

Snohomish County
UGA Land Capacity Analysis
Technical Report

December 21, 2005

Snohomish County Planning and Development Services

Long Range Planning Division

**This report was updated on December 22, 2005 consistent with the final
Future Land Use Map adopted by the Snohomish County Council on
December 21, 2005.**

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Introduction

The Growth Management Act (GMA) requires Urban Growth Areas (UGAs) to be reviewed and updated at least every ten years so that they are capable of accommodating the urban growth projected to occur in the county during the succeeding 20-year period. The county's current 10-year plan update establishes a new plan horizon that extends to the year 2025. The county and the cities must therefore demonstrate that a sufficient supply of land exists within the UGA to accommodate forecasted urban growth to the year 2025. Both residential and employment land requirements must be evaluated in this assessment of UGA land capacity.

This report describes the results of the Snohomish County Long Range Planning Division's updated residential and employment land capacity analysis for unincorporated portions of the UGA proposed in the County Council's final future land use map adoption for the 10-year GMA comprehensive plan review and update. The report compares the estimates of population and employment capacity with the population and employment forecasts for each unincorporated UGA in Snohomish County under the County Council's final future land use map. This is also done for each unincorporated Municipal Urban Growth Area (MUGA) within the SW County UGA.

The analysis is consistent with previous capacity analyses conducted by the county in 1995 for its original GMA comprehensive plan adoption, and it is consistent with relevant Washington State Community, Trade and Economic Development (CTED) guidance documents. It also continues and builds upon the data sources and methodology developed by the county and cities for the *2002 Growth Monitoring/Buildable Lands Report*. The current land capacity update has also been informed by an evaluation of the assumptions that were the basis for the two different land development scenarios (A & B) used in the 2002 Buildable Lands Report.

The 2002 Buildable Lands Report analyzed the urban development densities that occurred since adoption of the first GMA comprehensive plans. Using this information, the report evaluated the adequacy of the land supply within the UGA to accommodate the remaining portion of the projected urban growth anticipated in adopted plans at the densities observed since GMA plan adoption. In that sense, the Buildable Lands Report "looks back" and compares planned vs. actual urban densities during the first 5 years of the GMA plan in order to determine whether the original plan assumptions pertaining to assumed densities and the adequacy of the urban land supply to the year 2012 were accurate. (See RCW 36.70A.215.)

The current UGA land capacity analysis differs from the GMA Buildable Lands Report requirements by focusing on the reestablishment of a new 20-year urban land supply for

accommodating the new 2025 urban growth targets. As such, it fulfills a separate GMA “show your work” requirement for the sizing of UGAs for future growth.

Technical guidance documents used for this capacity update include Washington State’s (CTED) report entitled “*Issues in Designating Urban Growth Areas (Part I): Providing Adequate Urban Area Land Supply*,” released March 1992; the Snohomish County Tomorrow Working Paper: *Land Capacity Methodology for Residential Land*, released February 1993; Washington State’s (CTED) report entitled *Buildable Lands Program Guidelines*, released June 2000; and the *Recommended Methodology and Work Program for a Buildable Lands Analysis for Snohomish County and its Cities*, prepared by ECONorthwest and released July 2000.

Each city in Snohomish County is updating its own land capacity analysis for areas within its jurisdiction as part of their local 10-year comprehensive plan update effort. Most cities are building upon the capacity work accomplished for the 2002 Buildable Lands Report effort. Updated city information has been obtained by county staff by reviewing current city plan update and EIS documents for technical information on city targets and capacity. Some of this city information is still in draft form. The updated 2025 capacity results from cities, where available, have been combined with the county’s 2025 unincorporated UGA capacity results to arrive at the composite UGA land capacity/growth target comparisons shown later in this report.

Both city and county land use plan assumptions and technical information have been reviewed by decision makers and the public over the past several months as jurisdictions prepared for adoption of their updated GMA plans. Some of the information on which this draft analysis is based has therefore changed since the April 29, 2005 draft version of this report. Updated city land capacity information will be reviewed as part of the interjurisdictional target reconciliation process following adoption of city and county plan updates. If the outcome of the interjurisdictional target reconciliation process results in modifications to county or city land use plan designations or growth targets, additional revisions to this report may be necessary.

Summary of Key Findings

Population

- Capacity exists within the unincorporated portions of the updated UGA for an estimated 175,381 additional persons as of 2002. This is sufficient capacity to accommodate the 2002 – 2025 forecasted unincorporated UGA population increase of 150,173.
- The updated composite UGA (cities plus unincorporated UGAs) is estimated to have capacity for 275,236 additional residents as of 2002. This exceeds the 2002 – 2025 forecasted UGA population increase of 239,756 by 14.8% (the UGA “safety factor”).
- All individual UGAs have sufficient population capacity to accommodate their 2025 population forecasts.

Employment

- Capacity exists within the unincorporated portions of the updated UGA for an estimated 39,114 additional jobs as of 2002. This is sufficient capacity to accommodate the 2002 – 2025 forecasted unincorporated UGA employment increase of 32,249. *
- The updated composite UGA (cities plus unincorporated UGAs) is estimated to have capacity for 152,738 additional jobs as of 2002. This is sufficient capacity to accommodate the 2002 – 2025 forecasted UGA employment increase of 120,873.
- All individual UGAs have sufficient employment capacity to accommodate their 2025 employment forecasts.

* - A portion of the UGA expansion consists of large parcels of land for employment in response to new economic development challenges. UGA expansion is needed to create contiguous areas large enough to attract large-scale employers in support of countywide economic development goals contained in the Countywide Planning Policies and the Economic Development Element of the Comprehensive Plan. An analysis of available large tracts for employment use showed a very small number of such sites. Fewer than 2 percent of all parcels inside the existing unincorporated UGA with remaining employment capacity are 20 acres or larger. This amounted to only 32 undeveloped, redevelopable, or partially used parcels in April 2001. In contrast, the expansion in North Marysville would add a contiguous developable area of 400 acres. Proposed UGA expansion is balanced by new capacity created by redesignating areas within the existing UGA for commercial and industrial development, including the Cathcart site proposed for a mix of use designations expected to add an estimated capacity of over 2,000 jobs. See the “Snohomish County Reasonable Measures” report, dated December 14, 2005, for more information on this topic.

Methodology

Summary of Major Unincorporated UGA Capacity Analysis Steps

The unincorporated UGA capacity analysis is a combination of five basic steps and a variety of sub-steps and iterations.

Step 1: Development History – Residential, Commercial and Industrial

The unincorporated UGA capacity analysis relied upon the development history collected and evaluated for the 2002 Buildable Lands Report. For the 2002 report, a database of residential, commercial, industrial and mixed-use development in cities and the county was assembled. It covered a period of time from January 1995 to December 2000. Residential densities (housing units per acre) and commercial/industrial intensities (floor area ratios, or FARs) were summarized for comprehensive plan and zoning designations within each jurisdiction. Please refer to the 2002 Buildable Lands Report for more detailed documentation on the development history database and density results.

Gross acres, gross residential densities, and gross commercial/industrial floor area ratios (FARs) were calculated using the total site area of the subdivision or development. *Buildable* acres, residential densities and commercial/industrial FARs were calculated after deducting for critical areas, buffers and major utility easements. *Net* acres, net residential densities and net commercial/industrial FARs were calculated by subtracting all additional non-residential uses (e.g., roads, parks, stormwater detention facilities, etc.) from the buildable acres. Please refer to the graphic on page 19 for a visual example of the differences in these definitions and the text below for more detailed definitions for different land use types.

For single family residential development:

- *Gross residential density* is the number of units divided by total area in acres.
- *Buildable area* is the area of any use that alters the landscape, e.g. building lots, roads, detention ponds, and tot lots. It does not include wetlands, critical area buffers, utility easements, or any area that is to remain unchanged. Buildable density is the number of units/altered acreage.
- *Net residential area* is the area used for residential building lots only. Typical land uses that are excluded from residential include roads, wetlands, Native Growth Protection Areas, recreational areas and detention ponds.

The definition of single-family development includes more than just traditional detached homes. It also includes duplexes and segregated-lot condominiums. Townhouse condominium projects fitting this definition must have a separate lot for each dwelling unit. Some duplex-style condominium projects fitting this definition have two lots per building while others have one lot per building.

For multi-family, non-residential development, mixed-use projects:

- *Gross site area* for each project is based on the digital parcel coverage maintained by the County Assessor.
- *Buildable site area* is the gross site area minus protected critical areas and unbuildable easements, such as power lines.
- *Net site area* is the buildable site area minus road dedications.

Residential densities and commercial/industrial intensities were calculated as follows. The number of multi-family units was divided by the gross, buildable and net residential acreage to obtain gross, buildable and net residential densities on a project-by-project basis. For commercial and industrial uses, development intensity was calculated as a floor area ratio (FAR) statistic. The FAR was derived on a project-by-project basis by dividing the square footage of usable employment space by the gross, buildable and net employment acres developed in order to obtain the gross, buildable and net FAR for each project. In mixed-use projects (projects with both residential and commercial uses in the same structure), both the residential density and commercial FARs are reported.

For the purposes of the UGA land capacity update, density statistics were updated for areas within the “Urban Low Density Residential (4-6 DU/Acre)” designated areas of unincorporated UGAs. As documented in the *Snohomish County Tomorrow 2003 Growth Monitoring Report*, higher net single family residential densities in recorded subdivisions were observed in the post-2000 period. A query on ULDR designated subdivisions applied for since 1996 and recorded from 1997 to 2002 resulted in an updated buildable density of 5.02 units/acre. This buildable density was used for the capacity update in place of the previous 4.76 buildable density statistic observed during the 1995 – 2000 period and used in the 2002 Buildable Lands Report for unincorporated ULDR areas.

Please consult the 2002 Buildable Lands Report for more detailed information on the 1995 – 2000 observed densities used in this capacity update for other designations within the unincorporated UGA.

Step 2: Buildable Lands Inventory

The unincorporated UGA capacity analysis relied upon the GIS parcel-based buildable lands inventory established for the 2002 Buildable Lands Report. Extensive conversion of parcel information, comprehensive plan and zoning information, and critical areas information into a GIS format occurred during 2001-02 in order to establish the parcel-level buildable lands inventory for the 2002 report. The capacity analysis used an updated GIS version of the plan designations associated with the future land use map included in the April 8, 2005 draft plan in order to estimate the unincorporated UGA capacity of the proposed plan.

Baseline Date

The original buildable lands inventory was developed using parcel-level geographic information system (GIS) data created by Snohomish County. Parcel boundaries and associated data on parcel characteristics were established for the inventory by joining a January 2001 extract of Assessor

parcel data with an April 2001 version of the countywide GIS parcel map (containing nearly 250,000 parcel records). Extensive checking and editing of the GIS parcel data throughout the remainder of 2001 was necessary to allow for proper land use analysis. County and city staff attempted to establish current land use as close as possible to the April 1, 2001 base year date for the 2002 Buildable Lands Report which compared 2001-2012 land needs and 2001 land supply estimates. Use of March 2001 digital orthophotography to “ground-truth” the accuracy of the Assessor’s existing land use codes greatly facilitated this effort.

April 2001 served as a baseline date for both the 2002 Buildable Lands Report and the present unincorporated UGA capacity update. The capacity estimates therefore represent additional capacity for population and jobs as of April 2001. All housing and commercial/industrial structures occupied as of that date were considered developed, while everything proposed, built or occupied after that date was counted as future capacity as of April 2001.

Since April 2001, development has taken place on many of the parcels with additional capacity in the buildable lands inventory. Other parcels currently have pending applications for new construction. A few had unoccupied new construction in April 2001. In these situations (recent development and pending applications since April 2001, and new but still unoccupied buildings as of April 2001), this report uses the actual development or pending application where this information is known for the capacity on a given parcel.

For the capacity update, pending residential projects in unincorporated UGAs were added to the parcel database through March 2005. Commercial and industrial pending projects in unincorporated UGAs were added through fall 2004. This pending capacity information overrides the theoretical capacity estimates calculated by the capacity analysis. Theoretical capacity estimates (based on historic observed densities for developable parcels in the same plan/zone designation) are used for parcels without recent or pending development.

Parcel Data

The land capacity analysis focuses solely on parcels within unincorporated areas inside the proposed new UGA boundary. The county’s GIS was used to select Assessor parcels that fell within the proposed new UGA boundary. Parcels within the unincorporated UGA with potential capacity for additional development by the year 2025 were classified into three categories: vacant, partially-used, and redevelopable land.

Vacant. Parcels with improvement assessed values of less than \$10,000 were included in the first-pass of the vacant land definition. Review of the initial maps resulted in elimination of many parcels with low improvement assessed values but with uses unlikely to change (e.g., tax-exempt properties, cemeteries, etc.).

Partially-used. Parcels with improvement assessed values > \$10,000 (containing existing structures) that were of sufficient size to allow additional subdivision or development to occur, were considered partially-used parcels. Different criteria were applied to develop this classification:

For *single family residential uses*, parcels that were at least 2.5 times the lot size of a typical urban single family residential zone were considered potentially partially-

used. In non-SW UGAs, a size threshold of at least 21,000 square feet was used, while in the SW UGA, the size threshold was lowered to at least 15,000 square feet to account for the more prevalent observed short-platting of lots of this size (and smaller) in these locations. In UGAs without sanitary sewer systems, the minimum size threshold, however, was raised to 31,250 square feet for partially-used parcels to account for the Health District requirement for larger sized lots when developed with septic systems. In all UGA locations, parcels with greater than \$250,000 improvement value per acre (expensive structures) were not considered for the partially-used analysis.

For *multi-family, commercial, industrial and mixed-uses*, an estimate of the existing building footprint size was derived using Assessor information on first floor square footage. This information was used to calculate the percentage of the lot covered by the existing structure so that surplus land could be considered for additional development. Parcels designated for multi-family use that had lot coverage percentages less than 15% were considered partially-used. Parcels designated for commercial, industrial or mixed-use development that were less than 2 acres in size were considered partially-used if the lot coverage percentage was less than 12%. Parcels designated for commercial, industrial or mixed-use development that were 2 acres in size or greater were considered partially-used if the lot coverage percentage was less than 25%.

Redevelopable. Included parcels with improvement assessed values > \$10,000 (containing existing structures) in which the structures were located on land that had a relatively high assessed value relative to that assigned to the structure. In these instances, the existing structures were assumed to be demolished, and a new, more intensive use based on the designation was calculated. Different improvement-to-land assessed value ratio thresholds were used based upon the type of redeveloped use and location in county:

For *single family residential uses*, existing structures in the SW UGA that were valued at less than 70% of the land assessed value for the parcel (and which met the same size thresholds described above for partially-used single family residential uses) were considered potentially redevelopable (<60% was used in non-SW UGA locations). It was assumed that for parcels meeting this definition, the existing structure was demolished and the entire land area was resubdivided. This same improvement-to-land value threshold was applied countywide.

For *multi-family residential uses*, existing structures that were valued at less than 100% of the land assessed value for parcels in SW UGA locations, and less than 75% in non-SW UGA locations, were considered potentially redevelopable. It was assumed that for parcels meeting this definition, the existing structure was demolished and the entire land area of the parcel was redeveloped at higher densities.

For *commercial, industrial and mixed-use designations*, existing structures that were valued at less than 125% of the land assessed value for parcels in SW UGA locations, and less than 100% in non-SW UGA locations, were considered

potentially redevelopable. It was assumed that for parcels meeting this definition, the existing structure was demolished and the entire land area of the parcel was redeveloped for higher intensity commercial, industrial or mixed-use development.

NOTE: The thresholds used to establish these categories were developed using information from the development history database described above. Specifically, information on the characteristics of previous uses prior to the residential, commercial and industrial development observed from 1995 through 2000 (e.g., previous improvement-to-land assessed value ratios; whether the development occurred on vacant, partially-used or redeveloped land) was collected and evaluated for the development of these thresholds. In addition, the longer planning period associated with the 10-year comprehensive plan update (to the year 2025) for the potential depreciation and redevelopment of structures to occur from a market perspective was considered, especially when compared to the shorter time horizon for the 2002 Buildable Land Report (to the year 2012).

Use of Critical Areas to Establish the Buildable Lands Inventory

Information on critical area features within UGAs that was in a GIS-format was gathered for the 2002 buildable lands analysis. This included the following features:

Slopes: 33% or greater, with 25 foot buffers at both the top and toe of slope. GIS data obtained from State DNR 1998 digital elevation model was the source for these data.

Wetlands: A merged version of the county's wetland inventory and the NWI inventory in GIS format was used. The combination of these two wetland datasets resulted in an overall increase in estimated wetlands when compared to one based solely on the county's inventory. Average buffer widths of 50 feet were calculated. In the UGAs where the county's wetland inventory had not been conducted, the NWI wetland data was supplemented by estimates of wetlands on hydric soils present in the UGA.

Streams: The DNR stream inventory in GIS format was used to apply different buffer widths to land associated with different DNR streams types. Type 1 and 2 streams received 100 foot buffers on both sides of the stream; type 3 streams received 50 foot buffers; type 4 received 25 foot buffers; and type 5 received 10 foot buffers.

Chinook salmon and bull trout habitat: 150 ft buffers were used on both sides of the applicable streams/rivers for these ESA protected species.

Frequently flooded areas: Information on 100-year floodplain and floodway boundaries from FEMA maps in GIS format was used.

The critical area features described above were merged into a composite GIS layer that was then overlaid on parcels. This GIS overlay process was then used to deduct critical areas and buffer areas from the total gross area of the parcel, to arrive at an estimate of gross buildable acres within vacant, partially-used and redevelopable parcels.

Please note that the depiction of these features on these GIS parcel maps is for general analysis purposes only, specifically the development of the UGA-level buildable lands capacity estimates. They are not intended, nor are they at a sufficient level of detail and positional accuracy, to be used for a parcel-level determination of a parcel's actual development potential that would be obtained

following submittal of a site-specific development application. In addition, the criteria used represent best approximations of what may be unbuildable in a typical situation. However, there are specific instances where these criteria would not automatically result in unbuildable area (e.g., 33% or greater slopes). These criteria should therefore be viewed as representing “average” situations.

Type	Current Snohomish County CAR buffers used for capacity update
Streams	
with ESA listed fish	150 ft
Type 1	100 ft
Type 2	100 ft
Type 3	50 ft
Type 4	25 ft
Type 5	10 ft
Wetlands	
with ESA listed fish	150 ft
Category 1	75 ft (used 50 ft overall avg)
Category 2	50 ft (used 50 ft overall avg)
Type	Current Snohomish County CAR buffers used for capacity update
Category 3	25 ft (used 50 ft overall avg)
Category 4	25 ft (used 50 ft overall avg)
Lakes	
with ESA listed fish	150 ft
Type 1 – SMMP natural	100 ft
Type 1 – SMMP conservancy	100 ft
Type 1 – SMMP rural	50 ft
Type 1 – SMMP suburban	50 ft
Type 1 – SMMP urban	25 ft
Type 2	*
Type 3	*
Type 4	*
Type 5	*
Marine Shorelines	150 ft (with ESA listed fish)

NOTES: SMMP = Shoreline Management Master Program

* = as with all water bodies in unincorporated Snohomish County, subject to 25 ft rear setback requirement per zoning code, SCC 30.23.030(1)

Snohomish County is currently in the process of updating its critical area regulations. The final decisions on any changes to buffers in Snohomish County’s CAR by the county council will not be made for several months. As such, the present UGA land capacity analysis relies only on the current critical area regulations. Once CAR is updated, however, the UGA land capacity analysis

would need to be updated to reflect the changes. This capacity update could occur at the same time other potential capacity updates are conducted to document the capacity associated with any land use plan or growth target changes necessitated by next year's city/county target reconciliation outcome.

Removal of Major Utility Easements from the Buildable Lands Inventory

Another GIS data source for unbuildable land within UGAs was the Assessor's records on easements. Major utility easements (power transmission lines, oil and gas pipeline easements, etc.) were overlaid on parcels and the land area within parcels associated with the utility easement was deducted from the total acres to arrive at buildable acres. In order to avoid double-counting areas that were both critical areas and utility easements, the critical areas plus buffers were merged with utility easements first before overlaying on parcels.

Removal of Land Needed for New Transportation Arterials and other Capital Facilities Needs

Using GIS, land required for the rights-of-way for proposed new arterials, as identified on the county's current arterial circulation plan map was removed from the buildable lands inventory. In addition, during map review (see Step 4), parcels acquired or to be acquired for major public purposes (where known) were identified and removed from the buildable lands inventory. This included future school sites, parks and other municipal purposes uses.

Accounting for Unmapped Critical Areas

There is general consensus that existing GIS critical areas inventories are satisfactory for broad, areawide planning analysis, but that for site-specific purposes, these inventories are usually incomplete, especially with regard to smaller critical areas. There is acknowledgement that the information contained in these inventories best captures the larger critical area features, but that it is common during the more detailed site review at time of a project-level development application to uncover additional smaller critical area features not originally documented in the inventory. In order to account for unmapped critical areas in the buildable lands analysis, a 5% upward adjustment to total unbuildable acres when this calculation is performed at the parcel level was instituted. This percentage was reached through a stakeholder review process used for the development of the 2002 Buildable Lands Report methodology. It represents a generalized adjustment factor in contrast to the methodology described above which includes utility easements within the total unbuildable acres stored at the parcel level.

Step 3: Capacity Calculations -- Assignment of Future Development Densities to the Buildable Lands Inventory

The third step of the land capacity analysis process involved the use of the observed densities by plan designation as determined in the development history analysis. These observed residential densities (housing units per buildable acre) and commercial/industrial intensities (FARs per buildable acre) were applied to the buildable acres of land (gross acres minus critical areas and their buffers) within either vacant, partially-used or redevelopable parcels as determined above, to estimate additional housing unit and employment capacity potentially remaining per parcel. (See

attached graphic comparing gross vs. buildable vs. net density calculations.) This information was mapped by parcel and was reviewed for accuracy. (See Step 4.)

Within the unincorporated UGA, the county's proposed future land use (FLU) designations were used to predict future densities due to the frequent and continued likely rezoning of property from lower zoning categories to higher zoning categories within a plan designation prior to development of a property. Use of observed densities for county FLU designations would thus incorporate the likely continued practice of rezoning to higher densities within the same FLU designation in the same way that was observed from 1995 through 2000.

In some isolated instances, however, densities and FARs associated with current county zoning were determined to be more predictive than the more generalized future land use category. These situations were isolated to parcels in unincorporated UGAs currently with multi-family residential (MR), business park (BP), neighborhood business (NB), and rural conservation (RC) zoning.

In other instances, the county's proposed future land use map for the draft preferred alternative contains relatively new designations for which there is a very limited development experience to draw from at this time. These include the Urban Center, Transit/Pedestrian Village, and Urban Village designations. For the purposes of this land capacity update, it was assumed that for all three proposed designations, commercial development would occur at Urban Commercial intensities. For the first two designations, it was assumed that residential development would occur at Urban High Density Residential densities, while Urban Medium Density Residential densities were assumed for the Urban Village designation. These assumed densities will be superseded in the next Buildable Lands Report (required by GMA in 2007) by the actual densities observed during the monitoring of development that occurs in these new designations.

Calculation of Additional Housing Unit and Population Capacity

When calculating additional residential capacity, the formula that applied observed densities by plan/zone to vacant, partially-used or redevelopable parcels, was performed on a parcel-by-parcel basis. Any fractional units that resulted from the parcel-level calculation of additional housing unit capacity were truncated (dropped). In addition, additional residential capacity was not assumed for parcels less than 3000 square feet in size. This resulted in the removal of many "sliver" parcels from the buildable lands inventory maps – parcels that are unlikely to develop due to their small size or irregular shape, and in which setback requirements are unlikely to be met.

An example of how this formula was performed at the parcel level is shown below. Assume that a parcel (whether vacant, partially-used or redevelopable) has an estimate of buildable area of 3.5 acres. Also, assume that the parcel is located in a single family residential zone in which there is an observed buildable density from 1995-2000 of 4.2 units per buildable acre. This would result in an estimate of 14 additional units for the parcel:

$$3.5 \text{ buildable acres} \times 4.2 \text{ units per buildable acre} = 14 \text{ units.}$$

Notice that the fractional amount of 0.7 units is dropped from the additional capacity estimate for the parcel. Also, for redevelopable parcels, any existing housing units on parcels that are assumed to be redeveloped (i.e., assumed to be demolished) are subtracted from the estimate of additional housing unit capacity.

Housing unit to population capacity estimates are then calculated based upon 96% occupancy rate and 2.9 average household size assumptions for single family detached zones, 96% occupancy rate and 2.5 average household size assumptions for single family attached zones, and 92% and 2.0 average household size assumptions for multi-family residential zones. (These demographic assumptions were derived from review of the Census 2000 data for Snohomish County.) The formula for this calculation is as follows:

$$\text{Additional population capacity} = \text{additional housing unit capacity} \times \text{occupancy rate} \times \text{average household size}$$

Continuing with the example above, 14 additional single family housing units x .96 occupancy rate x 2.9 average household size = an additional population capacity of 39 (with rounding).

When calculating additional residential capacity, vacant building lots were handled separately from the theoretical capacity calculations using observed densities by plan/zone. Instead, if a vacant residentially-designated parcel was at least 3000 square feet in size (a cut-off established to eliminate parcels that would probably be unlikely to meet setback requirements as described above), these parcels were counted as representing additional housing unit capacity, even though they may not meet the minimum lot size requirements of the current zone. It was assumed that these vacant building lots could obtain legal lot status for a residential building permit and thus should be counted. In addition, if these vacant residential building lots were recently platted (i.e., sometime over the past 10 years), then the additional capacity associated with these parcels (along with all post-April 2001 development and pending development applications) were counted as a special subset of vacant capacity that would not be reduced for market reasons (i.e., the market availability reduction factor). These lots have been platted and are ready or will soon be ready to be developed – the question of whether the market will support their development has already been answered, making the market availability reduction factor unnecessary.

Some questions have arisen regarding the depiction of additional residential capacity in commercial zones. Generally, most commercial zones in the county and in most cities allow residential development as a permitted use. Review of the 2002 Buildable Lands Report development history summary tables for most commercial zones will quickly reveal this. Consequently, to the extent that commercial zones have been used for new residential development (almost always multi-family development) since 1995, these observed residential densities have been applied to commercial zones to predict future residential development in lieu of commercial development in commercial zones.

Calculation of Additional Employment Capacity

When calculating additional employment capacity, the formula that applied observed densities by plan/zone to vacant, partially-used or redevelopable parcels, was performed on a parcel-by-parcel basis. Any fractional employees that resulted from the parcel-level calculation of additional employment capacity were truncated (dropped). Specifically, the formula works as follows:

$$\text{Additional employment capacity} = (\text{buildable acres} \times \text{employment sector FAR} \times 43560 / \text{square feet per employee by sector})$$

Employment sector FARs (floor area ratios) are the observed values calculated by plan and zone designation in the development history summary reports. There are distinct FARs for development observed in the following employment sectors:

- Manufacturing (MANU)
- Wholesale, Transportation, Communications, Utilities (WTCU)
- Retail (RET)
- Finance, Insurance, Real Estate, Services (FIRES)
- Government/Education (GOVED)

Buildable acres are converted to square feet in the formula by multiplying by 43,560 (the number of square feet in an acre). The result is then divided by the assumed number of square feet per employee by employment sector:

- MANU = 500 square feet per employee
- WTCU = 833 square feet per employee
- RET = 600 square feet per employee
- FIRES = 395 square feet per employee
- GOVED = 300 square feet per employee

These estimates were derived from research previously conducted in Snohomish County, in cooperation with the Snohomish County Economic Development Council (1985 Snohomish County Business and Industrial Land Survey, updated in 1995 as the Employment Land Capacity Analysis for Unincorporated Snohomish County). This information was also compared with recent estimates published by the Institute of Transportation Engineers and was found to compare favorably.

An example of how this formula was performed at the parcel level is shown below. Assume that a parcel (whether vacant, partially-used or redevelopable) has an estimated buildable area of 3.5 acres. Also, assume that the parcel is located in a commercial zone in which there is an observed FAR of .20 (ratio of usable employment space built to land area built upon) for retail uses during the 1995 – 2000 period.

Additional employment capacity = (buildable acres x employment sector FAR x 43560 / square feet per employee by sector)

Additional employment capacity = (3.5 acres x .20 FAR x 43560 / 600 square feet per retail employee)

Additional employment capacity = 50 employees

Notice that the fractional amount of 0.82 employees is dropped from the additional capacity estimate for the parcel. Also, for redevelopable parcels, any existing employment estimated on the parcel (based on the square footage of existing commercial and industrial structures on the parcel that are assumed to be redeveloped, i.e., assumed to be demolished) is subtracted from the estimate of additional employment capacity using a standard average of 500 square feet per employee.

Capital Facilities Analysis

An assessment of sewer availability within UGAs was also conducted. In some areas, the lack of sanitary sewer planning or presumed availability during the GMA plan horizon resulted in the preclusion of further subdivision in some unincorporated UGA locations. This was due to the county's requirement to connect to sanitary sewers for subdivision approval within unincorporated UGAs. These areas included an area in the northwest portion of the Monroe UGA and a portion of the Picnic Point area in the SW UGA. In these areas, subdivision as a means of creating additional residential capacity was not modeled. Individual single family residential building permits on vacant building lots was modeled. (It should be noted, however, that in some urban unincorporated areas where connection to public sewer is not economically or technically feasible, some minor subdivision is possible using septic systems, although the circumstances allowing such exceptions are limited.)

Step 4: Quality Assurance/Quality Control Process -- Map review

Following the calculation of additional residential and employment capacity by parcel, this information was mapped and reviewed for accuracy. Since most of the parcel inventory was originally established for the 2002 Buildable Lands analysis, the extensive city and county staff review (both during one-on-one meetings with the cities and field review), as well as public review (Master Builders, Association of Realtors, Buildable Lands Open House comments), that occurred at that time resulted in many improvements to the map. In many cases, the original calculated capacity estimates were found through public review to be in error for a variety of reasons (recently acquired public purpose land, incorrect current land use information was used in the GIS). In these situations, the calculated capacity estimates were overridden with the more accurate information obtained from this public review. Information on known projects under review was also obtained during this process and was used to override the calculated estimates of additional capacity for the associated properties.

The March 2001 digital orthophotography (aerial photography) overlaid on the GIS parcel base was used extensively to "ground truth" the parcel map information as of April 2001. The aerial imagery for all parcels within the UGA that showed additional residential or employment capacity was viewed to ensure accuracy. Parcels that were visibly developed using this process were removed from the buildable lands inventory.

Step 5: Reductions for Uncertainty

Step 5 applies final reduction factors to the capacity results to account for uncertainties in market and land availability.

Miscellaneous Public Purpose Reduction

During map review for the 2002 Buildable Lands Report, parcels acquired or to be acquired for major public purposes (where known) were identified and removed from the buildable lands inventory. This included future school sites, parks and other municipal purposes uses. This also included the removal of land needed for future rights-of-way for proposed new transportation arterials during Step 2 (buildable lands inventory) portion of the analysis. However, this process

did not result in all future public purposes uses being accounted for. Other miscellaneous public purpose uses that would have been missed in this review process include churches, day care facilities, pre-schools, private schools, jails, skateboard parks, small-scale institutional and municipal uses (water storage facilities, etc.).

A 5% reduction factor was used to account for the uncertainty of land availability for development due to: potential new regulations requiring larger detention ponds, potential need for regional or local stormwater facilities, potential need for transmission line, utility, or road or rail rights-of-way, potential need of land for public or institutional uses like police/fire stations, churches, water supply storage facilities, wastewater treatment and pump stations, landfills and transfer stations, cemeteries, libraries, daycares, small parks or open space, municipal offices, and other uses where we do not today have a specific map coverage to use (consistent with Section 2.5.4 on page 5-37 of the Buildable Lands Procedures Report prepared by ECONorthwest).

The use of a 5% miscellaneous public purpose reduction factor was supported by an analysis of the development history database for actual miscellaneous uses developed between 1995 and 2000. It was found that for all designations, the percentage of land developed during this time period that went to non-typical uses (such as churches, utilities, government services and other conditional uses) was only 0.86%. This doesn't entirely account for all public uses, such as parks. However, since steps were taken to remove future public uses such as potential park and school sites from the buildable lands inventory so that they are not counted as buildable land in the first place, this analysis supports the use of an additional 5% reduction for this adjustment. (A 10% reduction factor could be used, however, the result would be an allocation of land to public purpose uses that is in excess of recent county experience and documented examples.)

Market Availability Reduction Factor

After a reasonable estimate has been made of parcels within a UGA that have remaining development potential, one of the last steps in calculating additional capacity is to apply the market availability reduction factor. This step is intended to address the fact that not all developable land will be available for development over the GMA planning timeframe since not all landowners are willing to develop their property for a variety of reasons (investment, future expansion, personal use). The state publications on "Providing Adequate Urban Area Land Supply" (1992) and the "Buildable Lands Program Guidelines" (2000) both recommend that the methodologies "assume that a certain percentage of vacant, under-utilized, and partially-used lands will always be held out from development."*

The 1992 state guidebook acknowledges that "information about land availability is difficult to obtain and confirm." However, some suggestions were provided that were used by Snohomish

* This step (the market availability reduction factor) is separate and distinct from the UGA safety factor calculation discussed previously in this report (and sometimes referred to as the "market factor" or "land market supply factor" as in RCW 36.70A.110). CTED's 1992 urban land capacity guidebook clearly distinguishes between these concepts by describing them in two separate steps: "**Step 5. Subtract all parcels which you assume will not be available for development within your plan's 20-year timeframe.** Assume that a certain percent of vacant, under-utilized, and partially-used lands will always be held out from development. **Step 6. Build in a safety factor.** If you are unable to monitor land supply on a regular basis, consider building in a safety factor of land in addition to your projected 20-year land area needs to assure adequate availability and choice at all times".

County jurisdictions during 1993-95 when the original land capacity analyses were developed for the first UGA sizing process under GMA. In the 1992 state publication, survey research by the Real Estate Research Corporation was cited that indicated that in high demand suburban areas, over half of the vacant landowners anticipated putting their land on the market for development within 5 years. Within 10 years, the percentage rose to 77%. For partially-used and under-utilized land, the report cites an analysis of King County plats in high demand suburban areas that concluded that up to 70% of partially-used and under-utilized land could be considered likely to be made available for development at greater densities within 20 years.

Based on this research, many Snohomish County jurisdictions (including Snohomish County for unincorporated urban areas) in their 1993-95 land capacity analysis applied a 15% market availability reduction factor for vacant land, and at least a 30% market availability reduction factor for partially-used and redevelopable land. Scenario A of the 2002 Buildable Lands Report used 15% and 30% reduction factors.

These reduction factors were generally consistent with the results obtained by the City of Marysville from a survey of Marysville area property owners in 1993. Results from the survey indicated that 28% of the owners of vacant and partially-used properties “did not consider their land available for development now, or within the next twenty years.” In addition, the buildable lands work conducted in 2002 among jurisdictions in King County resulted in the use of market availability reduction factors for cities that were generally in the 5-15% range for vacant land and 10-20% range for redevelopable land. The remaining unincorporated portions of the King County UGA used generally higher percentages than the cities, however, when the city and county results were combined, an overall market reduction factor of 20% for both vacant and redevelopable parcels in the UGA resulted for residential parcels, and 13% overall for commercial and industrial parcels in the UGA.

In the 2002 Buildable Lands Report, Scenario B was run using a 30% reduction factor for vacant lands, and a 40% reduction factor for partially-used lands and redevelopable lands. The higher reductions were primarily based on the reasoning that since the Buildable Lands Report dealt with a shorter planning period (2002 – 2012) that was half that of the original plan horizon (1992 – 2012) when the 1993-95 land capacity analysis was run, the market reduction factors should be higher. This was based on the notion that the likelihood of property owner willingness to make their property available for development should be less as the period for considering this action is also reduced. Having reestablished a 20-year plan horizon for the 10-year plan update (to the year 2025), the present capacity analysis uses the same market availability reduction factors associated with the original capacity analysis performed for the 1992-2012 planning period. This is consistent with the rationale used in Scenario B, as extended over 20 years.

Results of a recent Snohomish County property owner survey support this approach. The county contracted with Gilmore Research Group to research this question by conducting an urban land market availability survey. Gilmore Research conducted a telephone survey of owners of developable property within the Snohomish County UGA, including areas within cities. The survey was designed to obtain information directly from a random sample of Snohomish County property owners regarding their intent to develop or redevelop their property within the UGA over time. Results from the survey have been obtained and final results support the use of the 15% and 30% market availability reduction factors for establishing land availability for development within the

UGA to the year 2025. [See the PDS document “Urban Land Availability Survey,” published June 14, 2005.]

This survey research follows through on one of the recommendations contained in the final 2002 Buildable Lands Report for Snohomish County which emphasized that local governments should strive to improve the empirical basis for the assumptions and calculations underlying the estimates of remaining development potential for property within the UGA. As a part of the buildable lands analysis, the land market availability reduction probably had the least amount of local data associated with it. This study helps to remedy this situation by generating local data that will provide a better understanding of urban property owner expectations for developing their land.

Other Scenario A vs. Scenario B Differences in the 2002 Buildable Lands Report

CC&R’s (Covenants, Conditions and Restrictions). Scenario B required removal of buildable parcels that were subject to CC&Rs contained in private deeds that prohibited further subdivision of the property. The present analysis takes this into account. However, to date, no parcels have been found in the buildable lands database that fit this description. A set of 25 CC&Rs provided to the county by the Snohomish County-Camano Association of Realtors in January 2003 was researched by staff and although they contained private restrictions on further development and subdivision of property, none of the plats to which they corresponded had additional housing unit capacity calculated in the 2002 buildable lands database. This was due to the fact that these subdivisions were already platted at the current zoning used for the buildable lands potential yield assumptions. As such, the buildable lands analysis calculated no additional unit yields in these subdivisions since they were already built-out under the zoning.

Outer or 2nd 150 ft portion of the ESA Habitat Management Zone. Scenario B considered the second 150 ft portion of the HMZ along ESA streams as unbuildable since the county’s administrative rule prohibits the creation of “effective impervious surface” in this area, thus making development in the 2nd 150 ft area unfeasible. However, development in this area is still possible with appropriate stormwater infiltration systems. Staff research since the 2002 Buildable Lands Report has revealed that all plats approved since the listing of the Puget Sound Chinook salmon as a threatened species on May 22, 1999 (and recorded as of December 12, 2003) that had land area subject to the 2nd 150 foot ESA buffer requirements (a total of 10 plats) used the 2nd 150 ft area for individual residential building lots or open space for density transfer credit. In the plats where individual building lots have been recorded, nearly all have had building permits issued for single family home construction in the 2nd 150 ft area. As such, administration of the habitat management plan requirement has allowed for development in the 2nd 150 ft area.

Concurrency Arrearage Reduction Factor. Both Scenario A and B used concurrency arrearage reduction factors that were designed to estimate the amount of land currently affected by arterial units in arrears (“concurrency arrearage”) that will still not be able to develop by 2012. However, with the extension of the plan horizon for this updated capacity analysis to the year 2025, and with the updating of the county’s transportation element to address long-term transportation problems such as these, the continuation of areas affected by unresolved arterial units in arrears over a 20 year time period was considered highly unlikely. Consequently, this adjustment was removed for the 2025 land capacity analysis update.

Table 1 shows a comparison of methodological assumptions used for the 2002 Buildable Lands Report and the 2005 Draft UGA Land Capacity Analysis.

Also, note that Tables 2 & 3 which follow replace the summary tables previously shown on pages 21 and 22 of the April 29, 2005 Draft UGA Land Capacity Analysis Technical Report, and Tables 1 – 4 of the December 14, 2005 Draft UGA Land Capacity Analysis Technical Report.

NOTE: All tables and charts which follow were updated on December 22, 2005 and are consistent with the final Future Land Use Map adopted by the Snohomish County Council on December 21, 2005.

SAMPLE DENSITY CALCULATION AND APPLICATION

(Gross vs. Buildable vs. Net Density)

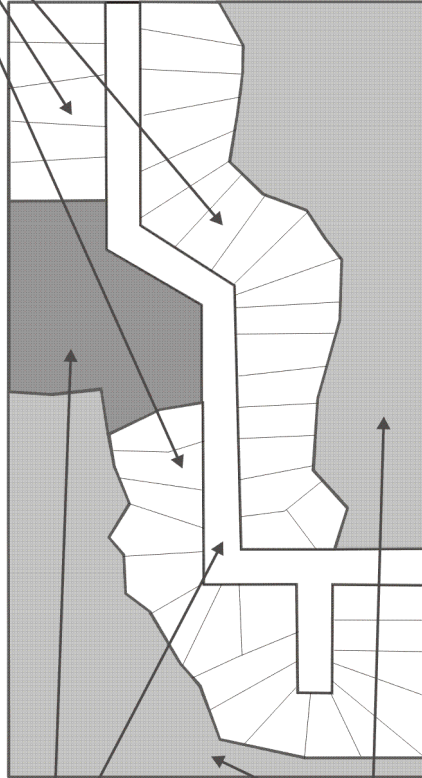
Development History:

Observed Density

(1995 - 2000)

20 Acre Site

Single Family
Detached Units
(40 lots on 8 acres)



Stormwater
detention &
roads, (4 acres)

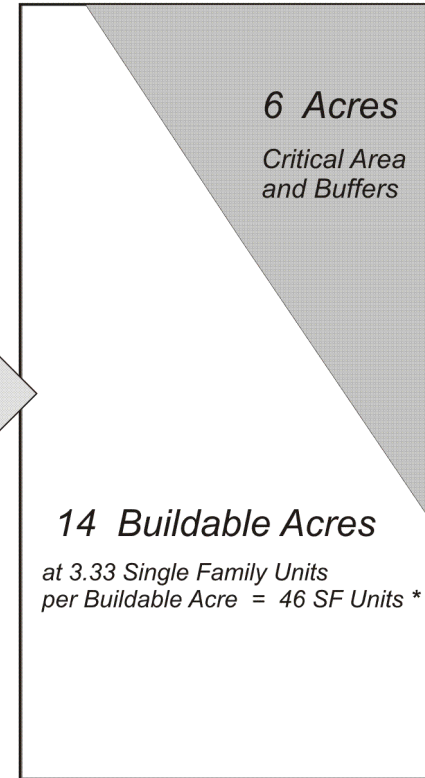
Critical Areas
and Buffers
(8 acres)

Buildable Land:

Future Density

(2001 - 2012)

**Vacant 20 Acre Single Family
Residentially Zoned Parcel**



GROSS DENSITY

$$\frac{\text{Dwelling Units}}{\text{Gross Acres}^*} = \frac{40}{20} = \mathbf{2 \text{ Units per Gross Acre}}$$

* Total Site Area (20 acres)

BUILDABLE DENSITY

$$\frac{\text{Dwelling Units}}{\text{Buildable Acres}^{**}} = \frac{40}{(20 - 8)} = \frac{40}{12} = \mathbf{3.33 \text{ Units per Buildable Acre}}$$

** Total Site Area (20 acres)
minus Critical Areas and Buffers (8 acres)

**3.33 Units
per
Buildable
Acre**

NET DENSITY

$$\frac{\text{Dwelling Units}}{\text{Net Residential Acres}^{***}} = \frac{40}{(20 - 8 - 4)} = \frac{40}{8} = \mathbf{5 \text{ Units per Net Residential Acre}}$$

*** Total Site Area (20 acres)
minus Critical Areas and Buffers (8 acres),
minus Non-Residential Uses (4 acres)
(e.g. roads, stormwater detention)

14 Buildable Acres

at 3.33 Single Family Units
per Buildable Acre = 46 SF Units *

* (.62 fractional unit is truncated)

Table 1

Comparison of Methodological Factors Used for 2002 Buildable Lands Report and 2005 Draft UGA Land Capacity Analysis

Methodological Issue	2002 BLR Scenario A	2002 BLR Scenario B	2005 Draft Land Capacity Analysis
Market availability reduction factor	15% for vacant land 30% for partially-used and redevelopable land (originally developed for 20-year timeframe)	30% for vacant land 40% for partially-used and redevelopable land (developed for 10-year timeframe)	15% & 30% used. Because the plan horizon is now 20 years once again, this is consistent with both Scenario A & B (extended over 20 years). Results of a recent property owner survey conducted by Gilmore Research support reductions used for both 20-year (Scenario A) and 10-year (Scenario B) timeframes. [See pages 16-17 of report.]
Miscellaneous public purpose reduction	5% to account for land area needed for public and institutional uses not specifically addressed in separate parcel review and removal process	10% to account for land area needed for public and institutional uses not specifically addressed in separate parcel review and removal process	5% used. Data analysis shows that for land developed between 1995 and 2000, slightly less than 1% was for miscellaneous uses. A 10% reduction would result in an allocation of land to miscellaneous uses that is in excess of recent county experience. [See pages 15-16 of report.]
“Outer” 150 ft portion of the ESA Habitat Management Zone (County)	Not considered; only first 150 ft buffer area considered unbuildable	Second 150 ft portion of HMZ (prohibition on “effective impervious surface”) also considered unbuildable	Analysis of plats recorded since 1999 that intersect the 2 nd 150 ft area shows that all use this area for either residential building lots or open space for density transfer credit. Recent development experience therefore indicates this area should be treated as buildable. [See page 18 of report.]
CC&Rs (Covenants, Conditions and Restrictions)	Not considered	Removal required when they prohibit future subdivision (as of Jan. 2003, no parcels with CC&R restrictions have been identified)	If CC&Rs effectively prohibit future subdivision on parcels that the capacity analysis indicates have additional development potential, then these parcels should be removed from the inventory. To date, no parcels in the inventory fit this description. [See page 18 of report.]
Transportation concurrency	Areas within UGA potentially affected by arterial units in arrears over next 10 years were tabulated for reduced capacity scenario (excluding known projects)	75% of the additional capacity in areas within UGA currently affected by arterial units in arrears was removed (excluding known projects)	No reduction factor was used for concurrency since the plan horizon now extends to 2025. The updated transportation element is intended to address long-term concurrency problems. [See page 18 of report.]
2012 Population	CPP/SCT revised 2012 population targets	Updated 2012 population allocation, using the Jan. 2002 OFM high/low population forecast range for Snohomish County	Not applicable – 2025 growth targets are now being used