FORECAST METHODOLOGY AND DISCUSSION

Appendix F

Population, Housing and Jobs Forecast | DRAFT
Methodology and Discussion

Leland Consulting Group, 2023

Overview

To help inform Arlington's 2024 Comprehensive Plan Update, Leland Consulting Group (LCG) analyzed a range of development scenarios to forecast where the growth necessary for meeting its 2044 Snohomish County growth allocations for population and jobs is most likely to occur. These forecasts were prepared at the Transportation Analysis Zone (TAZ) level, a small geography used primarily in origin-destination travel modeling. Five scenarios were developed to reflect different potential development outcomes, described in detail below. This document summarizes LCG's methodology and findings.

Forecast Inputs

Vacant and Underutilized Land and Parcel-Level Data from Buildable Lands Report

The City provided a layer of vacant and underutilized lands to serve as the base from which forecasted job, housing and population growth will occur. Of 1,197 records, 63 were removed either because they have recent projects identified by the City or were duplicates. GIS data from the Snohomish County 2021 Buildable Lands Report (BLR) was incorporated for baseline housing and estimated jobs/housing lost to redevelopment. Parcel-level data was exported from GIS into Excel for forecasting calculations.

For Scenarios 2 through 5, parcels with high value improvements were removed, since these were considered to be less likely to develop during the planning horizon. Improvement-to-Land Value ratio (the relative value of buildings, also referred to as improvements, compared to the underlying land) was used for defining such parcels, using County Assessor parcel data. Parcels with an improvement-to-land value ratio at or over 1.0 were removed. Twenty-nine parcels with no calculated ILV (due to missing property value data) were kept in all scenarios.

Baseline Jobs, Housing and Population

Jobs

The Snohomish County 2021 Buildable Lands Report (BLR) provides an estimate of 10,289 jobs in the UGA in 2019, based on data from the Washington Employment Security Department (ESD). Because there is no parcel-level data on existing jobs available, LCG used micro-analysis zone (MAZ)-level existing jobs data provided by the County to apportion the 10,289 jobs to TAZs, based on each TAZs share of existing MAZ employment.[1] In order to use 2020 as the baseline year for analysis, LCG added known 2020 jobs data from recent real estate development projects provided by the City and CoStar (a leading nationwide data source for commercial real estate development). Unless provided directly, existing jobs were estimated based on square feet (SF) of commercial development and BLR estimates of square feet per job by employment type as follows:

- Retail: 1 job per 700 SF
- Office/Live Work: 1 job per 350 SF
- Mini-Storage: 1 job per 20,000 SF
- Other: 1 job per 400 SF
- Manufacturing: 1 job per 500 SF
- Wholesale, Transportation, Utilities (WTU): 1 job per 2,000 SF (City revision of estimate in 2021 BLR)

The final baseline 2020 jobs count for Arlington used in all scenarios is **12,449 jobs**.

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[1] The assignment of MAZ-level jobs to TAZs was estimated using the parcel-level; "EXEM_T" field in the 2019 BLR GIS data. This field represents the County's estimate of "Existing total employment estimate on parcel" and was developed during the BLR process to estimate the number of jobs which would be lost to redevelopment on redevelopable parcels, but also serves as a useful proxy for the relative job distribution across TAZs.

Housing and Population

The BLR provides an estimate of 7,733 housing units in the UGA in 2019, and as with employment, LCG added units from 2020 projects provided by the City and CoStar to arrive at **9,120 units** in 2020. The UGA's 2020 **population of 20,418** (according to the Countywide Planning Policies) was apportioned to TAZ's by taking each TAZ's 2020 housing units multiplied by the observed 2020 persons per household (calculated as 20,418 population divided by 9,120 housing units, resulting in 2.23 people per household).

Pending Jobs, Housing and Population

LCG assumed that projects that have been built since 2020, are permitted, or are under construction, should be included in the total unit and jobs counts for the 2020-2044 period using their actual unit and square footage counts. These projects were designated as "pending" in this analysis. For projects built in 2021 or later, LCG used housing unit and jobs numbers from the City, CoStar, and the BLR. BLR data was only used when neither City nor CoStar data was available, for example, for a 135,000 SF Swire Coca-Cola warehouse distribution center on 59th Avenue. LCG assumed that sites that developed during this "pending" period will not be redeveloped again during the study period (2020 to 2044). Pending population was calculated by multiplying pending housing units at the parcel level by an estimated persons per household (2.00 for Multifamily, Commercial and Mixed Use zones; 3.00 for Single Family, per City input).

Development Assumptions for Vacant and Underutilized Parcels

For vacant and underutilized parcels, the following assumptions for development density and development rate (Table 1) were applied in order to produce forecasts for the five scenarios.

Table 1. Scenario Assumptions for Arlington Population, Housing and Jobs 2044 Forecasts

	Scenario 1: Lower Job, Housing Density	Scenario 2: 1 + Higher Job, Housing Density	Scenario 3: 2 + No Development Rate Reduction	Scenario 4: 2 + Higher Commercial Density, WFH	Scenario 5: 2 + WFH + No Development Rate Reduction
Developable Land	City V/UU Layer	City V/UU Layer with High-Value Properties Removed	City V/UU Layer with High-Value Properties Removed	City V/UU Layer with High-Value Properties Removed	City V/UU Layer with High-Value Properties Removed
Employment Density *Rentable Building Area/acre:* • Mixed Use/Comm. Zones • Industrial Zones *SF per Job:* • OTBD Zone • Other Comm. Zones • Industrial Zones	• 3,200 • 10,000 • 400 • 1,000 • 2,000	• 6,600 • 10,000 • 400 • 500 • 2,000	• 6,600 • 10,000 • 400 • 500 • 2,000	• 12,000 • 10,000 • 400 • 500 • 2,000	• 6,600 • 10,000 • 400 • 500 • 2,000
Work from Home Included in Employment #s?				✔	✔
Residential Density • SFR Zones • Smokey Point Area • RHC Zones • Mixed Use Zones	3-7 du/ac 27 17 15	3-7 du/ac 27 34 34	3-7 du/ac 27 34 34	3-7 du/ac 27 34 34	3-7 du/ac 27 34 34
Market-Based Development Rate Reduction Applied?	✔	✔		✔	

Employment Assumptions

Forecasted job totals were estimated by applying square foot per job estimates to estimated rentable building acres (RBA) of commercial and industrial space to be developed.

- **Rentable building Area per Acre (RBA/acre).** RBA/acre is the area within a building that will be rented to or owned by job-creating tenants; it does not include area rented as apartments. The estimated RBA/acre for mixed use zones is based on the average commercial space developed in mixed use projects in these zones over the past ten years (4,084 SF for scenarios 2 through 5, with a lower estimate of 897 SF for Scenario 1) and an estimated RBA/acre of 12,000 SF/acre for purely commercial projects.[2] From these estimates, an average RBA/acre was calculated for mixed use zones (3,200 for Scenario 1, 6,600 for Scenarios 2, 3, and 5), based on the share of commercial versus multifamily RBA/acre developed in these zones over the past ten years (30 percent commercial, 70 percent multifamily). Scenario 4 assumed 12,000 SF/acre for mixed use zones (explained further under "Scenario Development"). For the Business Park zone, which does not allow housing, an RBA/acre of 12,000 was used. For industrial zones, 10,000 was used for all scenarios, based on the density of past development.
- **SF per job.** Estimated SF per job varies by zone. The highest density employment, or 400 SF per job (across all scenarios), is seen in Old Town Business District zones, and was calculated using CoStar data on the existing square footage of commercial space and existing employment estimates from the BLR GIS data. The 2,000 SF per job for industrial zones (across scenarios) is based on City input regarding recent density for the prevailing employment type (WTU) in industrial zones. For commercial and mixed use zones, the 1,000 SF per job used in Scenario 1 was based on existing job density in commercial zones (using BLR job and CoStar SF data), and the 500 used in all other scenarios was based on the density of recent and pipeline projects provided by the city.

Housing and Population Assumptions

- **Single Family Zones:** based on density of existing development (calculated with BLR data), which was in line with allowed densities per the zoning code.
- **Mixed Use and Multifamily Zones:**
  - *Residential Moderate ("RMod") and Medium Capacity.* No CoStar data was available for projects within these zones, and because calculated density of existing development (6 and 4 du/acre respectively) is below the allowed densities of (7-11 du/acre for RMod, 12-16 for Residential Medium Density), a middle ground 10 du/acre was used across all scenarios.
  - *Residential High Capacity.* For Scenario 1, City input of 17 units per acre was used (also the RHC zone allowed density). The 34 units per acre used for all other scenarios was based on the 42 per acre average seen in multifamily projects developed over the past ten years, reduced slightly (20 percent) considering the City's expectation of lower density development.
  - *Commercial and mixed use zones.* For Scenario 1, City input of 15 units per acre was used (also the RHC zone allowed density). For all other scenarios, the RHC assumption was used.
- **Population:** Across all scenarios, an average household size of 2.00 persons per household was used for multifamily development, and 3.00 for single family, per City input.

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[2] The lower 897 RBA/acre assumption incorporated in Scenario 1 was an initial estimate based only on data available in CoStar, while the higher 4,084 figure incorporated data on more recent mixed use projects provided by the City. The 12,000 RBA/acre (rounded from 12,197) for commercial development is based on a Floor Area Ratio of 0.28 assumption.

Development Rate

Development Rate is the percent of vacant and redevelopable parcels that are estimated to redevelop between 2020 and 2044 (Table 2). LCG estimated development rates for all zones, used across all scenarios, based on:

- **Single and Multifamily Zones:** based on average annual acreage developed in single family homes for 2010-2021, using HUD permit data, and apportioned to zones based on their share of available single-family acreage.
- **Commercial/Mixed-Use and Industrial Zones:** based on CoStar data on average annual acreage developed into a commercial or industrial use since 2015, including planned/future pipeline development, and each zone's share of available commercial/mixed-use or industrial acreage.

Development Rate can also be estimated by reviewing construction, deliveries, and to a lesser degree, absorption data that is reported by various planning and real estate data sources. Development Rate can even focus on density expected from future development, versus what has been seen in the past.

Table 2. Development Rate

		Development Rate*
Multi-Family		
	Residential High Capacity	19%
Commercial / Mixed Use		
	Neighborhood Commercial	80%
	Old Town Business District - 1	7%
	Old Town Business District - 2	0%
	Old Town Business District - 3	0%
	General Commercial	100%
	Highway Commercial	25%
	Business Park	100%
	Commercial Corridor District	7%
	Medical Services	0%
Industrial		
	Light Industrial	46%
	General Industrial	46%

*Applied in Scenarios 1, 2, 4 only. While Development Rate represents the Percent that WILL develop, BLR and other studies quantify this metric as "Market Factor," which is the inverse of Development Rate (or the percent that will NOT develop).

Forecast Methodology

Capacity Calculation

Using the inputs described above in Table 1, LCG calculated Arlington's "capacity" for development that can accommodate population, housing, and jobs within the City of Arlington Urban Growth Area by 2044. These capacity totals were added to baseline and pending totals and compared to 2044 growth allocations from Countywide Planning Policies (for population and jobs) and County PAC Working Group (for housing) to determine if the Arlington UGA has sufficient capacity of land to accommodate allocated housing and employment growth, as required by RCW 36.70A.115. Figures 1 and 2 show the steps used to calculate capacity across scenarios.
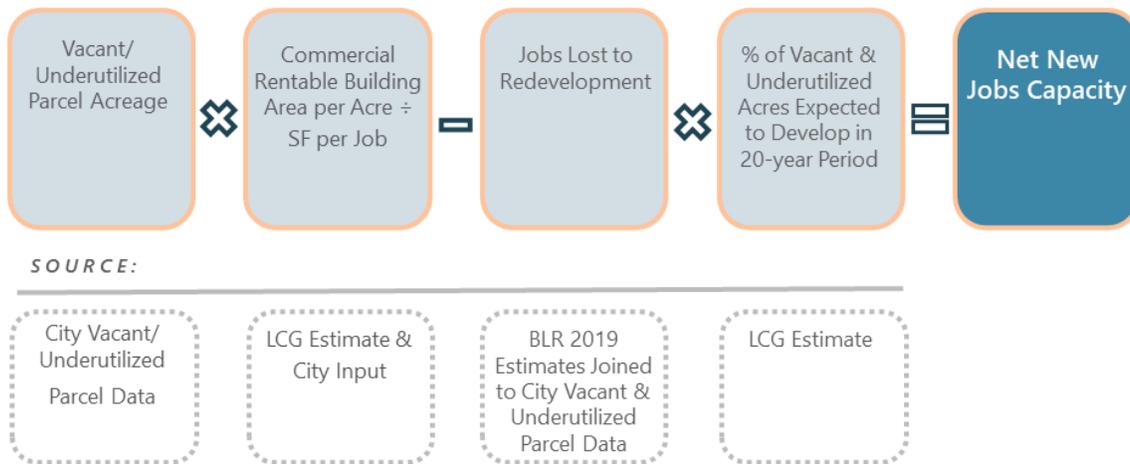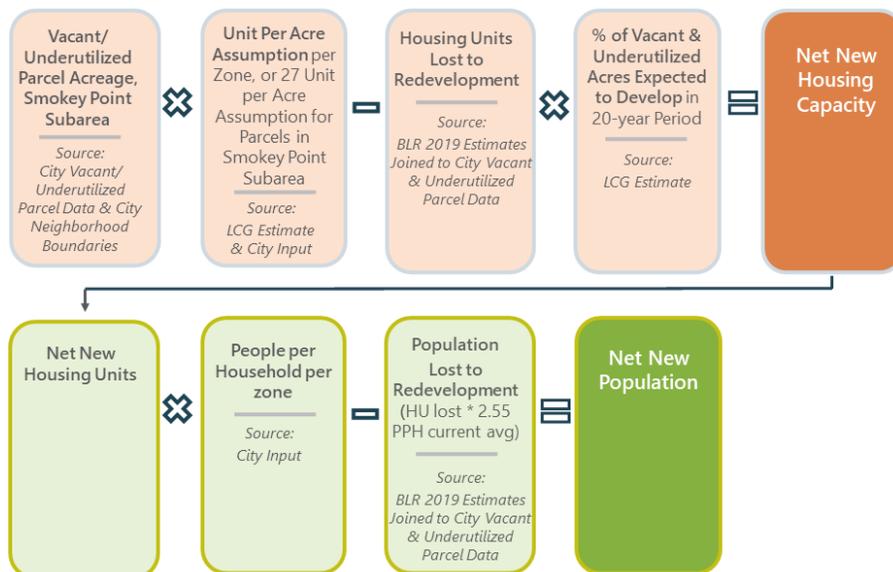
Figure 1. Employment Capacity Calculation

Figure 2. Housing and Population Capacity Calculation

Note: Scenarios 2, 3, 4, 5 removed parcels with Improvement-to-Land-Value Ratios of 1 or higher from Vacant/Underutilized layer.

Scenario Development

Leland Consulting Group (LCG) analyzed a range of development scenarios to forecast where the growth necessary for meeting its 2044 regional growth targets for population, housing and jobs is most likely to occur.[3] All scenarios calculated growth using the same methodology as shown in Figures 1 and 2, but are differentiated in terms of inputs used (e.g., assumed density of residential development), which are depicted in Table 1. Scenario 1 began with assumptions based on past growth trends for housing and jobs, but though the course of LCG analysis, higher density assumptions and other variables needed to be applied in order to reach the 2044 Snohomish County jobs target, which resulted in the multiple scenarios presented here. While **all scenarios showed sufficient capacity for meeting 2044 housing and population targets, only Scenario 5 met the future jobs target** (as shown below in Figures 3, 4, and 5). A summary of the context behind scenario development follows.

Scenario 1: Lower Job, Housing Density. The initial scenario utilized assumed residential and employment densities provided by City staff and included all parcels marked as Vacant or Underutilized in the City's Vacant and Underutilized layer.

Scenario 2: *Scenario 1* + **Higher Job, Housing Density.** LCG removed parcels from the City's Vacant and Underutilized layer with high value improvements that, based on consultant experience, are considered less likely to redevelop within the planning horizon (as described above under "Forecast Inputs"). Excluding these parcels led to smaller losses of existing jobs and housing units due to redevelopment. Other changes in this scenario include higher job and housing densities, based on the density of recent and pending developments (while keeping employment densities the same for Industrial and Old Town zones—though with a higher rate of Rentable building Area per Acre in Old Town).

Scenario 3: *Scenario 2* + **No Market-Based Development Rate Reduction.** Because calculated jobs capacity in Scenarios 1 and 2 fell short of the 2044 jobs target, LCG removed development rate, and performed the analysis as if all Vacant and Underutilized land (without the high Improvement to Land Value-rating parcels) were to redevelop by 2044. Past market constraints on development may be less of a factor for future development in Arlington due to the addition of high-capacity transit and ongoing economic development activity geared towards ensuring that the Cascade Industrial Center serves as a significant employer for the region. As stated in Puget Sound Regional Council's Guidance for Growth Targets to Implement VISION 2050, "historical growth targets may not be as useful a guide for these [high-capacity transit] jurisdictions compared to some cites. In many cases, transit investments represent new, future opportunities to accommodate growth."

Scenario 4: *Scenario 2* + **Higher Commercial Density, Work from Home (WFH)**. This scenario sought to answer the question of whether the jobs target could be met while including development rates, if more aggressive (though not unreasonable) density of commercial development were assumed in mixed use zones and estimated future work from home populations included. LCG calculated work from home population at 10.3 percent of 2044 population, which is based on national estimates for days worked from home per week by sector and workers employed in that sector in Arlington (applied only to the employed share of Arlington's population, calculated using current figures).

Scenario 5: *Scenario 2* + **WFH + No Market-Based Development Rate Reduction.** Because calculated job capacity for Scenario 3 fell short of the 2044 target, LCG removed the market-based reduction and ran the model at "full-build out" to analyze if the jobs target would be met if all parcels assumed to be vacant and redevelopable (excluding high-value parcels as described above) were to redevelop during the planning horizon. As in Scenario 4, an estimate of work from home population was included. In this scenario, the housing allocation was greatly exceeded and the jobs allocation was met and slightly exceeded.

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[3] 2044 regional growth targets for population and jobs are derived from Countywide Planning Policies, while housing targets are set by the State Department of Commerce for counties, and allocated to jurisdictions by the Planning Advisory Committee (Snohomish County Tomorrow).

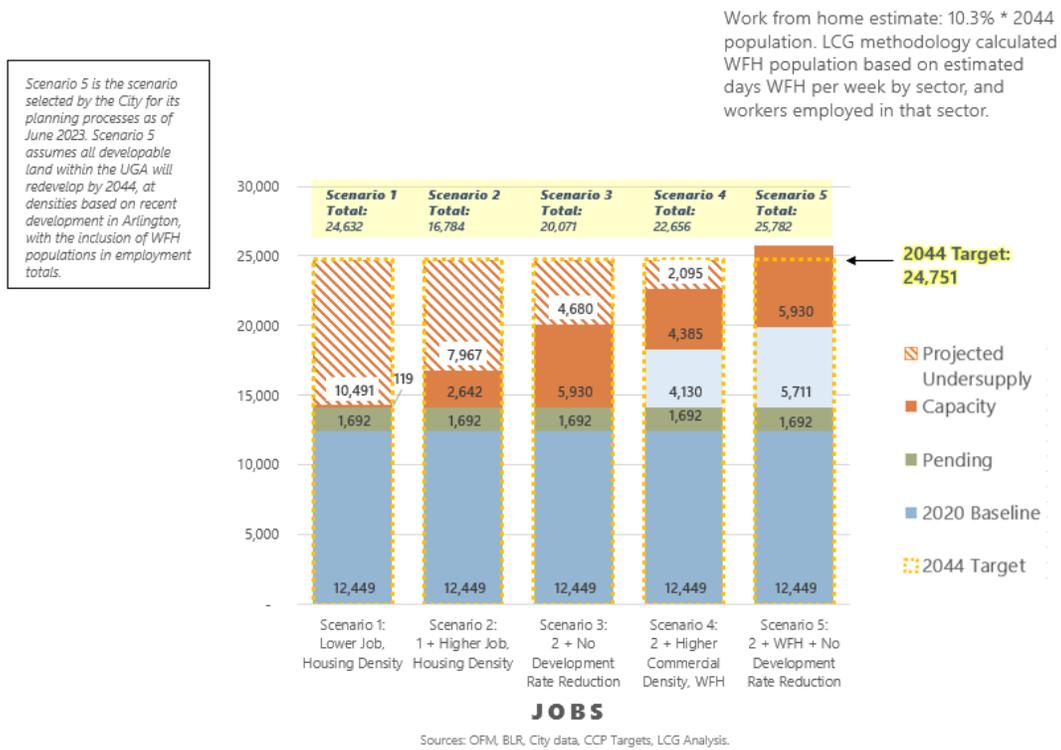**Figure 3. Job Capacity (2044) Findings, All Scenarios**

Scenario 5 is the scenario selected by the City for its planning processes as of June 2023. Scenario 5 assumes all developable land within the UGA will redevelop by 2044, at densities based on recent development in Arlington, with the inclusion of WFH populations in employment totals.

Work from home estimate: 10.3% * 2044 population. LCG methodology calculated WFH population based on estimated days WFH per week by sector, and workers employed in that sector.

2044 Target: 24,751

Sources: OFM, BLR, City data, CCP Targets, LCG Analysis.

Figure 4. Housing Capacity (2044) Findings, All Scenarios

Scenario 5 is the scenario selected by the City for its planning processes as of June 2023. Scenario 5 assumes all developable land within the UGA will redevelop by 2044, at densities based on recent development in Arlington, with the inclusion of WFH populations in employment totals.

2044 Target: 15,781

Sources: OFM, BLR, City data, Snohomish County PAC Working Group, LCG Analysis.

Figure 5. Scenario 1, 5 Findings

Sources: OFM, BLR, City data, CCP Targets, Snohomish County PAC Working Group, LCG Analysis.
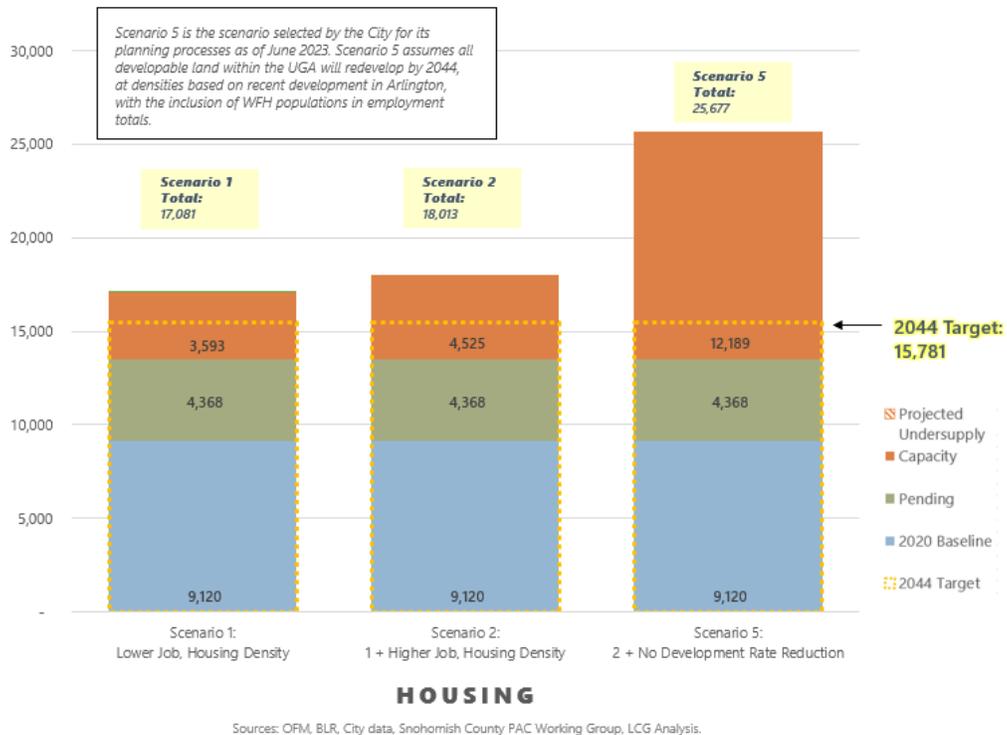
Discussion

While all scenarios showed sufficient capacity for meeting 2044 housing and population targets, only Scenario 5 met the future jobs target. Scenario 5 meets this target by assuming high-end rates of commercial development densities, a continuation of current work from home trends, and **that all developable land within the UGA will redevelop by 2044—regardless of market constraints. While Scenario 5 is an aggressive outlook on development, the City considers it most prudent to plan for the highest end of potential development, and is utilizing the Scenario 5 forecasts for its 2024 plan development.**

Scenario 5's removal of the development rate reduction produces a surplus residential capacity—or a capacity for 9,896 additional units beyond the 15,781 unit target for 2044. While the Puget Sound Regional Council advocates for consistency with county-provided growth targets, their Plan Review and Comprehensive Plan FAQ advises that "capacity for growth can exceed growth targets, which may be particularly important in planning for growth under new affordability requirements in HB 1220." Additionally, PSRC's Guidance for Growth Targets to Implement VISION 2050 states "historical growth targets may not be as useful a guide for these [high-capacity transit] jurisdictions compared to some cites. In many cases, transit investments represent new, future opportunities to accommodate growth." Because Arlington is a high-capacity transit community, with bus rapid transit service anticipated in 2027—and Scenario 5's base of vacant and underutilized land from the City contained significantly more parcels in the Smokey Point area (where the BRT transit center will be located) than the BLR, Arlington arguably has capacity for more residential development than previous analyses suggest. PSRC's FAQ also states that "when a community substantially increases capacity beyond its adopted target it should document how the additional capacity is necessary to support regional policies." This report has documented how the additional residential capacity was deemed necessary in order to align with regional policies for concentrating growth near Manufacturing Industrial Centers and high-capacity transit stations.

Arlington's existing land capacity may prove to be insufficient for accommodating the 2044 employment target if the City's current lower-density development trends continue. Future planning processes should assess how development trends of employment and other lands have shifted in light of CIC development, connection to the region's high-capacity transit, and other changes.