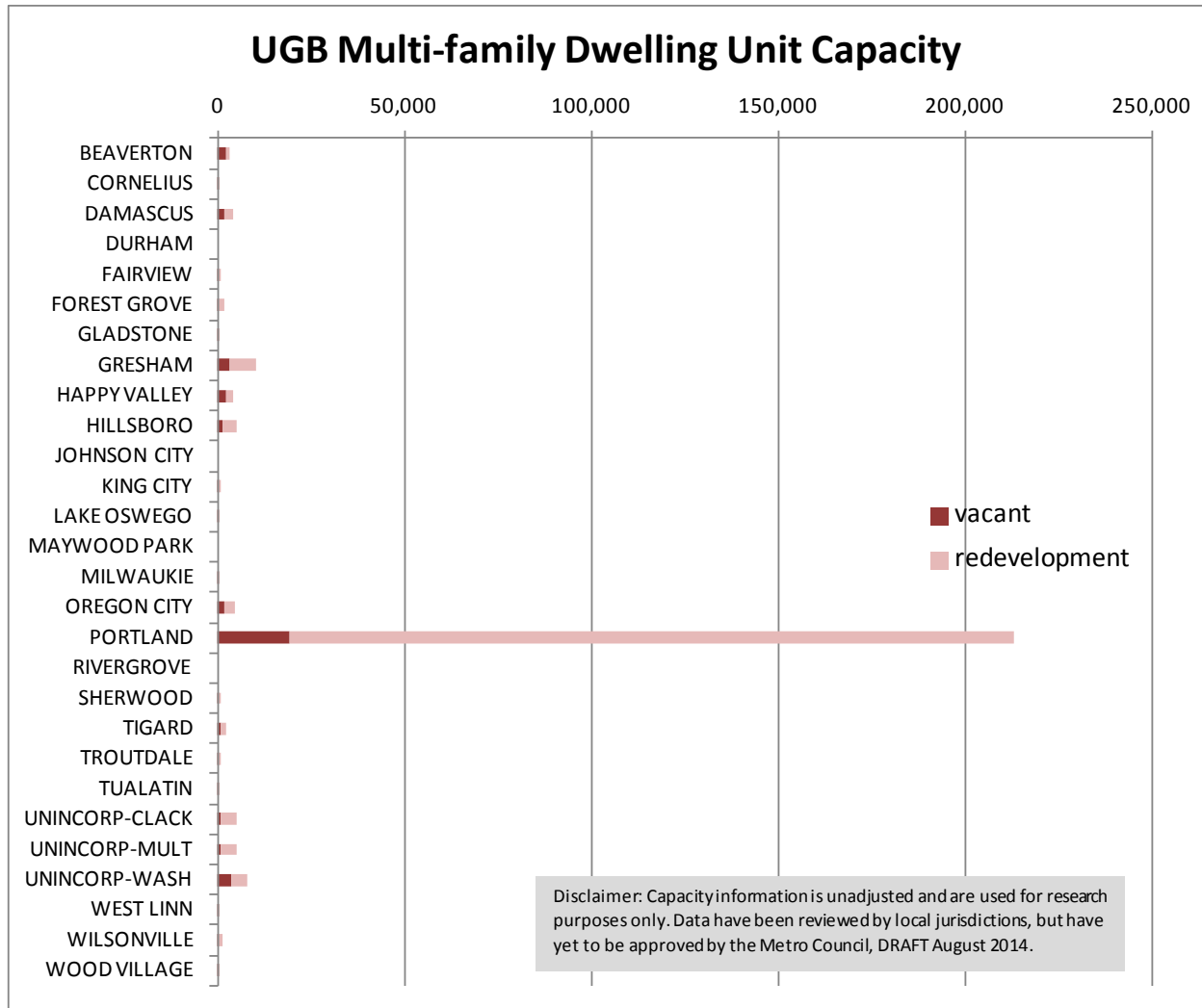
The figures include all vacant capacity and all prospective single-family infill and multi-family redevelopment capacity. As noted elsewhere, all vacant capacity are used in the UGR net need computation, while about half (less than) of the prospective multi-family redevelopment capacity is counted in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

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



Note: axis dimensions changed

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



Note: axis dimensions changed

Market feasibility of the buildable land inventory

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

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

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

The list represents a few items that could foretell difficulty in absorbing the vacant, infill and redevelopment capacity identified in the buildable land inventory. Land assembly challenges suggest that a relative scarcity of larger to mid-size parcels may be a barrier to development at expected densities in the future. Moreover, a collection of smaller tax lots (and not necessarily contiguous) is not necessarily the same as one larger tax lot(s) because of economies of scale. In economic terms, economies of scale accrue cost advantages to firms or organizations due to size, output or scale of operation, with cost per unit of output generally decreasing with increasing scale and efficiency because fixed costs can be spread out over more housing units. In terms of residential development, smaller tax lots and parcels may not “pencil out” due to higher cost of construction per housing unit because of lower operational efficiencies because of small area, infill lots or physical encumbrances around redevelopment near existing improvements. However, an August 2012 study of parcelization by ECONorthwest for Metro found that “of the many obstacles to development, parcelization is probably not the most important in most cases.”

Infrastructure deficiencies and financial feasibility concerns are immediate barriers to future development of “greenfields”, but may also be an impediment to redevelopment and infill. If the existing infrastructure (e.g., water, sewer, roads, gas lines, etc.) cannot adequately provide the necessary level of service to accommodate increased density levels, this may be a barrier. In undeveloped new urban areas, if there are inadequate roads, utilities, and other infrastructure, any prospective notions of future capacity are unrealizable.

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

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

development to occur. Challenges to city annexation thus may make governance and provision of urban services prohibitive to future land development at expected densities.

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

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

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

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

Growth scenario alternatives considered:

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

- MF = 4,283 average per year
- UGR (MetroScope scenario) average annual absorption
- Census (HIA based) average annual absorption

Hypothetical absorption rate findings are shown in Table 6.6.

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

Table 6: hypothetical absorption scenarios for residential buildable land inventory inside the current UGB

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

Step 5: Complete a gap analysis of projected housing need by type compared to the buildable land inventory

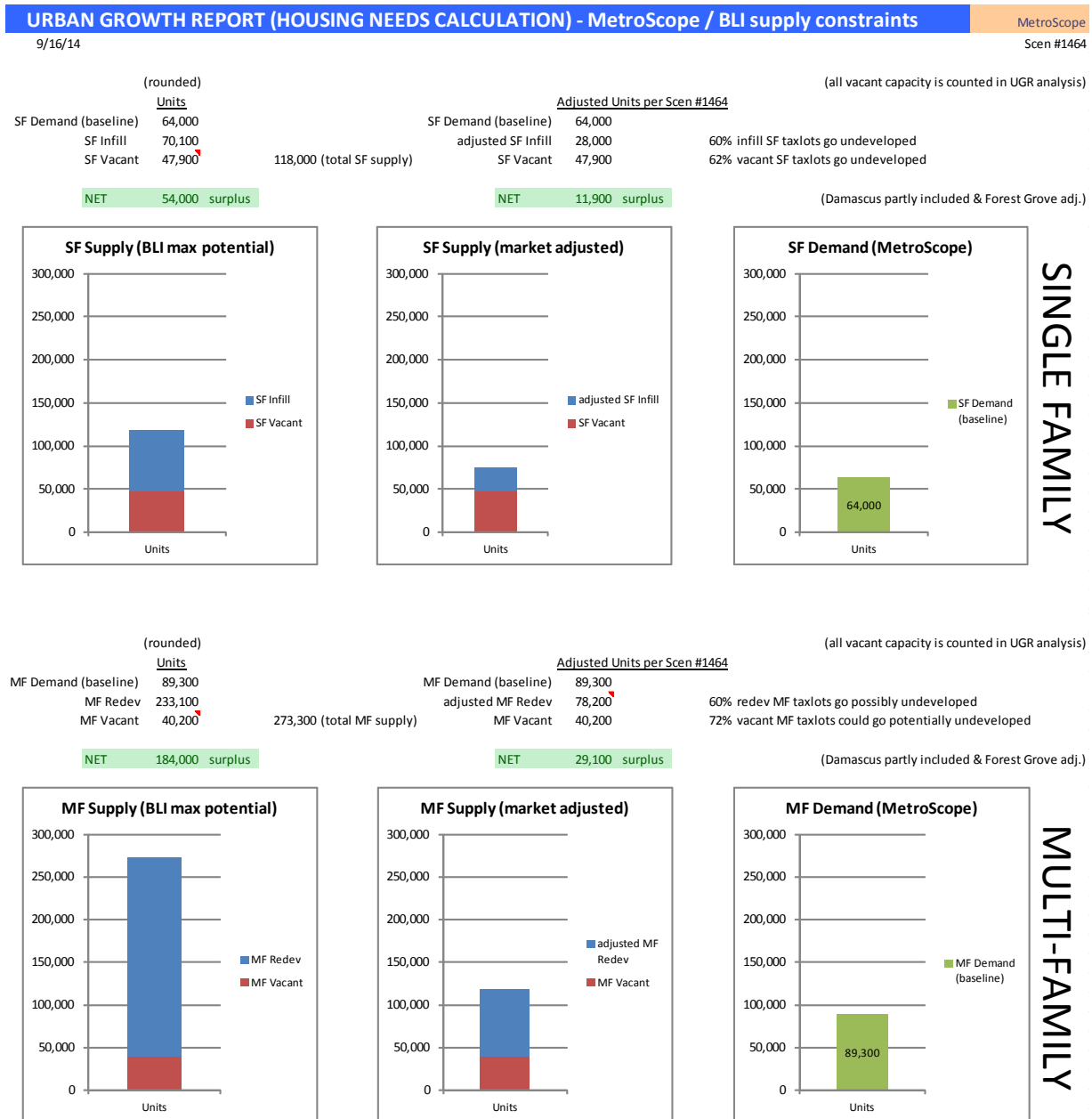
For the following assessments, modeled absorption data (MetroScope scenario) are used (not Census or historic data) to understand economic interactions between the household demand forecast and the buildable land inventory. In Figures 10, 11 and 12, “adjusted” supply refers to the amount of the

buildable land inventory that gets absorbed in the modeled growth scenario. It is this amount that is being counted as capacity in the Urban Growth Report. Different demand assumptions (from the range forecast) result in different amounts of redevelopment and infill supply in each scenario.

Low growth scenario summary of housing capacity needs

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

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



Baseline (medium growth scenario) summary of housing capacity needs

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

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

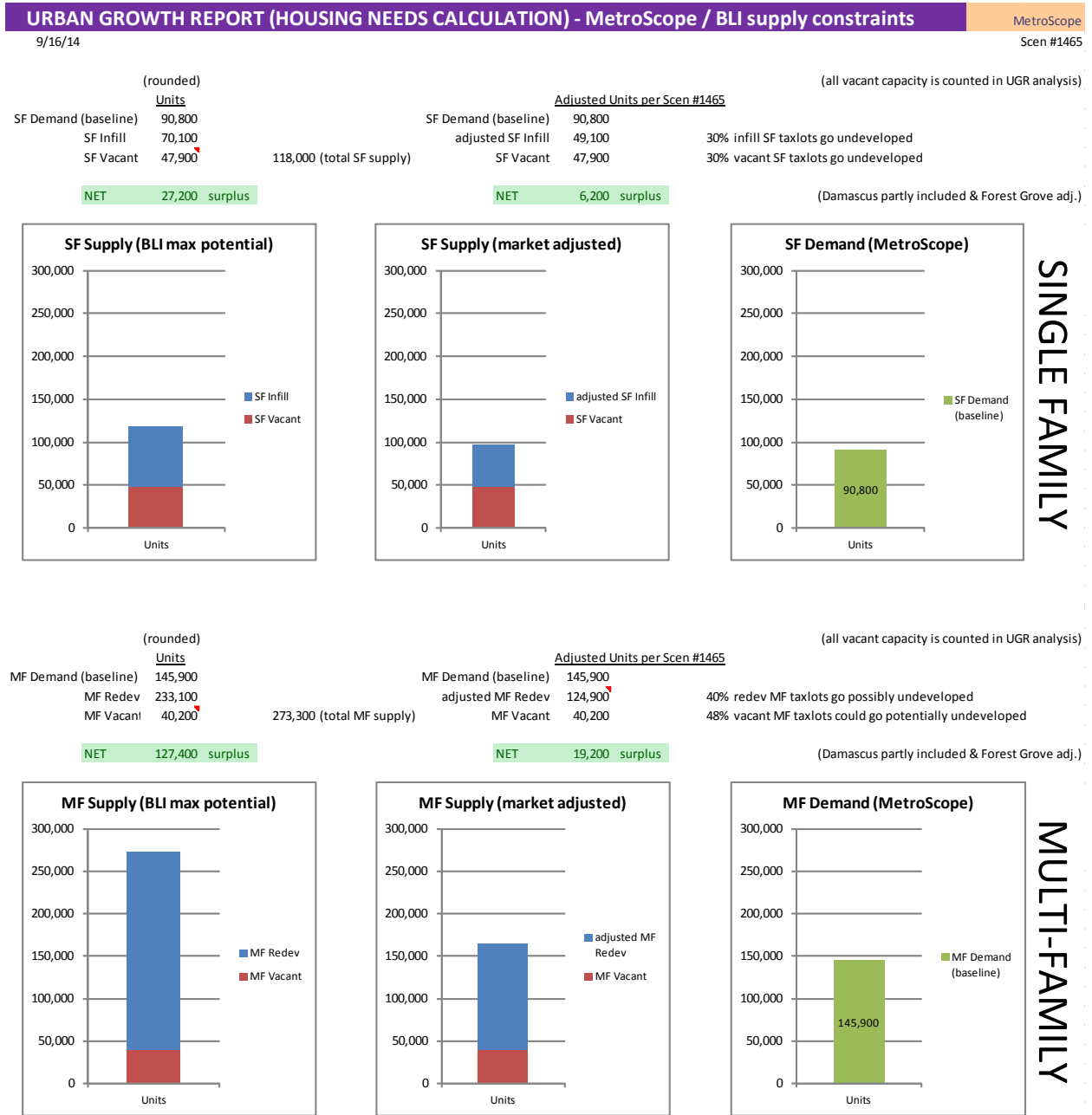


Note that final numbers for the baseline forecast are included as a supplement to this report and vary slightly from the numbers in Figure 11 since the final numbers incorporate assumptions about a “Damascus disincorporation” scenario.

High growth scenario summary of housing capacity needs

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

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



Additional analysis details from MetroScope scenarios

Three (3) MetroScope-Urban Growth Report Scenarios were prepared for the 2014 Urban Growth Report. The 3 scenarios included were derived from the “high”, “medium or baseline”, and “low” growth population and employment projections¹³. The following section provides additional details about those scenarios. Appendix 11 describes in more detail the inputs used in creating each of these scenarios.

¹³ Detailed specifications for the population and employment growth forecast may be found in Appendix 1a.

Average density by housing type

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

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

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

MetroScope UGR LOW -- Scenario #1464

MetroScope UGR MEDIUM -- Scenario #1462

(MetroScope Supply-side module)

MetroScope UGR HIGH -- Scenario #1465

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

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

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

Regional residential demand summary

Table 7 summarizes scenario details for household, housing, and location choice for residents in the Metro UGB (i.e., forward looking capture rate). The MSA forecast is the starting point because the time-series data (i.e., employment and population) is better for counties than for estimates of the data history of UGB's. Moreover, the best economic / employment data arrive to us from federal and state employment sources as MSA. Historical data with sufficient and necessary detail are not available for the Metro UGB; also, the UGB is periodically amended while counties rarely change boundaries. Having static boundaries means that measurement errors are minimized and therefore economic and demographic forecasts are more reliable (as in the case of counties or MSA's that are grouped together with the same counties).

Table 7: housing needs forecast details

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

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

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

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

Some of these scenario findings like location choice materialize in the capture rate being different for each scenario alternative. The capture rate (as illustrated in Table 7) doesn't vary across scenarios very much, but compared to historical experience they are somewhat higher than the 63 percent calculated in prior analyses. The higher capture rate projected under the MetroScope scenarios is due to many factors, such as the dwindling residential housing supply going forward in neighbor cities and rural areas adjacent to Metro UGB. Clark County's growth capacity, with its urban growth area, has fewer surpluses in the future as compared to the past and, like the Metro region, faces challenges for providing transportation infrastructure to support urbanization. Likewise, as is currently being observed, existing urban areas in the Metro UGB continue to be a draw for growth.

Modeled housing demand

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

Economic factors, in particular household income, play a function in determining tenure and the choice between single-family or multifamily development forms. The regional economic forecast predicts proportionally fewer middle-income bracket households and families, meaning a disproportionate rise in the number of lower income households. This results in a slight increase in renter multi-family (RMF) demand as seen in Table 8.

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

Table 8: MetroScope Scenario Housing Need Alternatives – Household Demand by Tenure and Structure Type

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

Census definitions for structure types:

Single family (SF) = 1-unit detached, 1-unit attached, mobile home, and boat, RV, van, etc.

Multi-family (MF) = 2 units or more

Table 8 summarizes the shift between projected household characteristics (referring to HIA distribution) and their market-clearing demand for housing by type and tenure. Demand shifts materially between the 2010 Census and the future scenarios. But between scenarios, the variations are not very pronounced.

The forecast scenarios show a major shift in the type of housing under demand, from single family (SF) to multi-family (MF). This shift is consistent with adopted state, regional, and local policies. While some have questioned the viability of this shift, to produce new single-family housing shares consistent with historic trends would also require a major shift in the region’s ability to urbanize UGB expansion areas. Most past UGB expansion areas have remained undeveloped or have taken over a decade to begin to produce housing. Over the last 16 years, UGB expansion areas have produced a total of 6,500 housing units compared to the 105,000 housing units produced inside the original 1979 UGB during the same time period.

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

Over the forecast period (2015 to 2035), the growth forecast alternatives derived from MetroScope clearly signal an even greater shift to MF. We surmise that –at least in part – the shrinking share of SF demand may owe to a shift in socio-economic patterns prompted by (1) a decline owing to smaller average household size – see Table 9, which shows 68% of the new households having one or two people, (2) a population that is increasingly getting older (rising median population age) – see Table 10,

and a proportionate rise in lower income bracket households, which is, in part, explained by smaller household sizes.

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

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

Other researchers have pointed to a future shift in demand towards multifamily housing in urban locations, largely because of demographic shifts. For instance, the Federal Reserve Bank of Kansas City (2013)¹⁴ notes that:

“...over the intermediate and longer term, demographic considerations are likely to dominate. In particular, the slowing of U.S. population growth will put significant downward pressure on both single-family and multifamily construction. The aging of the U.S. population will put further downward pressure on single-family construction, but offsetting upward pressure on multifamily construction... Over the intermediate and longer term, even optimistic assumptions project a relatively moderate peak level of single-family construction, which will be followed by a large contraction for many years. Conversely, even pessimistic assumptions project a relatively high peak level of multifamily construction, which will be followed by a decline to a still-high level of construction... The shift from single-family to multifamily housing also may cause a geographic shift from suburban to city living... Households, firms, and governments that correctly anticipate these changes are likely to especially benefit.”

¹⁴ (Rappaport, Jordan, 2013)

Table 9: Baseline Forecast illustration of households by size

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

Table 10: Baseline Forecast illustration of households by householder age

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

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

Urban renewal (residential reinvestment) capacity and absorption

(source: MetroScope Scen. #1462)

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

these locations in the first place. Modeling the economic impact of these investment requires estimates for 1) the number of subsidized units (i.e., capacity) and 2) an investment amount.

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

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

Figure 14 and Table 11 summarize the model's incentive assumptions as well as modeled absorption of the incentivized units through 2035. As one can observe, the estimated total number of units receiving a form of residential reinvestment incentive is just under 88,000 dwelling units (or 22% of total capacity estimated for the Metro UGB). Overall incentivized housing unit absorption is about 80% and with about 29% of single family (SF) units remaining and 20% of incentivized multi-family units undeveloped by year 2035 . Generally, incentivized units will absorb more quickly than other residential capacity.

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

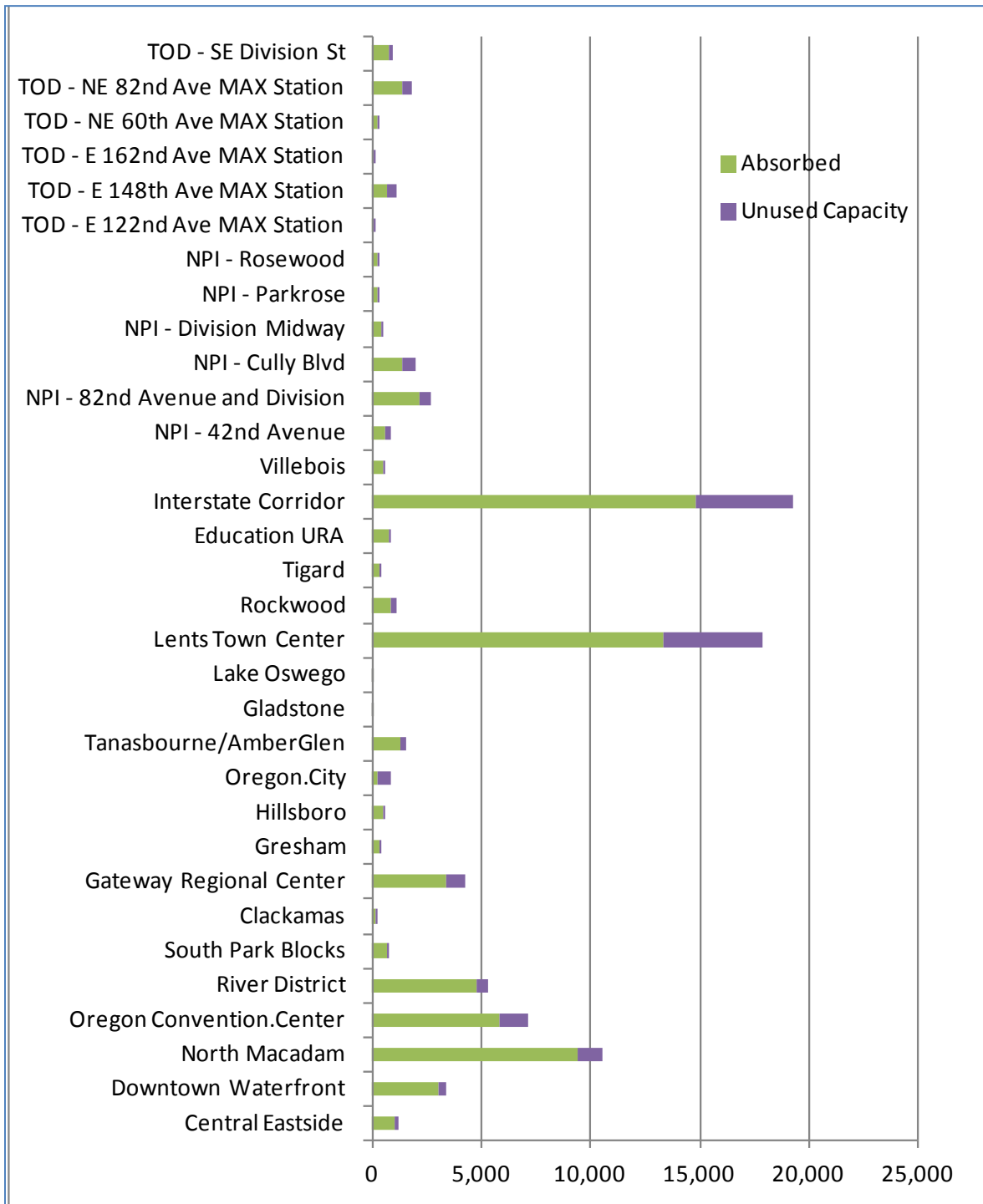


Table 11: Urban Renewal Capacity and Absorption by the Numbers for each location

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

MetroScope residential absorption projections by Jurisdiction¹⁵

Tables 12, 13, and 14 summarize how much of the prospective residential capacity is absorbed between 2015 and 2035, according to each MetroScope growth scenario¹⁶. These tables are provided for additional information, but the Metro Council’s growth management decision is a regional decision. To varying degrees, specific jurisdictions will see different levels of growth than forecast.

The supply of prospective residential units is included as a reference against absorption estimates. For modeling purposes, we consider the inventory to approximate 40+ years of residential supply if all

¹⁵ Excel files supporting this appendix: MARIO14.xlsx, UGR-HNA 2014 model (LOW).xlsx, UGR-HNA 2014 model (MEDIUM).xlsx, UGR-HNA 2014 model (HIGH).xlsx

¹⁶ Directly tabulated MetroScope data will differ by thousands of dwelling units because of rounding errors innate to modeling in a partial general equilibrium model (like MetroScope) and vacancy rate assumptions applied in the UGR but not in a MetroScope scenario.

vacant and redevelopment/infill capacity is absorbed. Included in each table is the amount of residential absorption by jurisdiction and by structure type.

Highlights of the baseline medium growth residential capacity consumption scenario:

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

Observations on projected single-family development:

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

Observations on projected multi-family development:

- The 2014 BLI estimates nearly 273,300 multi-family (MF) units of inventory potentially available if demand were sufficient to absorb all of this MF redevelopment supply.
- However, not all the redevelopment supply is counted in the UGR because redevelopment doesn't happen unless required by sufficient market demand to induce it to happen.
- From 2015 to 2035, the number of MF units absorbed is expected to be about 142,000 units based on assumptions folded into the baseline medium scenario (#1462).
- As the central city of the region, multi-family development in the city of Portland (113,500 MF units absorbed) far outpaces any individual suburban city and exceeds the efforts of all other cities combined (18,400 units). In order for Portland to achieve the baseline expectations in MF absorption by 2035, the city will have to be successful in redeveloping at higher densities than what will be torn down. Portland will have to absorb about half of its estimated redevelopment capacity from its recognized potential BLI (113,500 used out of 213,200 units). Two possible alternatives to this scenario are that other cities in the region will see more housing growth than forecast (inside the existing urban growth boundary) or that the region as a whole will see less growth than forecast.
- In general, cities near the suburban fringes of the Metro UGB find a majority of their prospective multi-family dwelling capacity going unused, for example, Damascus (96%), Happy Valley (87%),

Oregon City (83%), Wilsonville (63%), Gresham (71%), uninc. Multnomah County (98%),
Cornelius (83%), Forest Grove (78%), Sherwood (61%), and uninc. Washington County (61%).

Table 12 (note that this table is provided for context, but has not been updated to reflect revised assumptions about Damascus)

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

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

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

Table 13 (note that this table is provided for context, but has not been updated to reflect revised assumptions about Damascus)

UGR MEDIUM Forecast

2014 Buildable Land Inventory (BLI) -- Residential Capacity

Geography Current UGB

Units DU (HH x 1.05)

Output Supply Side

Time Span 20 Years (2015-2025)

Metro Research Center DRAFT 8/19/2014

Scenario #1462

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

Table 14 (note that this table is provided for context, but has not been updated to reflect revised assumptions about Damascus)

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

Geography Current UGB

Units DU (HH x 1.05)

Output Supply Side

Time Span 20 Years (2015-2025)

Metro Research Center DRAFT 8/19/2014

Scenario #1465

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

October 2015 supplement using the “middle” or “baseline” point forecast

Introduction

This supplement is intended to serve as technical documentation for the final reconciliation of housing 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. Inclusion of the Damascus disincorporation scenario means that the numbers presented in this supplement differ slightly from baseline numbers presented elsewhere in this appendix. This supplement also seeks to respond to additional questions that have come up in the course of urban growth management discussions.

Summary of final housing needs analysis results

This final housing needs analysis finds that there is enough buildable land inside the UGB to accommodate the household growth expected to occur between 2015 and 235. This analysis finds a surplus of growth capacity for both multifamily and single-family housing.

2035 Point Forecast

The Metro Council has selected the baseline forecast series for its 2015 urban growth management decision. This is a “midpoint” or medium growth forecast scenario. By choosing a baseline series, the Metro Council is also opting into the model input assumptions and land development implications for the medium-growth land use scenarios (MetroScope scenario #1462¹⁷ and #1511¹⁸). Specifications assumed in the scenario alternatives are described in Appendix 11 of the Urban Growth Report (UGR) and additional information regarding scenario #1511 is discussed in Appendix 15. The scenarios provide data to aid in preparing this housing needs analysis.

¹⁷ Scenario #1462 is the medium (or baseline) forecast land use growth scenario.

¹⁸ 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 which lead to approximately 2,000 fewer households inside the Metro UGB.

Table 15: summary of final regional housing demand (2015 - 2035)

	MSA (7 county)	Metro UGB	Notes
2015 Population Estimate	2,342,500		2.61 persons per HH
2035 Population Forecast	2,937,900		2.45 persons per HH
2015 Household Estimate	898,700	613,000	68.2% share of MSA
2035 Household Forecast	1,185,800	820,100	69.2% share of MSA
2015 Housing Demand		655,500	6.9% vacancy rate
2035 Housing Demand		852,900	4.0% vacancy rate
UGB Housing Need (2015 to 2035)		197,400	72.1% UGB capture rate
<i>Source: Metro Baseline Regional Forecast, 2014 and MetroScope Scenario #1462</i>			
UGB Housing Need (2015 to 2035)		197,400	Scen. #1462
Less: reduced UGB capture from Damascus disincorporation		-2,000	Scen. #1511
FINAL UGB Housing Demand:		195,400	

A high-level summary of the residential need (i.e., housing demand), forecast assumptions and growth projections is listed in Table 15. From 2015 to 2035, the projected housing need estimated for the Metro UGB is 195,400 additional dwelling units. This is 2,000 fewer units than the 197,500 units described elsewhere in this appendix because this final result assumes disincorporation of the City of Damascus, which leads to approximately 2,000 fewer households inside the Metro UGB from 2015 to 2035. Full documentation of the Damascus disincorporation scenario is available in Appendix 15.

The MSA is expected to grow by another 600,000 (2,937,900 – 2,342,500) additional residents between 2015 and 2035 or about 30,000 people on average per year. The annual growth is about what has occurred on a regional basis since the late-1980’s, but on an annual percentage rate (APR) basis does represent a slower growth rate, which is due to the larger base population today versus 20 years ago. The MSA population forecast was prepared using a traditional cohort component approach in conjunction with Metro’s regional economic model. The APR for MSA population growth going forward is about 1.1% per year as compared to what has been historical growth of just under a 2% annual average. Full documentation of the forecast is available in UGR Appendix 1a.

Most of the MSA’s population growth is expected to settle in the Metro UGB. This analysis anticipates another 400,000 residents inside the Metro UGB between 2015 and 2035. The share of population residing inside the Metro UGB today is about 68.2% but is expected to edge up to 69.2% in 2035. This growth share is between 1 to 2 percentage points higher than estimates of the last decade, but is pretty consistent with the area’s past performance since adoption of the Metro UGB. The rate has varied year-

to-year due to the region's real estate and economic business cycles, but has stayed within a fairly narrow band of growth.

Vacancy rates are also going to vary over time due to cycles within the real estate market and economy. Overall, we generally anticipate the residential vacancy rate trend to be lower in the future because of land use policies that regulate land development, challenges with funding the infrastructure needed to serve new housing, as well as high market demand for existing housing in urban locations.

Regional population is translated into households based on demographic headship rates calculated from recent Census data. Headship rates are extrapolated forward in time from historic trends and a notion that there will be an eventual convergence with national trends. Household sizes nationwide have been declining for decades because of urbanization. The region's forecast reflects this national shift in demography. As a result, the average regional number of persons per household starts at 2.61 (in 2015) and trends lower until the regional average becomes 2.45 persons per household by year 2035. This ongoing shift in the population composition is incorporated into the trends exhibited by the regional housing demand forecast.

Incorporating the conclusions from the regional forecast, selection of a point in the range, including land use and nationwide demographic trend information, and the assumed disincorporation of Damascus, this all results in a projected housing demand for 195,400 additional dwelling units inside the Metro UGB during the planning period 2015 to 2035.

2015-35 HIA Forecast

In aggregate, the projected population growth for the Metro UGB translates to 207,100 net new households and a projected demand for 195,400 additional dwelling units during the next 20 years. An assumed drop in vacancy rate over the forecast period absorbs some of the needed housing demand. The remaining housing demand is expected to be met by additional residential construction on land already inside the UGB. But what type of construction? The housing need analysis in this report relates housing demand by type to the various numbers of households and household segmentation.

We forecast a willingness and ability to pay for housing for each household category and assign that willingness to 1 of 4 housing types, housing types being owner-single-family, owner-multifamily, renter-single-family, or renter-multifamily. There are many reasons why a household will choose one housing type over others. Census data certainly provide measurable evidence of market share and there is theoretical and empirical evidence on determinants of real estate preferences or latent market demand. Measureable factors include a household's socio-economic profile, the economy, government regulations, but one key factor unmeasured is *self-selection bias*. Tackling what all these factors mean in terms of housing choices and the market share of each type of housing requires sophisticated analytical tools, which is why we use statistical models to inform policy makers what kind of housing selections that households might be asked to make in the future.

The projection for housing demand is based primarily on the HIA profile. The profiles reflect characteristics of the household that identify willingness for a housing choice. The HIA profiles classify households into categories based on household size, households with children under 18 year of age, the income bracket of the household, and the age bracket of the householder. Census data and other measurements provide numerical evidence of a linkage between household HIA distributions and market share for housing types. Estimates and projections of these market shares for the Metro UGB and analysis for the UGR are summarized in Table 16.

Table 16: 2015 and 2035 residential market shares by type and tenure (Metro UGB)

	Owner SF	Owner MF	Renter SF	Renter MF	Single Family (SF)	Multi-family (MF)	Total
2015 (total housing)	54%	3%	11%	32%	65%	35%	100%
2035 (total housing)	50%	9%	8%	33%	58%	42%	100%
2015-35 (net new housing)	37%	27%	0%	36%	37%	63%	100%

Source: MetroScope Scenario #1462

There are 4 housing types considered in the UGR residential needs analysis. Tenure is defined by owning or renting. Single-family development forms include detached and attached housing forms which in our definition include duplexes, triplexes, and row/ townhouses with common walls. The definition we use for multifamily is generally any structure with more than 4 attached units. These housing types are tied into the household profiles (i.e., HIA) by household size, income bracket, and age bracket. The residential demand forecast is based on the HIA forecast which describes how many households are families or non-families, the income bracket of each household type, and the life-cycle age category.

Figure 15: 2015 and 2035 housing type demand by household characteristics (Metro UGB)

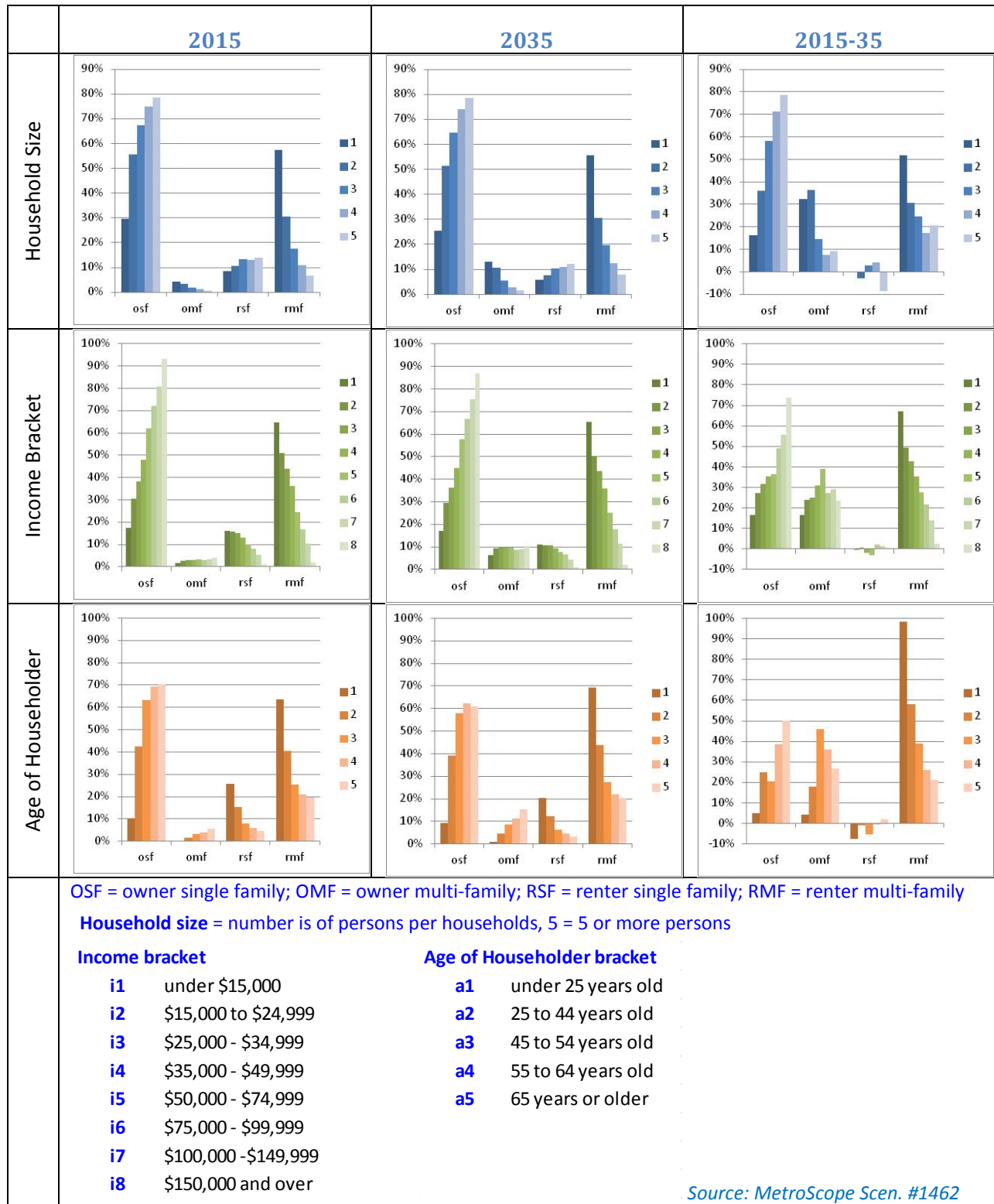


Figure 15 relates the choice of housing by household size for 2015 and 2035 and a predicted change over time. The first compares housing demand by size, followed by income bracket and then age.

As an example of what the charts mean. . .

- An increase in household size, increases market share and demand for single family housing and decreases it for multi-family
- An increase in household income, generally increases demand and market share for single family housing and decreases it for multi-family
- An increase in the age of the head of a householder, generally increases market share and demand for single family housing. A key exception is when householders reach ages past roughly 80-85 years, when we begin seeing the propensity for single family start tapering off.

In practice and in our analysis, the housing choice by HIA is more complex. It is the joint distribution or combination of size, income and age of the household that is factored into the housing choice forecast. We aren't able to easily show the joint combination of household size, income and age, but you can imagine that combinations of certain factors reinforce the market share for single (or multi-family) than just the single variable attribute. And in other profile combinations, the composite effects are a bit more confounding and it becomes in some cases a more even split between which development forms will have a greater attraction for the type of household.

Here's an example: a family of 4 of above average median family income and with a householder who is 40 years old will, according to its HIA profile, have more than a 90% chance of preferring to live in a single family house. Taking all together the different households by life cycle and income bracket, we make a determination of how many different kinds of households will form in the Metro UGB and carry forward their typical housing preference. Talled together, we project out a housing unit demand forecast by tenure and structure type.

As such, growth projections are very much endogenous, meaning we deliberately avoid using fixed factors which don't vary with changes in economics, demographics or otherwise leave as many variables to vary as possible. Assumptions we like to vary include economic projections, demographic forecasts, and housing demand factors (such as the HIA and housing propensities). The economic and demographic forecasts vary from year to year and these growth assumptions are documented in Appendix 1a, The Regional Forecast.

The socio-economic factors that, in part, explain future housing demand change over time because we tie the HIA forecast with the regional forecast. For example, on average, population in the region like the rest of the U.S. is expected to grow older. This is reflected in an increase in the number of households headed by older residents. The economic forecast in terms of income and earnings are tied into the HIA forecasts as the number of low, middle and high income bracket households increase (or decrease) in accordance with regional economic growth trends. In fact, in future years we anticipate a greater share

of households in the lower and higher income brackets than today. This means that the share of middle income bracket households is expected to decline. At the region level, we note that average household sizes are expected to decrease and so, to reflect this in the profiles of HIA, the number of households with fewer people necessarily rises much faster than households with larger number of persons per household.

Housing demand factors – that is, the affinity that individual types of households have for owning, renting and wanting single or multi-family housing – are also allowed to vary over time. This variety is calculated from running a MetroScope scenario with particular growth, housing, and regulatory assumptions. Documentation for what are these assumptions is included in UGR Appendix 11.

A market analysis requires interaction between supply and demand

Over the years, the Metro Council, MPAC and other stakeholders have requested that the UGR include more market analysis. What this means in practice is that the market interaction of supply and demand needs to be considered. Household demand projections are only half the equation, so to speak. Although it is important to know what housing shares might materialize based on latent housing preferences alone, without knowing what's buildable or feasible it's unlikely that a market-clearing solution can be identified. Describing housing demand without the context of zoning and what is buildable would ignore policy decisions that have been made at the state, regional, and local levels.

The role of adopted policies in this analysis

The adopted policy framework sets the stage for the housing stock that can be built in the future and guides this analysis. Much of that policy context originates from an objective to use land and public resources more efficiently. For instance, the state's Metropolitan Housing Rule is carried out in municipal zoning ordinances. It specifies minimum residential densities for select cities and requires that all cities and counties in the region provide zoned capacity for at least 50% multifamily or single-family attached development. Likewise, state law requires cities and Metro to maintain an urban growth boundary and includes additional rules that favor building at higher densities before expanding a UGB. The region's 2040 Growth Concept outlines how this region intends to grow, primarily in existing urban areas, before looking to urban reserves for growth capacity.

Other fixed assumptions in this analysis include the transportation investments described in the Regional Transportation Plan, development fees such as system development charges, and investment programs such as urban renewal. Together, all of these policies emphasize efficient use of land.

Because zoning determines where residential development is possible and that residential capacity is not uniformly available everywhere, the decision about where housing get built is typically idiosyncratic. We utilize our land use model – MetroScope – to sort out the economic and real estate implications of particular growth determinants. This housing needs assessment doesn't stop with merely duplicating past housing demand trends; the assessment incorporates supply feedbacks to determine what might be possible given policy expectations.

Average densities

As required under ORS 197.296, Table 17 shows the estimate of housing need by type and density range under the middle growth forecast with a “Damascus disincorporation” assumption.

Table 17: Housing need by type and density range (2015-235, Metro UGB)

Zone Class	Nominal Units / Acre	Dwelling Unit Absorption	By Zoning - % of DU Used	general zone class
SFR1	1	492	0.6%	single family product
SFR2	2	1,382	1.7%	
SFR3	3	6,415	8.1%	
SFR4	4	7,266	9.2%	
SFR5	5	12,345	15.5%	
SFR6	6	11,918	15.0%	
SFR7	7	17,860	22.5%	
SFR8	8	3,482	4.4%	
SFR9	9	4,525	5.7%	
SFR10	10	3,379	4.3%	
SFR11	11	0	0.0%	
SFR12	12	2,378	3.0%	
SFR13	13	0	0.0%	
SFR14	14	3,589	4.5%	
SFR15	15	4,363	5.5%	
SFR16	16	0	0.0%	
MFR1	12.3	1,415	1.2%	multifamily product
MFR2	17.8	2,194	1.8%	
MFR3	23.3	7,187	6.0%	
MFR4	29.4	617	0.5%	
MFR5	33.4	17,474	14.5%	
MFR6	40	0	0.0%	
MFR7	73.1	15,560	12.9%	
MUR1	11.2	656	0.5%	multifamily product
MUR2	18.2	473	0.4%	
MUR3	23.1	738	0.6%	
MUR4	29.1	1,587	1.3%	
MUR5	34.6	1,348	1.1%	
MUR6	40.1	2,670	2.2%	
MUR7	54.6	1,744	1.4%	
MUR8	75.5	1,624	1.3%	
MUR9	110.5	45,906	38.0%	
MUR10	222.5	19,570	16.2%	
TOTAL UNITS ABSORBED		200,158		
single family subtotal		79,393	40%	
multifamily subtotal		120,764	60%	

Note that the data shown in Table 17 are produced by the MetroScope econometric model, which uses supply matrices and demand matrices. It is useful to think of the supply matrices as depicting housing units and the demand matrices as depicting households (the people). Depending on the type of data desired, either the supply matrices or demand matrices are referenced. In this case, the supply matrices are referenced to summarize densities by zone class. There are minor differences in the numbers shown in the two matrices. These differences become smaller and smaller as the model equilibrates between supply and demand, but there are differences nonetheless. In this case, the supply matrix shows a total of approximately 200,000 housing units, which is about 5,000 more than the demand numbers referenced elsewhere in this analysis.

Single Family Average Density	7.0
Multifamily Average Density	98.0
Average Density (all types)	61.9

Residential preferences and the policy context

Household characteristics (i.e., households by size, income, age, and presence of kids) in part shape residential preferences and housing demand. In addition to household characteristics, inclinations towards particular housing types influence preferences. However, what a consumer may prefer and what they actually purchase or rent typically differs to some degree. This is the case with all markets, not just housing, as consumers make decisions that consider tradeoffs and budgets. This analysis does not presume whether preferences will change or stay the same. Instead, this analysis tests how the demographic forecast interacts with the buildable land inventory in the context of adopted land use and transportation policies.

The growth distribution by HIA – inside the UGB – is predicated on average household sizes decreasing, a general decrease in households with moderate to upper-middle incomes, and an increase in median age of householders between 2015 and 2035. These demographic shifts by themselves will shift market shares even if preferences remain unchanged.

Taken as a whole, incorporating supply feedbacks and the intrinsic factor demand of households, the market shares for new housing reveal a 39% single family and 61% multi-family product split. By the year 2035, single-family housing would still be the most common form of housing in the region. However, as compared to the existing housing stock shown in see Table 18, new housing would represent a shift. In addition to demographic factors and infrastructure finance realities, adopted policies influence future development forms.

Table 18: Housing units per structure in the Tri-county area (U.S. Census 2007 - 2011)

Housing type	Housing unit count	Share of total units
1-unit structure	473,537	68.7%
2 to 4 units in structure	53,349	7.7%
5 or more units in structure	162,876	23.6%

Source: 2007-11 ACS 5-year estimates

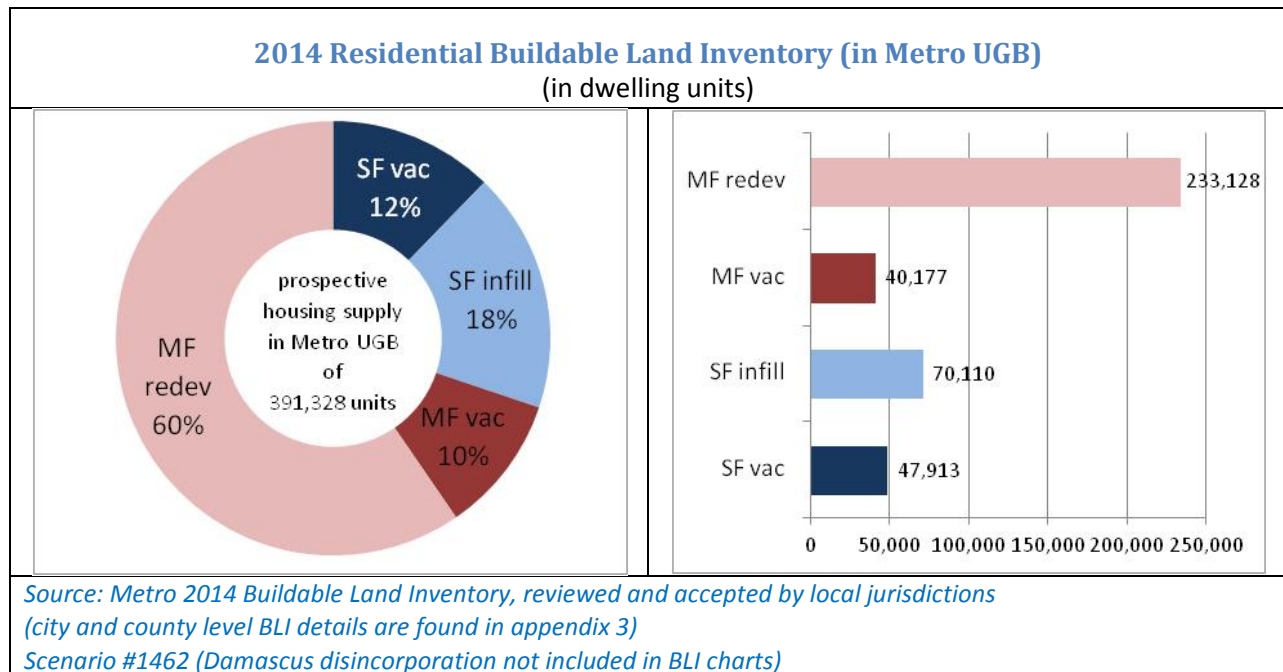
This market-clearing housing needs analysis projects a shift in market share, but not necessarily of market preferences since forecasting changes in preferences is speculative. People need housing and may prefer one choice over another, but in all housing markets preferences give way to limited and allowable market choices. This is the case in housing markets with or without urban growth boundaries. Policy makers must balance preferences with other factors, including the existing policy context, other public goals and practical factors such as having a city that is willing and able to govern and finance a UGB expansion area.

Effects of a Damascus disincorporation scenario on the buildable land inventory

The housing supply documented in Appendices 2 and 3 is based on today’s zoning and a physical inventory of vacant buildable land plus imputation of existing development that could yield more

prospective development capacity. Redevelopment and infill are net of any residential units lost due to demolitions and assumes that the additional development capacity would be at higher density (bounded by the upper limits of allowed zoning). This appendix shows the calculations that estimate how much of the redevelopment and infill component of the residential inventory may actually be absorbed during the 2015 to 2035 period. The redevelopment inventory (and inventory of infill) is adjusted down to reflect less than the entire shown BLI capacity.

The BLI estimate shows an inventory count of 47,913 units of vacant single-family capacity and 70,110 units of single family infill. For multi-family, the inventory has a count of 40,177 units of vacant capacity and 233,128 units of net redevelopment capacity. Redevelopment and infill represent 78% of the prospective housing supply inside the Metro UGB. Consistent with longstanding policies to encourage efficient use of land, the prospective housing supply also estimates that the UGB’s current inventory has 70% of its zoned capacity in multifamily (and mixed use residential) zoning districts; 30% in single-family zones.



The buildable land inventory is deemed prospective; thus a significant proportion of this housing supply is not expected to be absorbed within the 20 year forecast horizon. How much is consumed and how much is undeveloped during the 20 year period is derived from MetroScope scenarios (#1462 and #1511). This supply adjustment is noted in the final housing needs assessment calculations in the next section.

Including an assumption that Damascus will disincorporate results in changes to the buildable land inventory. The Damascus disincorporation assumption only affects residential capacity in Damascus and

adjacent areas in unincorporated Clackamas County. The change in the BLI is negligible because the disincorporation of the city of Damascus is offset by the assumption that Happy Valley will annex and pick up most, but not all, of the loss in capacity from the disincorporation of Damascus.¹⁹ Based on direction from city and county representatives, the annexed areas are assumed to be at higher density under the jurisdiction of Happy Valley than Damascus. Despite a net loss in incorporated area, higher assumed zoning density almost makes up for the difference. It has the following change to the buildable land inventory:

- 4,800 less single-family
- 800 more multifamily

In keeping with other market-based analysis methods used for this report, the effects of these changes to the buildable land inventory were tested with a MetroScope scenario. This scenario is documented in Appendix 15. The scenario results in minor changes in housing distributions in the region. For the purpose of this analysis, the scenario shows slightly reduced housing demand in the region (2,000 fewer housing units locate inside the Metro UGB under the Damascus disincorporation scenario).

Housing Needs Analysis Summary

Demand projections for the UGB call for a housing need for 195,400 more units in the 20-year planning period from 2015 to 2035. This is 2,000 units fewer than the 197,400 units mentioned elsewhere in this analysis because the Damascus disincorporation scenario that many fewer households “captured” in the region’s UGB. The housing need is divided out by housing type (single and multi-family development forms).

Of the projected growth in the Metro UGB, 74,900 householders will look to single-family development forms to meet their future housing needs (see Table 19). The remaining householders will look to a multi-family development form to meet their housing needs for the future (see Table 20). In both instances, our needs assessment indicate a surplus, meaning that there will be sufficient housing supply to meet the aggregate housing needs of those who can afford single or multi-family housing.

¹⁹ This assumption is based on discussions held by elected and staff officials from Metro, Damascus, Happy Valley and Clackamas County.

Table 19: summary of single-family housing needs for the Metro UGB 2015-2035

SINGLE FAMILY		Demand Units	Supply Units	Adj. Supply Units	comments
	SF demand	74,900			per scen #1511
	SF Infill		70,100	42,100	40% SF infill tax lots go undeveloped
	SF Vacant		43,100	43,100	34% of vac SF tax lots go undeveloped
	SF supply		113,200	85,200	Damascus adjustments included
	Net Need			10,300	SURPLUS

Table 20: summary of multifamily housing needs for the Metro UGB 2015-2035

MULTI- FAMILY		Demand Units	Supply Units	Adj. Supply Units	comments
	MF demand	120,500			per scen #1511
	MF Redev		233,100	89,900	60% of MF redev go undeveloped
	MF Vacant		40,200	41,000	24% of MF vacant go undeveloped
	MF supply		273,300	130,900	Damascus adjustments included
	Net Need			10,400	SURPLUS

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