SNOHOMISH COUNTY COUNCIL
Snohomish County, Washington

MOTION 21-273

ADOPTING THE BUILDABLE LANDS PROCEDURES REPORT THAT HAS BEEN ACCEPTED AND RECOMMENDED BY THE SNOHOMISH COUNTY TOMORROW STEERING COMMITTEE FOR USE IN THE DEVELOPMENT OF THE BUILDABLE LANDS REPORT FOR SNOHOMISH COUNTY

WHEREAS, the Growth Management Act (GMA) (chapter 36.70A RCW) at RCW 36.70A.215 requires certain local governments to carry out review and evaluation programs that analyze various factors relating to growth, density and capacity of urban growth areas (UGAs) and that annually collect data on urban and rural land uses; and

WHEREAS, the review and evaluation program under RCW 36.70A.215 requires that Snohomish County produce a report, commonly referred to as a buildable lands report, every eight years; and

WHEREAS, the Snohomish County Countywide Planning Policy (CPP) GF-7 establishes a process for the development of the buildable lands reports involving Snohomish County cities and the county through the cooperative planning process of Snohomish County Tomorrow (SCT); and

WHEREAS, CPP GF-7 requires that the development of the Buildable Lands Report for Snohomish County follow a framework for coordinated county and city data collection and analysis established in the Procedures Report titled “Recommended Methodology and Work Program for a Buildable Lands Analysis for Snohomish County and its Cities,” which was originally approved by the SCT Steering Committee in July 2000, and used as the framework for the 2002, 2007 and 2012 Buildable Lands Reports for Snohomish County; and

WHEREAS, E2SSB 5254, passed by the Legislature in 2017, enacted a number of changes to state requirements for buildable lands methods and procedures, which were subsequently clarified in updated Buildable Lands Guidelines published by the State Department of Commerce in December 2018; and

WHEREAS, efforts began in May 2019 by SCT to update Snohomish County’s Procedures Report for buildable lands analysis by forming a Planning Advisory Committee (PAC) subcommittee to work with planning staff and a consultant team (ESA/ECONorthwest) to review and evaluate existing methods and procedures for conducting the buildable lands analysis, and recommend updates to the Procedures Report; and

WHEREAS, the PAC subcommittee met four times between September 2019 and February 2020 to develop its recommendation; and

WHEREAS, the PAC subcommittee process also included holding a Stakeholder Workshop in November 2019 to discuss the overall process for updating the BLR methodology, provide preliminary findings of the research, and to gather input and ideas for the PAC subcommittee to consider. The workshop attendees included representatives from the development, environmental, and infrastructure-provider communities, as well as representatives from cities and Snohomish County; and

WHEREAS, due to the cancellation of in-person meetings as a result of the COVID-19 emergency declaration beginning in March 2020, the BLR stakeholder outreach approach subsequently shifted to updates of stakeholder representatives via email and 2021 BLR webpage updates; and

WHEREAS, the SCT Managers and Administrators Group (MAG) was briefed on the buildable lands methodology review and update project on January 21, 2020; and

WHEREAS, the SCT Community Advisory Board (CAB) was briefed on the buildable lands methodology review and update project on February 20, 2020; and

WHEREAS, the SCT PAC was briefed on the changes to the buildable lands Procedures Report recommended by the PAC subcommittee on April 9, 2020, followed by PAC approval of the recommended changes to the Procedures Report on May 14, 2020, with specific recommended changes being the insertion of a technical supplement document as a preface to the existing Procedures Report; and

WHEREAS, the SCT Steering Committee reviewed the changes to the buildable lands Procedures Report recommended by the PAC on May 27, 2020, and approved those changes at the Steering Committee meeting on June 24, 2020; and

WHEREAS, Appendix E of the CPPs for Snohomish County calls for Snohomish County Council adoption of the buildable lands Procedures Report that has been accepted and recommended by the SCT Steering Committee; and

WHEREAS, adoption of the Procedures Report for the buildable lands analysis does not constitute an agency action as defined by WAC 197-11-704. Therefore, SEPA environmental review is not required. Although the adoption of the report is not an agency action, to the extent it may be considered an agency action, it is categorically exempt under WAC 197-11-800(17) as information collection and research; and

WHEREAS, on September 1, and continued to September 8, 2021, the Snohomish County Council held a public hearing on the buildable lands Procedures Report recommended by the SCT Steering Committee;

NOW, THEREFORE ON MOTION, the Snohomish County Council adopts the Procedures Report titled “Recommended Methodology and Work Program for a Buildable Lands Analysis for Snohomish County and its Cities (Updated with Technical Supplement Approved by the Snohomish County Tomorrow Steering Committee on June 24, 2020)”, and attached to this motion as Exhibit A.

PASSED this 8th day of September, 2021.

SNOHOMISH COUNTY COUNCIL
Snohomish County, Washington

Megan Dunn
Council Acting Chair

ATTEST:

Clerk of the Council

EXHIBIT A

Recommended Methodology and Work Program for a Buildable Lands Analysis for Snohomish County and its Cities

Prepared for

Snohomish County
Planning & Development Services

by

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Final Report

July 2000

Updated with Technical Supplement Approved by the
Snohomish County Tomorrow Steering Committee on June 24, 2020
and Adopted by the Snohomish County Council on September 8, 2021

Methods and Procedures Technical Supplement: Response to E2SSB-5254

In 2019, Snohomish County began preparing for the 2021 Buildable Lands Report (BLR). Part of this preparation process included reviewing new legislation (E2SSB-5254) that resulted in changes to the Review and Evaluation Program for Buildable Lands. In December 2018, the Department of Commerce published updated Buildable Lands Guidelines (Guidelines) as a response to the requirements passed in E2SSB-5254. Snohomish County identified key issues necessary to address in the methodology for the 2021 BLR. The County worked with ECONorthwest to review and evaluate a subset of these issues including: (1) land classification definitions, (2) market factor rates, (3) infrastructure gaps assessment, and (4) reasonable measures.

Purpose and Approach

This document provides a summary of the analysis and findings for the portions of the Methods and Procedures that are recommended to be updated to comply with the updated Guidelines. The document is organized by each key issue that the County reviewed during this process using the following framework:

1. **Legislative (E2SSB-5254) requirements.** A key driver of reviewing the issues discussed in this process was the emphasis on these topics in the E2SSB-5254 legislation and supporting updated Guidelines. The discussion of each issue begins with a more detailed description of the regulatory framework.
2. **Findings and analysis.** Snohomish County staff and ECONorthwest completed analysis throughout the process, and documented key steps and findings of the analyses for each issue. This document is intended to summarize that work, and may not provide details that may be useful to some readers of this document (see the last section for references to more detailed analysis and findings).
3. **Recommended updates.** The discussion of each key issue concludes with the references to relevant sections of the Methods and Procedures document that are augmented by the recommended updates. This discussion describes how the updates would potentially change the County's existing process.
4. **Supporting documentation.** The last section of this document provides a comprehensive list of the supporting documents produced during the update process.

Approach

A consistent approach was used to review the existing methods and procedures following a set of evaluative steps for each key issue:

1. Review updated Department of Commerce Buildable Lands Guidelines (Guidelines) to understand recommended methods.
2. Use empirical analysis, if necessary, to compare the existing methodology to potential updated approaches.
3. Determine if an updated method is recommended compared to the status quo.
4. Develop recommended alternatives (or refinements) to the current methodology.
5. Evaluate alternatives using criteria: (1) ease of implementation; (2) availability of data; (3) alignment with DOC Guidelines; and (4) empirical evidence.
6. Document recommended changes and reference applicable steps in the Buildable Lands Methods and Procedures Document.

Public process

As part of the 2021 BLR methodology review and update, Snohomish County convened a subcommittee of the Snohomish County Tomorrow (SCT) Planning Advisory Committee (PAC). The subcommittee included city and county planning staff, representing 11 cities and the county. The SCT PAC subcommittee met four times between September 2019 and February 2020. During each meeting, Snohomish County staff from the Buildable Lands Team, along with ECONorthwest, presented analysis results and findings for each issue. The subcommittee provided context and background information about their jurisdictions, as well as discussed the findings and helped to focus the scope of the analysis. After review of the analysis of the key issues, the subcommittee approved the recommendations, as summarized in this document.

This process also included outreach to stakeholder groups. Snohomish County held a stakeholder workshop in November 2019 to discuss preliminary findings and the overall process for updating the BLR methodology to align with the new requirements. County staff and ECONorthwest facilitated discussions with small groups of stakeholder representatives from the development, environmental, and infrastructure-provider communities. Input from these groups was collected as part of the evaluation of recommended revisions and refinements to the BLR methods and procedures. The County followed-up with the stakeholder representatives to describe the status of the project and provide opportunities to comment and ask questions about the effort as it went through the SCT review process.

Issue 1. Land Classification

A core element of a buildable lands analysis is the classification of land, typically based (at least initially) on a rule-based methodology. The definitions of land classifications determine, in part, how much capacity is assigned to each parcel in the final BLR. Thus, accurately defining the classifications has implications for assumptions in subsequent steps of the buildable lands analysis and BLR results. Starting with the updated Guidelines and existing methodology, ECONorthwest compared development history with the County's previous BLR results to help inform potential alternative approaches to land classification.

Relevant E2SSB-5254 requirements

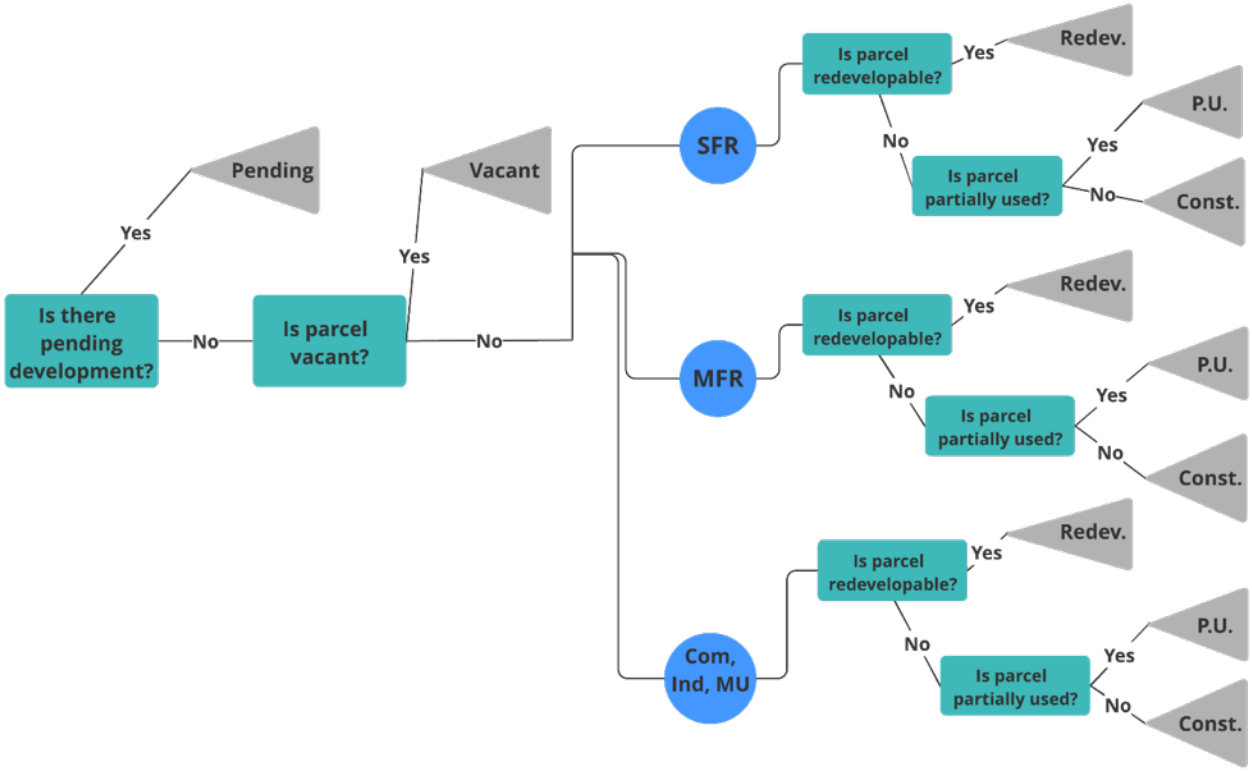
E2SSB-5254 requires that counties attempt to improve the overall accuracy of their BLRs to account for changes in growth patterns, which includes improving accuracy of land status classifications.

Findings and analysis

The 2012 Snohomish County BLR identified seven land status classifications for parcels within urban growth areas. The County uses a rule-based methodology to define a land classification for each parcel, which is followed by a manual review of aerial imagery and discussion with jurisdiction staff to determine the final land classification of the parcels. The land classification helps to determine the treatment of a parcel in subsequent steps of the buildable lands analysis, including the eventual capacity calculated for a parcel. Land classifications are generally assigned to two groups of classifications, either (1) those that anticipate development (i.e., additional capacity assigned) or (2) those where no development is anticipated (i.e., no additional capacity assigned[1]). Of the seven land status classifications, four are used for additional capacity determinations—vacant, partially-used, redevelopable, and pending. Exhibit 1 shows the logic for evaluating parcels by development type. A complete description of land classification definitions is included in the 2012 BLR Methodology section (page 15) of the 2012 Buildable Lands Report for Snohomish County.

[1] These areas are classified as a "constant" land status where the existing use is anticipated to remain unchanged during the remaining portion of the current GMA planning period.

Exhibit 1. Snohomish County Existing Land Classification Methodology



Note: SFR = Single-Family Residential; MFR = Multifamily Residential; Com = Commercial; Ind = Industrial; MU = Mixed-Use; Redev. = Redevelopable; P.U. = Partially Used; Const. = Constant.

Validation study

In 2019, Snohomish County staff completed a validation study to review and compare estimates from the 2012 BLR with recent development history data. The study included a sample of 219 projects that developed for residential uses between 2013 and 2018.[2] The projects included single-family, multifamily, or mixed-use development types within the UGA (cities and unincorporated UGAs).

Exhibit 2 to Exhibit 4 show summary statistics of the distribution of projects included in the validation study located on either redevelopable or partially-used economic units.[3] Exhibit 2 shows the improvement to land value ratios quartiles (using 2011 assessed values from the Snohomish County Assessor) for projects that developed consistent with their redevelopable and partially used land status classifications. Generally, the partially-used classification has

[2] The sample included projects where site boundaries corresponded to economic unit or parcel boundaries in the 2012 BLR. The sample excluded projects where project boundaries were split by 2012 economic unit or parcel boundaries; development is occurring in phases (some of which were incomplete); pending land status classification was assigned in 2012 BLR; or condominium conversion occurred with no net increase in units.

[3] In most cases, parcels and economic units are synonymous. However, some situations warrant the combination of parcels or the division of parcels into economic units based on location, ownership and/or land use.

higher ratios than the redevelopable classification and the multifamily development type is higher than the single-family development type.

Exhibit 2. Improvement to Land Value Ratio Quartiles by Land Classification and Development Type.

ILR Quartiles	Single Family	Multi Family
Redevelopable		
Bottom 25%	0.000 - 0.142	0.004 - 0.112
25% - 50%	0.142 - 0.353	0.112 - 0.231
50% - 75%	0.353 - 0.643	0.231 - 0.353
Top 75%	0.643 - 1.397	0.353 - 2.009
Partially-Used		
Bottom 25%	0.163 - 0.474	0.363 - 0.425
25% - 50%	0.474 - 0.701	0.425 - 0.709
50% - 75%	0.701 - 0.993	0.709 - 1.179
Top 75%	0.993 - 1.387	1.179 - 1.796

Source: Snohomish County Validation Study, 2019.

Exhibit 3 shows the improvement value quartiles (using 2011 assessed values from the Snohomish County Assessor) for projects that developed consistent with their redevelopable and partially used land status classifications. Generally, the partially-used classification has higher improvement values than the redevelopable classification, and the single-family development type is higher than the multifamily development type for the redevelopable classification.

Exhibit 3. Improvement Value Quartiles by Land Classification and Development Type.

Improvement Quartiles	Single Family	Multi Family
Redevelopable		
Bottom 25%	$0 - $44,475	$2,000 - $32,000
25% - 50%	$44,475 - $96,500	$32,000 - $49,800
50% - 75%	$96,500 - $231,975	$49,800 - $160,800
Top 75%	$231,975 - $1,857,400	$160,800 - $5,109,100
Partially-Used		
Bottom 25%	$51,400 - $92,125	$54,600 - $103,875
25% - 50%	$92,125 - $135,750	$103,875 - $156,500
50% - 75%	$135,750 - $245,750	$156,500 - $201,850
Top 75%	$245,750 - $499,900	$201,850 - $229,300

Source: Snohomish County Validation Study, 2019.

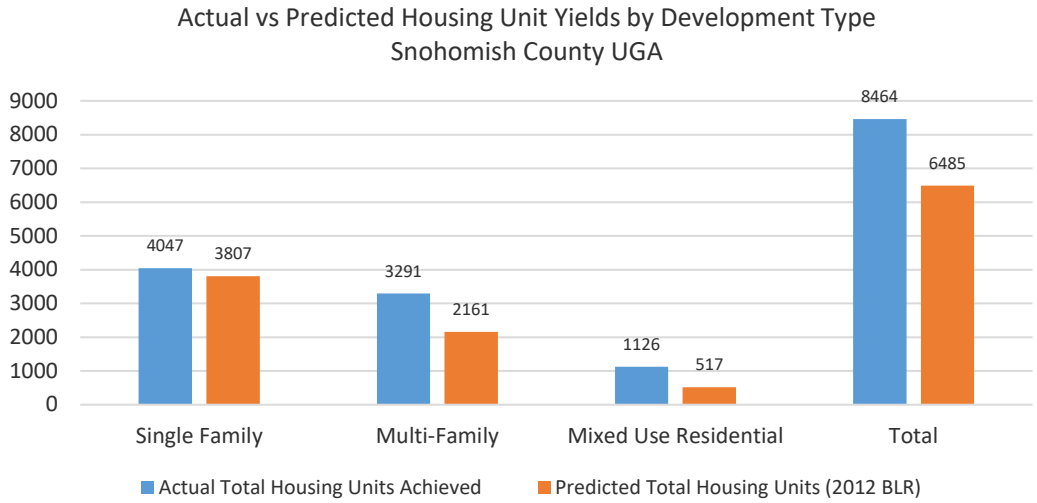
Exhibit 4. Median Improvement Value by Land Classification and Development Type.

Improvement Median	Single Family	Multi-Family
Redevelopable	$ 96,500	$ 49,800
Partially-Used	$ 135,750	$ 156,500

Source: Snohomish County Validation Study, 2019.

The results of the validation study showed that overall, the actual yield of housing units was higher than the predicted yield in the 2012 BLR. Exhibit 5 and Exhibit 6 show this comparison by development type and predicted land status from the 2012 BLR. The validation study also found that while the predicted land status of redevelopable for projects that actually redeveloped was generally accurate, most of the parcels classified as partially-used in the study were instead redeveloped.[4]

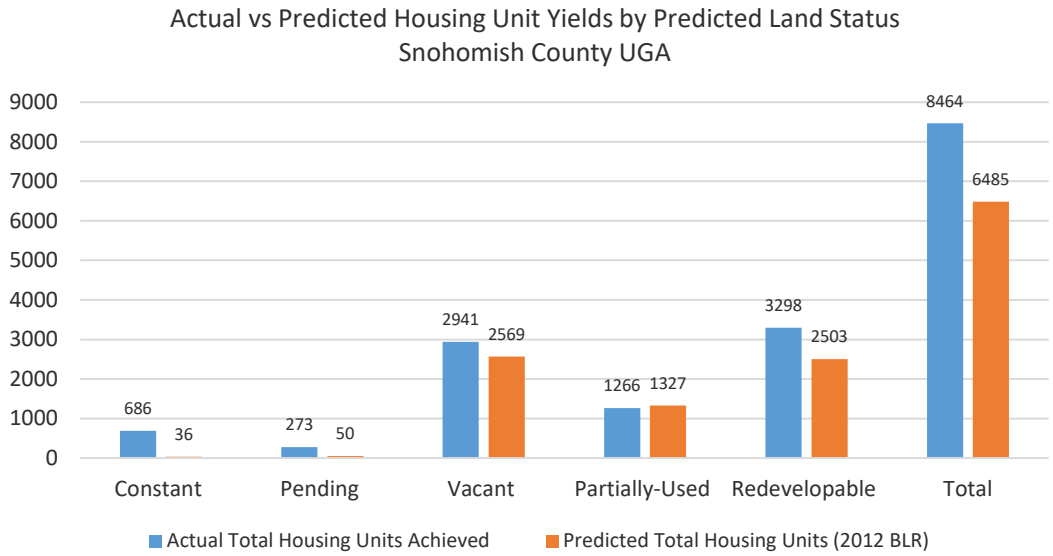
Exhibit 5. Comparison of Predicted Housing Unit Yields in 2012 BLR with Actual Yields by Development Type



Source: Snohomish County Validation Study, 2019.

[4] The Snohomish County Validation Study found that of the 105 out of 219 validation study development projects that were classified redevelopable, 93 (89%) actually redeveloped; while of the 42 projects that developed that were classified partially-used, only 7 (17%) were infill developed. The rest (35 or 83%) were actually redeveloped, suggesting a need to move more locations that previously would have been considered partially-used into the redevelopable category. Constant parcels were predicted such that only 15 (7%) projects out of the 219 total development projects occurred on land categorized as constant in 2012.

Exhibit 6. Comparison of Predicted Housing Unit Yields in 2012 BLR with Actual Yields by Predicted Land Status



Source: Snohomish County Validation Study, 2019.

Land classification analysis

Building on the findings from the validation study, ECONorthwest completed further analysis to better understand the characteristics of areas that developed, as compared to the 2012 BLR land status classification. This approach was done at the parcel level for all parcels that developed between 2011 and 2018, and compared these parcels to classifications in the 2012 BLR. The purpose of this inquiry was to use data potentially to inform the land classification process. The key questions that guided the analysis were:

- What developed since the 2012 BLR?
- What are the characteristics of properties that developed?
- For properties that developed, what was the land classification in 2012?
- What relationships exist between property characteristics, actual development, and land classification?

The analysis started with a summary of trends in development for beginning discussions with County staff and the Subcommittee. The outcomes of these discussions led to further analysis to better understand the characteristics of land that developed in Snohomish County, and how these characteristics may inform alternative methodological approaches. The analysis, which centered around an econometric approach, is documented in the "Snohomish County Method Alternatives and Evaluation Criteria" memorandum. Appendix A of the memorandum provides detailed results of the econometric approach using a multinomial logit model.

In summary, a logit model is a type of regression model that explains the relationship of individual characteristics to probability of development, and fits well with the buildable lands methods and conditions. A parcel has many characteristics and the logit model allows for understanding the likelihood that a parcel will develop given its unique characteristics and development type. The thresholds (and parameters for those thresholds) set by the BLR methodology determine how land is classified, and the logit model can help to identify the optimal threshold parameters,[5] given other considerations for probability of development.

General findings from the model indicate that the existing land classification scheme (e.g., improvement value, improvement to land value ratio) can reasonably be used as predictive variables for development. Additional insight suggests that other variables (i.e., gross buildable acres) can be used to relate parcel characteristics to the probability of development.

With respect to buildable lands methods, the assignment of land classification represents the first and significant step towards more accurately identifying buildable capacity given best available data and information. There are two main objectives of such an exercise:

1. First, the method should seek to maximize the accurate identification of "constant" parcels. These are parcels where no development is expected.
2. Second, the method should seek to maximize the accurate distinction between "redevelopable" and "partially used" parcels. Partially used parcels are those where an existing structure is likely to be retained and so adjustment to buildable capacity are needed.

Exhibit 7 shows the "best performing" threshold parameters based on the logit model results for each development type, compared to the existing parameters (in this case, "best performing" is defined as meeting the two objectives above). It also shows thresholds that are not part of the existing methodology, but indicate parcel characteristics that performed well in the model and may provide improved predictability of development.

[5] In this document we reference "thresholds" and "parameters" in descriptions of assumptions for land classifications. "Thresholds" indicates the different variables applied to assign a land classification—e.g., improvement value or parcel size. "Parameters" for the thresholds indicates the specific values assigned to a threshold—e.g., $100,000 improvement value.

Exhibit 7. Summary of Existing and "Best Performing" Land Classification Threshold Parameters by Development Type

	Single Family		Multifamily		Commercial, Industrial, Mixed Use	
	Existing	Best Performing	Existing	Best Performing	Existing	Best Performing
Vacant						
Improvement Value	$2,000	$7,500	$2,000	$3,500	$2,000	$400
Redevelopable						
Improvement Value	$100,000	$103,750	n/a	n/a	n/a	n/a
ILR	0.75	0.7	1	0.76	n/a	n/a
Land Value	n/a	n/a	n/a	n/a	n/a	$338,400
Partially Used						
Improvement Value	n/a	n/a	n/a	$91,200	n/a	$502,450
ILR	n/a	1.53	n/a	n/a	n/a	n/a
Gross Buildable Acres	2x zoned lot size	0.33	n/a	n/a	n/a	n/a
Building Footprint-to-Lot Size	n/a	n/a	0.25	0.10	n/a	n/a
Land Value	n/a	n/a	n/a	n/a	n/a	$757,950

Source: Snohomish County; ECONorthwest analysis

Recommended updates

As stated above, the analysis of land classification showed that the model classifies land that does or does not develop with reasonable accuracy. The analysis showed that there are some areas where refinement to the model may provide some improvements in predictive accuracy. These recommended refinements are:

- **Update thresholds for each development type.** Using recommended thresholds at or similar to results from the logit model, we recommend reviewing the results of the logit model for use in updating the thresholds for determining vacant, partially used, and redevelopable land classifications for the 2021 BLR.
  - This recommendation augments the information in Chapter 5: Phase II Data Collection, Analysis, and Evaluation of the Methods and Procedures Document. The methodology section of the 2021 BLR should also consider this recommendation.
- **Adjust for inflation.** Since the analysis was based on assessor data from 2011, we recommend adjusting thresholds for inflation for the 2021 BLR using the Seattle CPI-U.
  - This recommendation augments the information in Chapter 5: Phase II Data Collection, Analysis, and Evaluation of the Methods and Procedures Document.
- **Collect data on redevelopment.** Similar to the County's process for their validation study, we reviewed a representative sample of developed parcels for whether buildings were retained (infill) or removed (redevelopment). Tracking this data as part of the long-

term development monitoring process will help to better understand the redevelopable land classification in future BLRs.[6]

- This recommendation augments the information in Chapter 5: Phase II Data Collection, Analysis, and Evaluation of the Methods and Procedures Document, as well as Appendix E: Proposed Data Structure.

Issue 2. Market Factor

The market availability factor reduction is an adjustment to the estimated capacity that allows for consideration of parcels (without identifying specific parcels) that will be held out from development throughout the 20-year GMA plan horizon. The Snohomish County BLRs completed in 2002, 2007, and 2012 assumed market availability factor reductions of 15% for vacant land and 30% for partially used and redevelopable land. These assumptions were based on property owner surveys completed in 1993 (City of Marysville) and 2005 (Snohomish County). The Guidelines reference the methods used in Snohomish County as examples for collecting data on market factors, in addition to other types of analysis. The Guidelines also recognize the difficulty in collecting and analyzing data for purposes of developing a reasonable market factor assumption.

Relevant E2SSB-5254 requirements

E2SSB-5254 requires that counties adequately address reductions for uncertainty regarding the eventual availability of land for development, with specific emphasis on the "use of a reasonable market supply factor." The Guidelines provide a list of potential considerations for updating market supply factors that address a range of issues that influence development in a particular area, such as infrastructure or development costs; timing of permitting and construction; land availability and suitability; and willingness of property owners or other economic conditions. The Guidelines also note that market factors may vary across counties as well as cities within a county.

The Guidelines provide suggested methods for addressing each consideration, with acknowledgement that many of these issues overlap and generally contribute to an overall market factor. Snohomish County's coverage of nearly 20-years of buildable lands and development data allowed for an evaluation of the market factor unavailable in years prior. The analysis in this section allows for a comprehensive review of the market factor, where the issues related to the market factor are inherent in the results.

Findings and analysis

ECONorthwest worked with County staff to identify sample areas that represent different types of markets or geographies. These areas represent locations in the County's UGA where development activity has been focused at some point during the past 20 years. The areas

[6] This recommendation would not be able to be implemented until after the 2021 BLR, but is worth noting due to the updated Guidelines' emphasis on data collection.

represent a range of different areas in the County's UGA including single-family development in SWUGA and non-SWUGA. Effort was made to examine other land use types (such as multifamily and mixed-use development) however, unlike for single-family development, it was not possible to find a location with the necessary criteria (zoning and generally "built-out" development) to evaluate the utilization rates of capacity estimated in the 2002 BLR by 2019 for multifamily and mixed-use areas.

Using 2002 BLR data (based on a 2001 parcel extract), County staff studied properties with additional capacity estimated in the 2002 BLR that remained unchanged since 2001, as indicated by the lack of development or the lack of development proposals as of 2019. The results are summarized in Exhibit 8 and the detailed results are discussed in the "Snohomish County Method Alternatives and Evaluation Criteria" memorandum (dated February 7, 2020).

Exhibit 8. Summary of Existing and Observed Market Factors for Single-Family Residential by Geographic Area and Land Classification

	Existing Market Factor Assumption	Observed Market Factor 2002-2018	
		Bothell MUGA (SWUGA)	Stanwood/ Cedarhome (non-SWUGA)
Vacant	15%	6%	12%
Under-utilized	30%	10%	16%

Source: Snohomish County; ECONorthwest analysis

Recommended updates

Based on the analysis of market factors in the sample areas, the recommended updates to the methodology are:

- **Assign different market factors for SWUGA and non-SWUGA.** The single-family development samples studied in this analysis reflect two distinct geographic areas—the SWUGA and non-SWUGA. While the observed market factor in both areas were below the existing market factors for vacant and underutilized land, the resulting market factors in the SWUGA were also lower than the non-SWUGA (reflecting the land market conditions of the SWUGA as a higher demand area).
  - This recommendation augments the information in Chapter 5: Phase II Data Collection, Analysis, and Evaluation of the Methods and Procedures Document. The methodology section of the 2021 BLR should also consider this recommendation.
- **Monitor different market factors for different development types.** County staff also discussed potential market factor adjustments for different development types. However, the necessary information for the other types, such as multifamily and mixed-

use development, was not available as it was for single-family development. In future BLRs, the County may decide to evaluate these differences as data collection continues.

- This would not require immediate updates to the Methods and Procedures document.

Issue 3. Infrastructure Gaps

ECONorthwest evaluated the updated Guidelines and the recommendations related to accounting for uncertainty due to infrastructure gaps.[7] Working with County staff and through initial discussions with the subcommittee, we identified two case study areas to apply the recommended approach from the Guidelines. This section provides a summary of our approach and analysis, as well as a recommended approach for the County.

Relevant E2SSB-5254 requirements

E2SSB-5254 requires that counties adequately address reductions for uncertainty, with specific emphasis on infrastructure gaps. The Guidelines suggest that evaluation of capital facilities plans is sufficient for identification of most major infrastructure gaps, while considering the following factors:

- "Is there a long-term lack of urban development in the area?
- How did the recent comprehensive plan address the needed infrastructure provision, and is that information still valid?
- If the infrastructure is anticipated to be provided later in the planning period, is development likely to occur quickly so that planned development is realized within the planning period, or will some of the area remain undeveloped?"

The Guidelines suggest that if an infrastructure gap is identified and a sufficient rationale explaining why an area can eventually meet predicted capacity over the 20-year period cannot be provided, then the jurisdiction may assume reduced capacity in that area or apply a reasonable measure to address the issue.

Findings and analysis

ECONorthwest conducted two case studies for areas that may be subject to infrastructure gaps under the updated Guidelines, which emphasizes providing rationale for reductions for uncertainty. Appendix C in the "Snohomish County Method Alternatives and Evaluation Criteria" memorandum provides example findings for these two areas—one in the Arlington UGA and one in the Granite Falls UGA. After completing this type of analysis, the jurisdiction may find that the rationale for not meeting growth targets is not due to infrastructure gaps, but

[7] The Guidelines provide the following elaboration on infrastructure gaps: "While the capital facilities plan addresses a number of items, including water, sewer, storm, schools and transportation infrastructure to support growth, infrastructure gaps pertaining to those capital projects may still be possible."

another factor, such as a market factor. The detailed results are discussed in the "Snohomish County Method Alternatives and Evaluation Criteria" memorandum, and Exhibit 9 summarizes the recommended alternative for updates to the 2021 Buildable Lands Report.

Exhibit 9. Summary of process to identify infrastructure gaps.

1. Identify potential infrastructure gap	2. Assess factors	3. Provide rationale
•Draft map review with local jurisdictions •Results of BLR show unmet capacity or growth target	•Length of lack of urban development •Information in recent comprehensive plan or facilities plans •Likelihood of development within the planning period	•Infrastructure gap will (*or will not*) be addressed in planning period •Infrastructure gap is not the factor affecting capacity or growth patterns (e.g, market or other factor) •Sufficient evidence for reduced capacity or application of reasonable measure to address the infrastructure gap

Recommended updates

The recommended updates to address infrastructure gaps to meet the updated Guidelines are:

- **Draft map review stage.** When the County reviews maps with each jurisdiction, they should identify areas (if any) that may not achieve the predicted capacity specifically due to infrastructure gaps. After identifying the potential infrastructure gap, County and jurisdiction staff should work to assess the reasons for the infrastructure gap. Assessment of the factors related to infrastructure gaps can include how long the area has gone without urban development; identification of area in comprehensive plans or facilities plans; or the likelihood of development within the planning period. The County should work with the jurisdictions to develop findings that either provide a rationale articulating how the area is expected to eventually meet the predicted capacity over the 20-year planning period, or for assuming reduced capacity in an area. It may be possible that areas with potential infrastructure gaps are already addressed in the Capital Facilities Plan and, as the Guidelines suggest, do not require additional findings.
  - This recommendation augments the information in Chapter 5: Phase II Data Collection, Analysis, and Evaluation of the Methods and Procedures Document.
- **Reasonable measures stage.** If the County reports that a jurisdiction is not meeting growth targets, the jurisdiction may point to specific infrastructure gaps as a contributing factor. If this is the case, the jurisdiction would provide findings that document this issue and may need to adopt reasonable measures to specifically address

the infrastructure gap if the rationale for overcoming the issues without taking actions is insufficient.

- This recommendation augments the information in the Reasonable Measures Program document

Issue 4. Reasonable Measures

The final issue evaluated as part of this process was potential updates to addressing reasonable measures in the 2021 BLR. RCW 36.70A.215(1)(b) defines reasonable measures as:

> "...those actions necessary to reduce the differences between growth and development assumptions and targets contained in the county-wide planning policies and the county and city comprehensive plans with actual development patterns."

Reasonable measures are required when the results of the BLR show that a jurisdiction is not meeting growth targets or has insufficient land to accommodate projected growth. This section provides an evaluation of potential updates needed to the reasonable measures process to align with the updated Guidelines.

The existing Countywide Planning Policies (CPPs) provide a list of reasonable measures that jurisdictions can adopt depending on the issue identified in the BLR. This list is formatted as a matrix (Appendix D of the CPPs for Snohomish County, 2011), and categorizes measures by issues related to residential or employment capacity, increases and impacts of densities, and other measures. The matrix assigns each measure's applicability to certain issues (either direct applicability or partial applicability, if any) such as "increases density" or "provides affordable housing."

The recommended updates to the reasonable measures program is discussed in the Technical Supplement: Response to E2SSB-5254 for the Reasonable Measures Program document.

List of Supporting Documents

Below is a list of relevant supporting documents referenced in this supplement:

- *Snohomish County Tomorrow Recommended Methodology and Work Program for a Buildable Lands Analysis for Snohomish County and its Cities (Procedures Report, July 2000)*
- *Snohomish County Tomorrow Recommended Method for Evaluating Local Reasonable Measures Programs (June 2003)*
- *2012 Buildable Lands Report for Snohomish County (June 12, 2013)*
- *Snohomish County Method Alternatives and Evaluation Criteria, memorandum from ECONorthwest (February 7, 2020)*

Table of Contents

Preface

This report documents a recommended approach to the Snohomish County buildable lands analysis developed after extensive technical review by county, city, and other stakeholder group representatives during the period from January to July 2000. It was prepared in response to Countywide Planning Policy UG-14(a) which requires the development of a buildable lands analysis procedures report that will be used by local jurisdictions in Snohomish County when conducting their buildable lands review and evaluation no later than September 1, 2002. This report will now be forwarded to Snohomish County Tomorrow for review.

This report is based on the best available information at this point in time. As buildable lands data collection and analysis efforts proceed into this year and next, however, there may be a need to refine this recommended methodology in order to respond to any unanticipated problems associated with the buildable lands data sources or methodological approaches outlined in this report.

Acknowledgements

We would like to acknowledge the following individuals for their contributions to this project.

Name	Agency
Stephen Toy	Snohomish County PDS
Klaus Schilde	Snohomish County PDS
Ryan Countryman	Snohomish County PDS
Lauren Giboney	Snohomish County PDS
Tim Koss	Snohomish County PDS
Don O'Connell	Snohomish County GIS
Curt Kiessig	Snohomish County GIS
Gary Hasseler	City of Bothell
Dick Russell	City of Brier
Rob Chave	City of Edmonds
David Koenig	City of Everett
Bob Larsen	City of Everett
Cindy Reddekopp	City of Gold Bar
John Jimerson	City of Lake Stevens
Arnold B. Clark	City of Lake Stevens
Dennis Lewis	City of Lynnwood
Ron Hough	City of Lynnwood
Eric Thompson	City of Marysville
Tom Rogers	City of Mill Creek
Andrea Spencer	City of Mountlake Terrace
Patricia Love	City of Mukilteo
Heather McCartney	City of Mukilteo
Russ Douglas	City of Mukilteo
Stephanie Cleveland	City of Stanwood
Jody McVittie	Citizen
Sue Adams	Pilchuck Audubon Society
Jim Miller	EDC Land Use Committee
Denny Derickson	EDC Land Use Committee
Susan Banel	EDC Land Use Committee
John Spangenberg	Master Builders Association

Summary

In December 1999, Snohomish County contracted with ECONorthwest to prepare this report, which describes methods to be used by the County and its cities in meeting state requirements for a buildable lands analysis. This report covers only the first step of a full buildable lands analysis: determining and getting agreement on methods to be used by jurisdictions to collect, analyze, and present information about land supply and demand. It provides a written description of protocols for data collection and analysis, but not the databases or analyses themselves, which will be developed later based on the methods described in this report.

PURPOSE

This report describes cooperative, interjurisdictional methods for estimating the amount of buildable land for Snohomish County and its 20 cities that address:

- State requirements, especially as described in the buildable lands guidelines document issued by the Washington State Department of Community, Trade and Economic Development (CTED).
- Both five-year and annual data collection requirements
- Data needed to conduct the five-year buildable land analysis, and estimated costs of collecting and maintaining it
- The strengths and weaknesses of systems now used by Snohomish County jurisdictions that generate information related to buildable lands
- Funding priorities for allocating the state buildable lands grant funds within Snohomish County
- A schedule of tasks and responsibilities for completing the integrated buildable lands inventory.

Consistent with the GMA requirements, this buildable lands methodology applies only to buildable land supply evaluation within UGAs. It does not address buildable land supply evaluation outside the UGA in rural and resource areas.

While the State's Buildable Lands Program requires land inventories (land supply), the term *buildable lands analysis* does not really cover the full State requirements, which include an evaluation of *land need* also. Thus, the methods described in this report address not only *land supply*, but also (to a lesser extent) *land demand*.

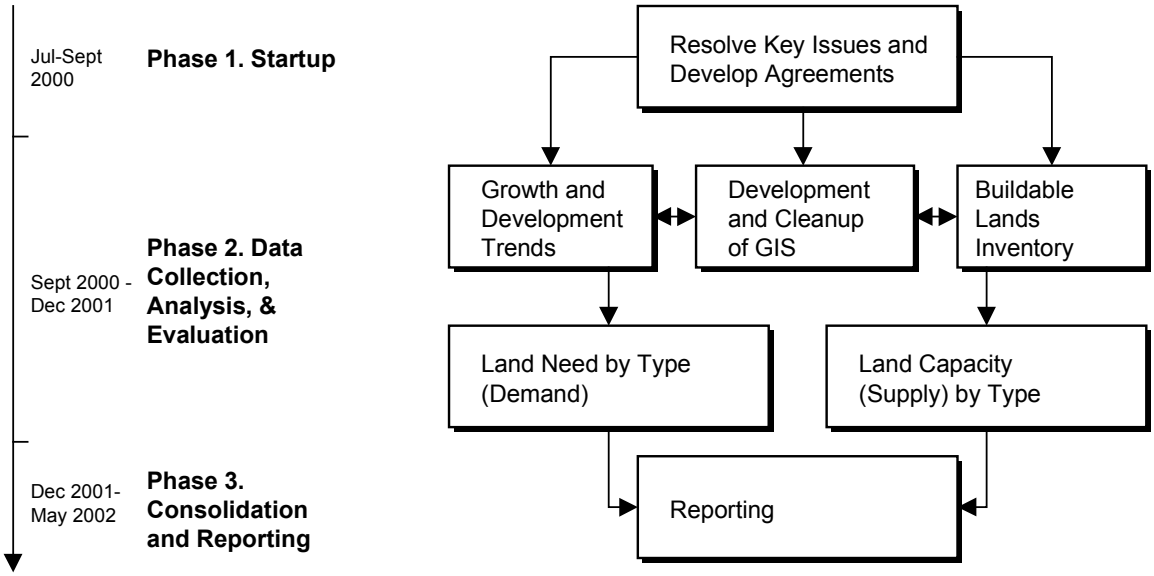
OVERVIEW OF PROJECT PHASES AND SCHEDULE

The work program is divided into three principal phases:

- *Phase 1: Startup*. Work the County needs to do to prepare for implementation of the remaining parts of the work program
- *Phase 2: Data Collection, Analysis, and Evaluation*. Gathering and assembling the data on development history, demand for land, the buildable lands inventory, evaluation of the data consistent with GMA requirements; and
- *Phase 3: Consolidation and Reporting*. Comparing land inventory data with development trends, and land need estimates. Preparation of the 5-year report.

Figure S-1 provides a conceptual overview of how the three phases fit together with the GMA data collection requirements described in Appendix A, and an approximation of time elapsed for each element.

Figure S-1. Relationship of work program and schedule to GMA requirements



The work program shown in Figure S-1 is based on a 22-month schedule beginning July 2000. The startup phase would last approximately 2-3 months depending on the length of time needed to get agreements in place, and whether the County decides to use a consultant to assist in implementation. The data collection portion of the second phase would last approximately 6-12 months: the biggest uncertainty here is the time at which the County can have its various GIS data layers (including assessment data) in a readily accessible format. The data analysis portion of the second phase would last 6-9 months. The reporting phase would last about 3-6 months, depending

on the amount and type of local review and revision.

OVERVIEW OF PROJECT PHASES AND TASKS

Following is a brief overview of work program tasks by phase. Each phase of the project, and the specific methodologies are described in more detail in the chapters 4, 5 and 6.

PHASE I: START-UP

The Start-up Phase includes work the County needs to do to prepare for implementation of the remaining parts of the work program. Much of the work that one would otherwise expect to find at the start of a buildable land analysis will already have been completed as the part of the project this report summarizes. Methods and data sources have been identified, and various jurisdictions have reviewed and agreed to those methods. This Phase includes:

- Agreement on final methods, definitions and jurisdictional data collection responsibilities;
- Agreement on project management and coordination;
- Staffing and staff assignments;
- Consultant search and selection (if consultants are used); and
- Project kick-off meeting(s).

The Start-up Phase lays the groundwork for the remaining tasks in the work program. It also sets in place systems for how the project will be managed, coordination with local jurisdictions, and any additional county policies that may be needed to implement the buildable lands program.

PHASE II: DATA COLLECTION, ANALYSIS, AND EVALUATION

This Phase provides a detailed description of tasks with recommendations about procedures for collecting and monitoring data on land capacity, growth and development, land needs (demand) estimates, planned and actual densities, policies, and interjurisdictional coordination. A summary of the outputs of this phase is presented below (the specific methods are described in Chapter 5).

Buildable Land Demand Analysis (Type and Density of Development)

1. *Development history.* Determine residential densities and intensities of commercial and industrial development achieved during the period 1 January 1995 to 31 December 2000 in cities and unincorporated UGAs:

a. Calculate single-family residential net densities in recorded formal plats during 1995-2000 in cities and unincorporated UGAs by comprehensive plan and zoning designation.

b. Calculate single-family residential net densities in recorded short plats during 1995-2000 in cities and unincorporated UGAs by comprehensive plan and zoning designation.[1]

c. Calculate multiple family residential net densities for new apartments/condos from building permits issued during 1995-2000 in cities and unincorporated UGAs by comprehensive plan and zoning designation.

d. Summarize net residential density results by generalized/regional comprehensive plan designation categories (low, medium, and high density residential) by city and unincorporated UGA.

e. Calculate net floor area ratios for new commercial and industrial structures from building permits issued between 1 January 1995 and 31 December 2000 in cities and unincorporated UGAs by comprehensive plan and zoning designation.

f. Summarize net floor area ratio results by generalized/regional comprehensive plan designation categories (commercial and industrial) by city and unincorporated UGA.

2. *Land Need Calculation.* Determine remaining residential, commercial, and industrial land requirements necessary to achieve the adjusted[2] Countywide Planning Policy 2012 population and employment targets by city and unincorporated UGA:

a. Document the number of net new housing units developed by type (single-family and multiple family including subsets of each) and density range from 1 January 1992 to 31 December 2000 for each city and unincorporated UGA.

b. Calculate remaining housing unit needs by type and density range for the 2001-2012 period for each city and unincorporated UGA using 1992-2000 past trend analysis and extrapolation, combined with relevant adopted housing policy direction, to reach adjusted 2012 population targets (also add in any "redeveloped" housing units from land supply calculations)

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[1] This step is only necessary for jurisdictions where lots created by short subdivision during 1995-2000 constitute a substantial number or proportion of total lots recorded during 1995-2000.

[2] Adjusted for annexations to April 1, 2001

c. Calculate net buildable land area needed by generalized/regional comprehensive plan designation category to accommodate the remaining housing unit needs for the 2001-2012 period at net residential densities observed from 1995-2000 for each city and unincorporated UGA.

d. Document net new commercial and industrial employment added from March 1990 to March 2001 for each city and unincorporated UGA.

e. Calculate remaining commercial and industrial employment growth anticipated for the 2001-2012 period for each city and unincorporated UGA using 1990-2001 past trend analysis and extrapolation, to reach adjusted 2012 employment targets (also add in employment associated with any "redeveloped" employment sites from land supply calculations)

f. Calculate net buildable land area needed by generalized/regional comprehensive plan designation category (commercial and industrial) to accommodate the remaining commercial and industrial employment anticipated for the 2001-2012 period at net commercial and industrial floor area ratios observed from 1995-2000 for each city and unincorporated UGA.

3. *Comparison.* Compare the results of steps 2(c) and 2(f) to the results of step k below to determine if an adequate supply of buildable land exists within UGAs.

Buildable Land Supply Analysis

The principal steps are:

a. Classify all land as developed, under-utilized/redevelopable, partially-vacant, vacant, or undevelopable.

b. Estimate total acres of land by comprehensive plan designation.

c. Estimate total vacant acres of land by comprehensive plan designation.

d. Estimate total unbuilt acres of partially-vacant parcels by comprehensive plan designation.

e. Estimate total under-utilized/redevelopable acres by comprehensive plan designation

f. Calculate gross potentially buildable acres by comprehensive plan designation (c + d + e)

g. Calculate total acres considered built-out (developed), by comprehensive plan designation (b – f)

h. Estimate acres of land with environmental constraints/critical areas which preclude development on remaining developable acres by comp plan designation and type of critical area:

   (1) Wetlands and buffers

   (2) Streams and buffers

   (3) Geologically hazardous areas

   (4) Aquifer recharge areas

   (5) Fish and wildlife habitat

   (6) Frequently flooded areas

i. Calculate total estimated gross buildable unconstrained land area by comprehensive plan designation (f – h)

j. Estimate the amount of the total estimated gross buildable land area by comprehensive plan designation that is:[3]

   (1) Required for future rights-of-way

   (2) Required for other future public purposes

   (3) Considered unlikely to have adequate water/sewer facilities provided during the remaining portion of the 20-year planning period

   (4) Considered unlikely to be made available for development during the remaining portion of the 20-year planning period

k. Calculate total estimated net buildable land area by generalized/regional comprehensive plan designation categories to compare with estimated land requirements (i – j).

Phase III: Consolidation and reporting

The final phase builds on the data gathered in Phase 2 to answer the key policy questions required by the GMA and presents a framework for the preparation of the five-year growth monitoring report. Those

[3] Jurisdictions should ensure that these land estimates do not double-count land already removed from the buildable land supply due to previous consideration of environmental constraints in step h or market availability in determining land classification in step a.

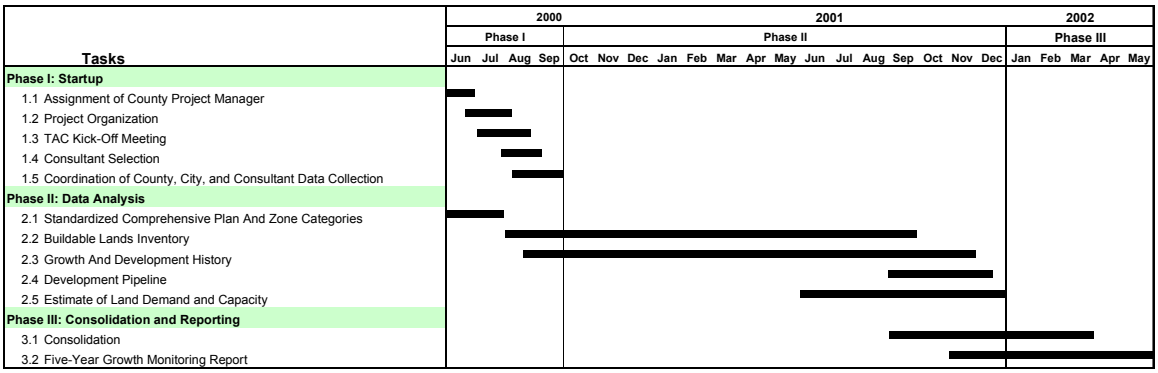
policy questions are described in the Phase 2 analysis requirements above.

This section concludes with a description of the report development and review process and a proposed outline of the five-year growth monitoring report for Snohomish County.

SCHEDULE OF TASKS

Figure S-2 shows a general schedule of tasks, by phase and month. The schedule assumes the project will begin in July 2000 and be completed by May 2002. The deadline for completing the five-year growth monitoring report is September 2002. The figure also shows that some Phase II tasks can begin during Phase I.

Figure S-2. Schedule of tasks



PROJECT ADMINISTRATION

PROJECT MANAGEMENT AND STAFFING

The County will manage the work program. The likely manager is Steve Toy, who will be assisted by staff in his department. Other County staff will assist Toy on various aspects of the work:

- County Assessor. The assessment staff are not staff to the project, but some time from assessment staff will probably be needed occasionally to make sure the assessment data are correct and being interpreted properly. The budget for the work program assumes that this small amount of time is covered as part of typical inter-office coordination between planning and assessment staff: there is no specific budget allocation for assessment staff.

- GIS. The County is updating its GIS capabilities, and particularly its ability to use assessment data, which is critical to the methods proposed in this project. These activities are already part of the County's current effort to establish basic GIS functionality using a countywide parcel base map. One key feature of the County's GIS

development plan involves a decentralized approach for user creation and maintenance of centrally-stored GIS data. As such, the cartography section of County Planning and Development Services has developed significant GIS capabilities that will be applied to this project.

In addition to County staff, each city will have staff involved in data collection and review. For jurisdictions with staff planners, the expectation is that they would have these responsibilities (see Chapter 5 for a discussion of specific tasks). For small jurisdictions with no planners, some of the work may be able to be done by city staff, or County staff or consultants may need to do the bulk of the technical work.

The work program also presumes modest review and assistance from service providers, but such assistance is presumed to be standard coordination and does not have a budget allocation.

PROJECT REVIEW

The work program presumes that the current Technical Advisory Committee (TAC) remains in place for this project: representatives may change, but the interests represented should not. For the bulk of the project, it is the TAC that provides technical review.

At a few key places in the work program, more extensive public review will be desirable. The public body that this project reports to is Snohomish County Tomorrow (SCT), and, ultimately, the County Council and City Councils. As with any other GMA planning process, there are also opportunities for cities and the County to gather public input on the development of the buildable lands data and analysis by holding public workshops, meetings with stakeholder groups, and planning commission workshops. Through these forums, the general public will have an opportunity to review and comment on the data and materials being developed to address the buildable lands requirement at the individual city or UGA level.

PROJECT COSTS

A key issue in the implementation of the buildable lands work program is the cost to the County and cities. Table S-1 summarizes estimated project effort and cost by jurisdiction type.[4] The estimates show a total project cost of about $350,000. The majority of the project costs is for labor ($339,000). We estimate that the project will require about 11,500 hours of staff time to complete at a melded hourly rate of $30 per hour.

[4] The cost estimates do not reflect the use of consultants to implement portions of the buildable lands program.

Because the County is the designated coordinating entity for this project, and because they will be responsible for a substantial amount of the technical work, 61% of total project cost is allocated to the County. The TAC recommends that the small cities in "Group 4" be eligible for buildable lands funding, but that they be given the option of participating in the buildable lands data collection effort as a condition of receiving the funding. For Group 4 cities that decide not to participate, the County agrees to do the necessary buildable lands work for them. Funds initially allocated to the small cities that "opt out" in this way would be retained by the County to help cover the costs of doing their work.

A more detailed discussion of the cost estimates, including rate assumptions, city groupings, and detailed labor estimates is presented in Appendix D.

Table S-1. Estimated project effort and cost (all costs in thousands)

Jurisdiction type	Staff Hours	Labor Cost	Direct Cost	Total Cost	% of Total Cost
Snohomish County	7,128	$210	$4	**$214**	61%
Consultants	0	$0	$0	**$0**	0%
Group-1 Cities (3)	1,486	$44	$2	**$46**	13%
Group-2 Cities (8)	1,932	$57	$3	**$60**	17%
Group-3 Cities (4)	506	$15	$1	**$16**	4%
Group-4 Cities (5)	448	$13	$1	**$14**	4%
Subtotal All Cities	4,372	$129	$7	**$136**	39%
Total County, Consultant, All Cities	**11,500**	**$339**	**$11**	**$350**	**100%**

Source: ECONorthwest, 2000

Chapter 1

Introduction

Amendments to the Growth Management Act (GMA) in 1997 require Snohomish County and its cities to collect data on buildable lands and analyze how planning goals are being achieved. The amendments, often referred to as the Buildable Lands Program, require local governments to monitor the amount and density of residential, commercial and industrial development that has occurred since adoption of a jurisdiction's GMA comprehensive plan. Using this information, an evaluation of the adequacy of the remaining suitable residential, commercial and industrial land supply within urban growth areas (UGAs) to accommodate projected growth at development densities observed since the adoption of GMA plans is required every five years. If the results of the 5-year buildable lands evaluation reveal deficiencies in buildable land supply within UGAs, then the county and the cities are required first to adopt and implement reasonable measures that will remedy the buildable land supply shortfall without adjusting UGA boundaries.

In December 1999, Snohomish County contracted with ECONorthwest to prepare this report, which describes methods to be used by the County and its cities in meeting state requirements for a buildable lands analysis. This report covers only the first step of a full buildable lands analysis: determining and getting agreement on methods to be used by jurisdictions to collect, analyze, and present information about land supply and demand. It provides a written description of protocols for data collection and analysis, but not the databases or analyses themselves, which will be developed later based on the methods described in this report.

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- State requirements, especially as described in the buildable lands guidelines document issued by the Washington State Department of Community, Trade and Economic Development (CTED) in July 2000
- Both five-year and annual data collection requirements
- Data needed to conduct the five-year buildable land analysis, and estimated costs of collecting and maintaining it
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- Funding priorities for allocating the state buildable lands grant funds within Snohomish County
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METHODS

The main purpose of this report is to develop methods for conducting a buildable land assessment and a plan for implementing those methods. This section describes the methods we used to develop those methods,[1] cost estimates, and work plans. Our information came from several sources:

- Literature review. ECO began the project by reviewing relevant state documents, local plans and policies, and buildable lands analyses from other jurisdictions.
- Interviews. ECO conducted interviews with individuals knowledgeable about data collection procedures, and database systems.
- Questionnaire. ECO developed and administered a questionnaire for cities and the county to complete regarding data availability, preferences regarding data collection procedures, and ability to document and analyze data consistent with GMA requirements. ECO discussed the results of the questionnaire in two workshops with representatives of cities and the County.
- Previous experience. ECO has conducted over a dozen buildable land analyses. We drew on that experience, and the procedures we have developed, to recommend methods for Snohomish County and its cities.

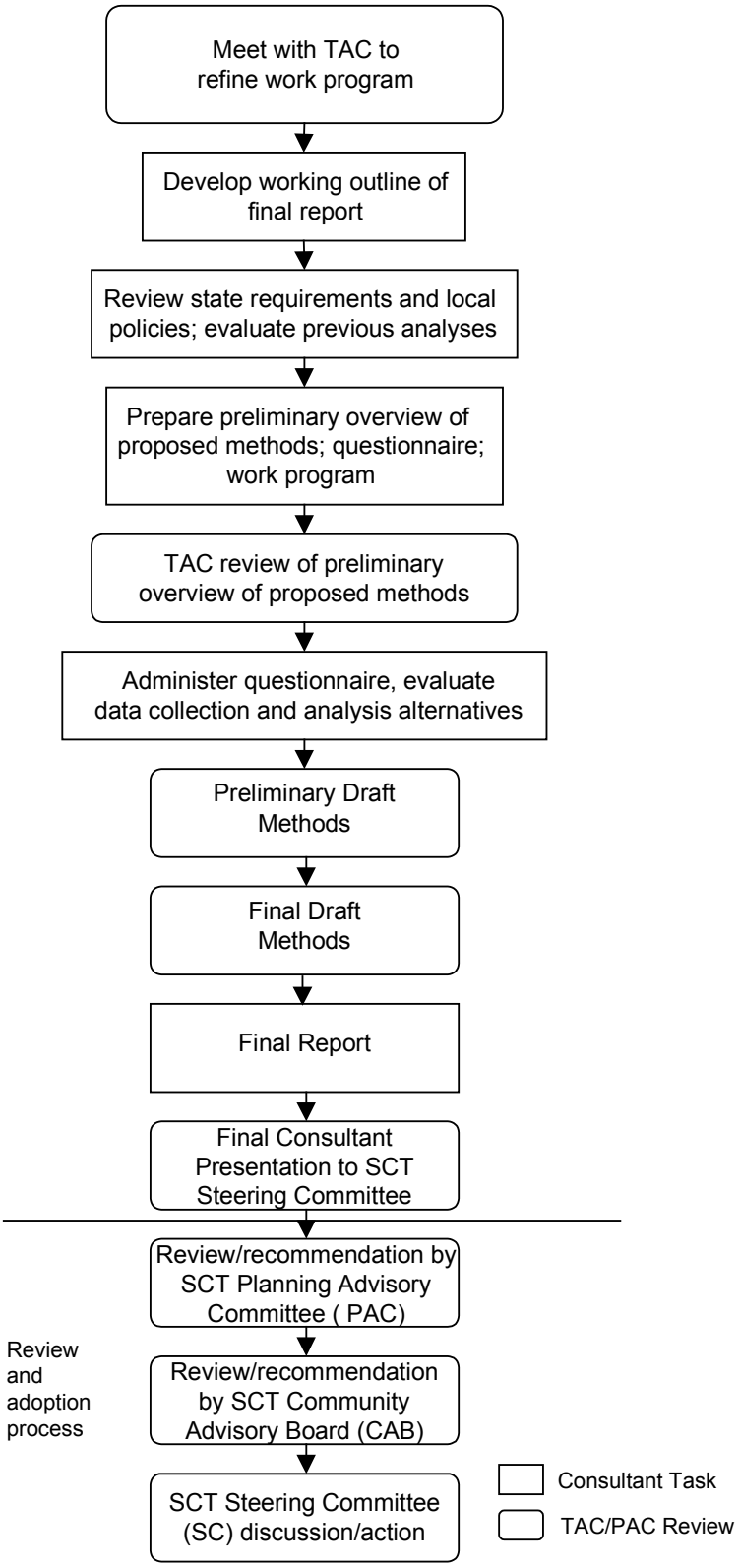
Our research was supplemented by a process that engaged local

1 Yes, though it is awkward it is correct: we had to decide what methods we would use to gather, analyze, and present the information in this report, which is itself about methods to be used to prepare a county-wide buildable lands inventory.

jurisdictions and other parties interested in discussing the buildable lands methods. ECO initiated the project by developing an outline of the final report and performing a quick evaluation of data sources and methods applied by Snohomish County in previous buildable lands work.

Figure 1-1 provides an overview of the methods and process used to develop the buildable lands data collection procedures and analytical methodologies. The boxes below the line describe the review and approval process for this report. This process uses the Snohomish County Tomorrow (SCT) process for interjurisdictional review and approval. The first step in this process involves SCT Planning Advisory Committee (city and county planning staff) review and recommendation. The second step entails SCT Community Advisory Board (various stakeholder/interest group representatives) review. The last step requires SCT Steering Committee (city, county, tribal elected officials) review and approval.

Figure 1-1. Overview of project process and methods



STATE REQUIREMENTS[2]

GROWTH MANAGEMENT ACT GOALS AND REQUIREMENTS

The GMA established 14 goals to guide local government planning. These goals address sprawl reduction, concentrated urban growth, economic development, environmental protection, adequate infrastructure, affordable housing, and regional transportation, among others. [RCW 36.70A.020 and RCW 36.70A480(1)]. Implementation occurs primarily at the local level through a framework that includes:

1. County-wide planning policies
2. Comprehensive plans
3. Development regulations
4. Capital budgets and other ongoing local activities
5. Optional incentive programs.

The GMA requires establishment of urban growth areas (UGAs) for incorporated towns and cities that are defined so as to contain a 20-year supply of buildable land for urban growth. Urban growth is not allowed outside UGAs. Development within UGAs must be at urban densities (generally, a minimum of four residential units per acre), with some exceptions for areas with significant critical area constraints. Natural resource lands outside UGAs are designated for long-term commercial agriculture, forestry, and mineral extraction. Certain environmentally sensitive lands are designated as critical areas.

POPULATION FORECASTS

The five-year GMA buildable lands analysis requires that jurisdictions "determine the amount of land needed for commercial, industrial, and housing for the remaining portion of the twenty-year planning period used in the most recently adopted comprehensive plan." (RCW 36.70A.215(3)(c)) For Snohomish County and its cities, the "remaining portion of the planning period" is the remaining portion of the 1992-2012 population and employment forecasts as represented by the growth targets for cities, UGAs, and the rural area, adopted as Appendix B of the Countywide Planning Policies on December 20, 1995. These growth targets reflect the outcome of the individual city and county GMA comprehensive planning efforts. The issue of growth forecasts is described in more detail in chapter 3.

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[2] A more detailed discussion of state requirements is presented in Appendix A.

THE BUILDABLE LANDS PROGRAM

In 1997, ESB 6094 (codified as RCW 36.70A.215) established specific reporting requirements for development monitoring and periodic buildable land supply reevaluation. These requirements are commonly referred to as the "buildable lands program."

The Buildable Lands Program is required for six Western Washington counties (Clark, King, Kitsap, Pierce, Snohomish, and Thurston) and the 101 cities and towns within their boundaries. The program requires local governments to compare anticipated growth against actual development over time to answer two questions: (1) Do local governments have enough suitable land inside the UGA to accommodate the growth anticipated during the remaining portion of the 20-year planning period? and (2) Are urban densities being achieved in urban growth areas?

The primary purposes of the Buildable Lands Program, as described in the statute, are to:

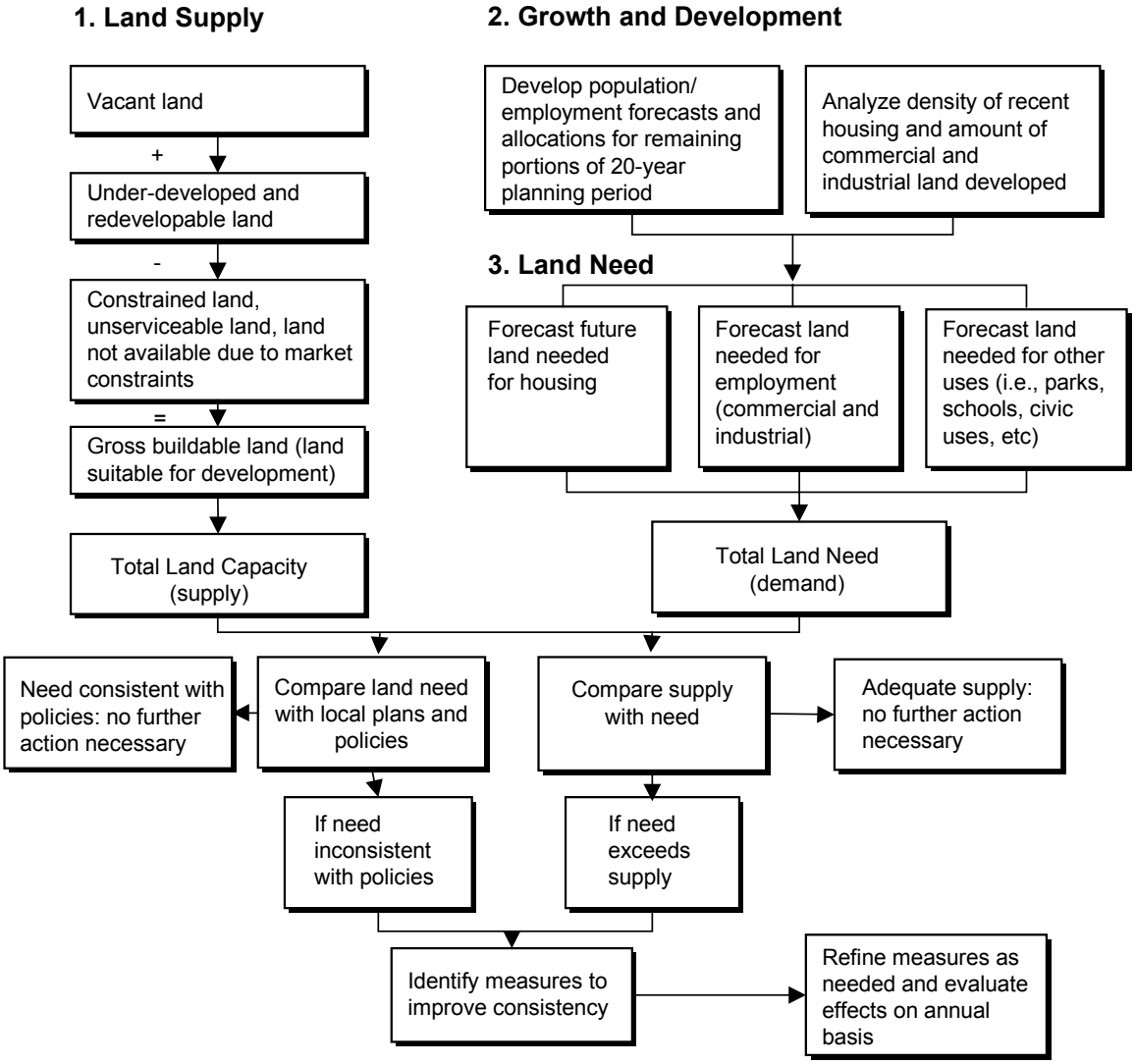
- Determine whether a county and its cities are achieving urban densities within UGAs by comparing growth and development assumptions, targets, and objectives with actual growth and development that has occurred in the county and its cities.
- Identify reasonable measures, other than adjusting UGAs, that will be taken to comply with the Growth Management Act (GMA), including increasing consistency between actual development and plan assumptions.

LOCAL BUILDABLE LANDS POLICIES

Snohomish County has completed a considerable amount of work towards addressing the GMA Buildable Lands Program requirements. Prior to the passage of the Buildable Lands Program requirements, the County completed the *Urban Growth Area Residential Land Capacity Analysis* and the *Employment Land Capacity Analysis* (unincorporated areas) in 1995.

Subsequent to the passage of the Buildable Lands Program requirements, Snohomish County Tomorrow (SCT) accepted state grant funds to begin implementation of the state requirements. As a part of the implementation process, SCT developed and implemented a work program designed to address the requirements of the GMA. The products of that work included Countywide Planning Policies intended to implement the GMA requirements.

Figure 1-2. Overview of GMA buildable land program requirements



Requirements of RCW 36.70A.215
Purposes: Determine whether a county and its cities are achieving urban densities in urban growth areas, and to identify reasonable measures, other than adjusting UGAs, to comply with GMA.

Step 1. Land capacity analysis - estimate supply of buildable land and buildable land capacity
Step 2. Determine the actual density of housing and the amount of land developed for commercial and industrial use within the UGA since Comprehensive Plan approval or last periodic review
Step 3. Estimate land need based on information developed in step 2.
Step 4. Compare land need and land supply. If need exceeds supply, identify measures, if not, review land need for consistency with local plans and policies
Step 5. If inconsistencies exist, implement measures to address inconsistencies, conduct annual monitoring and evaluation.

The County-wide Planning Policies UG-2c and HO-9 require that SCT develop and implement a coordinated, long-term growth and housing monitoring program. Policy UG-2c1 lists the data indicators that need to be analyzed annually as part of the program:

- Estimated population and employment growth;
- Annexations and incorporations;
- Residential and non-residential land consumption;
- Land supply and land values relative to demographic changes; and
- Availability and affordability of housing.

The SCT 1999 Growth Monitoring Report provides a detailed analysis of these data indicators.

FRAMEWORK FOR BUILDABLE LANDS PROGRAM[3]

A buildable land analysis as defined by state law has not only a *supply* component, but also a *demand* component. The GMA requires local governments to address two questions: (1) Do local governments have enough suitable land to accommodate the growth anticipated during the remaining portion of the 20-year planning period? and (2) Are urban densities being achieved in urban growth areas?

The first question embodies both supply and demand elements. The supply element is embedded in the phrase "do local governments have enough land." The demand element is addressed in the second part of the question: "to accommodate the growth anticipated during the remaining portion of the 20-year planning period."

DEMAND FOR LAND

Demand for land is typically characterized through analysis of national, regional, and local demographic and economic data. For residential uses, population and households drive demand. Information about the characteristics of households is used to identify types of housing that will be affordable to area households. For non-residential uses, an employment forecast is the primary driver of demand for land. This forecast is converted to estimates of the probable absorption rates for commercial and industrial lands.

Thus, a demand analysis typically includes the development of population and employment forecasts and a housing market analysis. The data generated from the demand analysis, combined with density assumptions, lead to an estimate of *land need (demand) by type*.

[3] A more detailed discussion of this topic is presented in Appendix B.

SUPPLY OF BUILDABLE LAND

There are many ways that "vacant land" and "buildable land" can be defined. In general, vacant land means land without structures or other significant man-made improvements. (A typical threshold for defining "significant manmade improvements" is tax lots that have no structures or have buildings with improvement values of under a nominal amount). Typically, "vacancy" is not a difficult determination to make: most people walking the land or looking at an aerial photograph could agree on what land was covered by significant structures that constituted existing development (and thus precluded new development unless the existing development were demolished).

The trick is to define "vacancy" and "buildability" without individual examination of every plot of land; i.e., to define it in ways that existing data bases and GIS sources can be used to show the amount and location of such land.

Vacant land that is constrained (either physically or legally) is not buildable. Constrained land is conceptually identical to what state law refers to as critical areas. Such land may be constrained by natural features such as slopes, wetlands, and designated floodways. Some of those features may be absolute constraints on development (water courses, cliffs); in most cases, however, physical constraints lead to unbuildable land because of policies that apply to them (e.g., though there are no physical impediments to building in a floodplain, policy prohibits it for several reasons related to the public good). Other policy constraints might include zoning (which often limits use or density) and public facilities (e.g., limits on service extensions).

ORGANIZATION OF THIS REPORT

The remainder of this report presents a recommended methodology and work program designed to provide Snohomish County and its cities with a set of explicit methods for addressing the GMA buildable lands requirements and completing the five-year growth monitoring report. This report is organized around the proposed work program for completion of the five-year growth monitoring report. The rest of this report is organized as follows:

- **Chapter 2, Issues, Assumptions, and Definitions** describes key issues, assumptions, and definitions that guide the methods.

- **Chapter 3, Overview of the Buildable Lands Work Program (2000 – 2002)**, provides a brief overview of the proposed work program, schedule, and estimated cost. It also addresses issues of project administration, process, and TAC and public involvement.

- **Chapter 4, Phase I: Startup** describes project startup: getting organized for the project, kick-off meetings, RFP development if

consultants are hired, and other issues important to project initiation.

- **Chapter 5, Phase II: Data Collection, Analysis and Evaluation** is the core of the buildable lands program methods. It describes data collection procedures and data structures.

- **Chapter 6, Phase III: Consolidation and Reporting** describes how the data gathered using methods described in chapter 5 will be consolidated and reported.

The appendices provide additional background information on various elements of the buildable lands program.

- **Appendix A, Overview of State Requirements and Local Policies** provides an overview of GMA requirements for buildable land programs and County policies pertaining to these requirements.

- **Appendix B, Framework for Buildable Lands Analysis** presents a conceptual model for completing buildable lands inventories and lands needs assessments.

- **Appendix C, Evaluation of Local Conditions** presents the results of local interviews and a questionnaire covering issues of data availability, and financial and staff resources.

- **Appendix D, Cost Estimates** shows a budget of hours by phase (by task and by labor type) for implementing the buildable lands work program and completing the five-year growth monitoring report.

- **Appendix E, Proposed Data Structure** presents the proposed data table structures and coding for data elements required to complete the five-year growth monitoring report. It also shows sample buildable lands supply and demand calculations.

- **Appendix F, Outline for Buildable Lands Report, May 2002** presents an outline of the final product of the buildable lands analysis: i.e., of the five-year growth monitoring report that the County would produce by May 2002.

Chapter 2

Issues, Assumptions, and Definitions

This chapter sets the framework for the work program we recommend in Chapters 3 through 6. It starts by listing issues that must be addressed prior to implementing the work program, and, for each issue, provides the assumption that the work program makes about the resolution of that issue. It ends with the definitions of data elements that will be used in the work program.[1]

ISSUES A WORK PLAN MUST ADDRESS

The purpose of this project is to develop a coordinated, interjurisdictional data collection and analysis strategy for Snohomish County and its cities. This strategy will form the basis for the countywide buildable lands review and evaluation to be completed no later than September 1, 2002 as required by the Washington State Growth Management Act (GMA). That purpose is consistent with the five-year reporting requirements of the GMA, but falls short of the 10-year requirement to review Urban Growth Area (UGA) boundaries.

The scope of this project is consistent with the five-year reporting requirements, but does not propose methods that fall outside of the scope of the five-year reporting requirements. The key focus of the project is in the evaluation of the adequacy of the remaining buildable land supply within UGAs.

Chapter 1 identified a number of issues that should be addressed prior to initiation of the work program. This chapter describes those issues in more detail and how the proposed methodology and work program addresses those issues.

1. POPULATION AND EMPLOYMENT FORECASTS

Most communities develop and adopt population forecasts as a basis for land use and public facilities planning. Washington State law requires the Office of Financial Management (OFM) to prepare population forecasts for all counties in Washington every five years (RCW 43.62.035). Specifically, RCW 43.62.035 states:

> "At least once every five years or upon the availability of decennial census data, whichever is later, the office of financial management

[1] The conclusions about definitions and how to resolve analytical issues were reached between February and June, 2000, through a series of meetings with the project's Technical Advisory Committee to discuss interim products provided by ECONorthwest.

> shall prepare twenty-year growth management planning population projections required by RCW 36.70A.110 for each county that adopts a comprehensive plan under RCW 36.70A.040."

Moreover, the GMA requires communities to develop and adopt comprehensive land use plans that "include population densities, building intensities, and estimates of future population growth" (RCW 36.70A.070 (1)).

The five-year GMA buildable lands analysis requires that jurisdictions "determine the amount of land needed for commercial, industrial, and housing for the remaining portion of the twenty-year planning period used in the most recently adopted comprehensive plan." (RCW 36.70A.215(3)(c)) For Snohomish County and its cities, the "remaining portion of the planning period" is the remaining portion of the 1992-2012 population and employment forecasts as represented by the growth targets for cities, UGAs, and the rural area, adopted as Appendix B of the Countywide Planning Policies on December 20, 1995. These growth targets reflect the outcome of the individual city and county GMA comprehensive planning efforts.

The buildable lands statue does not require updated forecasts (demand analysis) based on more recent information for the land supply vs. land demand comparison. Instead it clearly states at RCW 36.70A.215(1)(a) that the main purpose of the buildable lands program is to "determine whether a county and its cities are achieving urban densities within urban growth areas by comparing growth and development assumptions, targets, and objectives contained in the county-wide planning policies and the county and city comprehensive plans with actual growth and development that has occurred in the county and its cities."

Thus, the buildable lands exercise requires an assessment of original planning assumptions (growth forecasts and anticipated densities) in comparison to what has actually occurred five years into the GMA planning period. New forecasts are not a necessary requirement of the buildable lands review. Consequently, there may be areas of the County where the original 20-year forecast is probably in error (e.g., growth has proceeded at a much faster pace than anticipated). But it is not the purpose of the buildable lands review and evaluation to correct these forecasts at this point.

Instead, the County and the cities are expected to be engaged in the sub-county allocation of the new State Office of Financial Management (OFM) 20-year population forecast[2] immediately after the first buildable lands review and evaluation is completed by September 2002. The buildable land supply information contained in

[2] To be released after the Census 2000 results come out, probably late 2001 or early 2002.

the 2002 buildable lands review and evaluation report will be used by the County and its cities when conducting the sub-county allocation of the new 20-year forecasts. This will occur during the 2003-2004 time period, in time for the county to adopt an updated GMA comprehensive plan by 2005 (the latest date allowed by state law) with UGAs capable of accommodating the succeeding 20-years of projected growth.

2. DATE OF LAND USE AND BUILDABLE LANDS INVENTORY

The tax lot databases the County is presently working on will be current as of 2000; it will be updated using GIS maps in Spring 2001. Thus, the database will reflect development that has occurred during the population and employment forecast period (1992-2000). This report handles the starting point as follows: for supply side, the "as of" date will be Spring 2001; for demand side, use the 2001 *Growth Monitoring Report*.

3. USE OF GIS FOR BUILDABLE LAND INVENTORY

Many, but not all, jurisdictions will have land supply data in a GIS format. This report recommends that all land supply analysis will be in GIS format. For cities without GIS capabilities, the County will prepare the analysis.

4. LOCAL STAFF CAPABILITIES AND AVAILABILITY; USE OF CONSULTANTS

Interviews conducted with local government staff made it clear that smaller cities will not have staff time or GIS capabilities to do a full buildable land analysis at the same level of detail that larger cities and the County can. Two ways to assist those cities are with County staff or consultants.

Moreover, the County, as the expected manager and technical coordinator of the buildable lands analysis, may need to either hire more staff or consultants.

The Technical Advisory Committee was not asked to come to a conclusion about new staff or consultants as part of the development of the work program. The work program assumes that agreements on responsibilities and use of consultants for portions of the work program will be developed in the "start-up" phase of the project. Thus, the work program does not make a recommendation on consultants, and it assumes that staff time and consultant time is roughly substitutable. It presents a task-by-task budget in hours and dollars (see Chapter 3 and Appendix D for details).

DEFINITIONS

Definitions are crucial in developing a workable methodology for buildable lands analyses. It is important to use clear definitions that allow classification of land into mutually-exclusive categories. Following are definitions used for the purposes of this study. Most of the definitions are state codified definitions, presented in the CTED *Buildable Lands Program Guidelines*.

- *Buildable Land:* (See definition of lands suitable for development.)

- *Growth Target*: A figure in an adopted policy statement indicating the type and amount of growth (e.g., number of persons, households, or jobs) a jurisdiction intends to accommodate during the planning period.

- *Key Development Data*: Information that is critical to identifying the location, timing, and scope of new development that has occurred. Components may include, but are not limited to, building permits, certificates or changes of occupancy, subdivision plats, zone changes, urban growth boundary amendments, numbers of dwelling units, and critical areas and related buffers.

- *Sufficient Land Supply*: Amount of land necessary to accommodate adopted population and employment forecasts or targets for the 20-year planning period, taking into account any appropriate safety factors. (For further information, see *Issues in Designating Urban Growth Areas (Part I): Providing Adequate Urban Area Land Supply,* CTED 1992.)

- *Lands Suitable for Development* (also Net Buildable Acres): All vacant, partially-vacant, under-utilized, and redevelopable land that is (a) designated for commercial, industrial, or residential use; (b) not intended for public use; (c) not constrained by critical areas in a way that limits development potential and makes new construction unfeasible.

- *Vacant Parcels*: Parcels of land that have no structures or have buildings with very little value.

- *Partially-Vacant Land* (also referred to as *Partially-Used Land*): Tax lots occupied by a use but which contain enough land to be further subdivided or developed without need of rezoning. For low-density residential lands, tax lots over 2.5 times the minimum lot size will be considered partially vacant. For all other uses, tax lots with building coverages that leave vacant portions larger than 2.5 times the minimum allowable lot size for the underlying zoning district will be considered partially vacant.

- *Under-Utilized/Redevelopable Land*: Tax lots zoned for more intensive uses than that which currently occupies the property. For instance, a single-family home on multifamily-zoned land is considered under-utilized. This classification also includes redevelopable land, i.e., land on which development has already occurred but on which, due to present or expected market forces, there exists the strong likelihood that existing development will be converted to more intensive uses during the planning period. For the purposes of this study, redevelopable land will be considered a category of under-utilized land. Under-utilized land refers to land where a change of use to higher density occurs; redevelopable land refers to land where a similar use occurs at a higher density.

  Note that redevelopable land, as it is typically defined, deals primarily with parcels with developed structures that are judged as likely to be demolished and new buildings constructed in their place. The standard approach to identifying redevelopable land is to compare improvement value to land value. Many analyses assume that tax lots where improvement value falls below land value (a 1:1 improvement to land value ratio) are redevelopable. Not all, or even a majority of parcels that meet this criterion for redevelopment *potential* will be *actually* redevelop during the planning period. The issue of *how much* of the potentially redevelopable land will be assumed to redevelop over the planning period needs to be considered.

  An alternative approach to estimating redevelopment potential is to analyze the relationship of parcels to other surrounding parcels. For example, some jurisdictions define redevelopment potential as parcels that have improvement values significantly lower than surrounding parcels in similar designations. This approach, however, requires a property-by-property analysis using advanced GIS tools.

  Another approach to estimating redevelopment potential is to analyze land value as a function of parcel size. In general, one would expect larger parcels with lower improvement values to have higher redevelopment potential. The distribution allows analysis of the relationship between improvement value and parcel size, and shows clear breakpoints in that distribution.

- *Land Capacity:* The amount of development a parcel of land is expected to accommodate given existing zoning regulations, site conditions, and market factors.

- *Critical Areas (Constrained Land):* Constrained Land is subtracted from Total Vacant Land to get Gross Buildable Vacant Land (which is further divided into totally vacant and partially vacant based on parcel boundaries and existing development on parcels).

This definition of constrained lands includes the land area associated with both the critical area and any required buffers.

The GMA defines critical areas to "include the following areas and ecosystems: (a) Wetlands; (b) areas with a critical recharging effect on aquifers used for potable water; (c) fish and wildlife habitat conservation areas; (d) frequently flooded areas; and (e) geologically hazardous areas" (RCW 36.70A.170). Moreover, the GMA requires communities to classify critical areas and to regulate development in these areas (RCW 36.70A.050; RCW 36.70A.060).

- *Gross and Net Buildable Vacant Acres*: A *Gross Buildable Vacant Acre* is an acre of vacant land before land has been dedicated for public right-of-way, private streets, public utility easements, open space tracts, or parks, but after critical areas have been deducted. For example, a standard assumption is that about 20% of land in a subdivision is used for streets and utilities, etc: if so, then a gross buildable vacant acre will yield only about 35,000 sq. ft. (80% of a full acre) for lots. A *Net Buildable Vacant Acre* is an acre of buildable vacant land after land has been dedicated for public right-of-way, private streets, or utility easements, etc. A net vacant acre has 43,560 square feet available for construction, because no further street or utility dedications are required: all the land is in lots. *Gross-to-Net Adjustment:* Often expressed as a percent. The gross-to-net adjustment is applied to gross acres to account for land that has been dedicated for public right-of-way, private streets, or public utility easements, etc.

These definitions are a good starting point, but they will almost certainly require elaboration and clarification once the work is actually undertaken. We expand on these basic definitions in Chapter 5. Analysts should pay particular attention to overlapping definitions for *partially vacant, partially used, under-developed,* and *redevelopable* land to make sure that all land is counted, and counted only once.

Chapter 3 Overview of the Buildable Lands Work Program (2000-2002)

This chapter provides an overview of our recommendations for the buildable lands work program. Its purpose is to (1) provide a framework for the task detail, organized by phases, that Chapters 4, 5, and 6 present, and (2) discuss project administration issues—such as management, review, and budget—that would otherwise confuse the discussion of technical tasks in Chapters 4, 5, and 6. It is organized as follows:

- Overview of phases and a schedule for implementation
- Overview of tasks, by phase
- Overview of project administration.

OVERVIEW OF PROJECT PHASES AND SCHEDULE

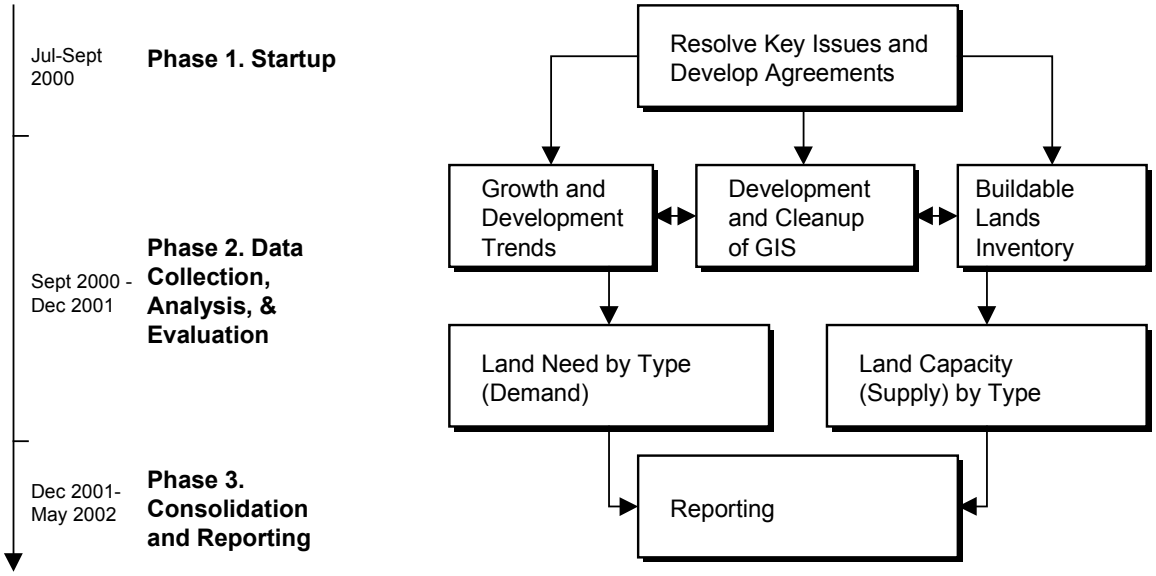
Chapter 1 and Appendix B provide a framework for a buildable land analysis that organizes elements according to whether they are related to assessing demand for land or supply of land. That framework is a good one for understanding what a buildable lands analysis is trying to accomplish, and for discussing issues, definitions, data sources, and analytical techniques. But ultimately the work must be done chronologically: time works that way. Demand and supply, data and analysis, analysis and review: they all get mixed and often occur simultaneously.

We have written several other guidebooks on various topics. It is our conclusion that work programs are most successful when they are organized to reflect the expected work flow. That means they should be organized chronologically: what is supposed to happen first, what needs to be completed before the next big step can be taken? We divided that chronological work program into three principal phases:

- *Phase 1: Startup*. Work the County needs to do to prepare for implementation of the remaining parts of the work program
- *Phase 2: Data Collection, Analysis, and Evaluation*. Gathering and assembling the data on development history, demand for land, the buildable lands inventory, evaluation of the data consistent with GMA requirements; and
- *Phase 3: Consolidation and Reporting*. Comparing land inventory data with development trends, and land need estimates. Preparation of the 5-year report.

Figure 3-1 provides a conceptual overview of how the three phases fit together with the GMA data collection requirements described in Appendix A, and an approximation of time elapsed for each element.

Figure 3-1. Relationship of work program and schedule to GMA requirements



While the County has until September 2002 to complete the analysis, the work program could be implemented faster. The work program shown in Figure 3-1 is based on a 22-month schedule beginning July 2000. The startup phase would last approximately 2-3 months depending on the length of time needed to get agreements in place, and whether the County decides to use a consultant to assist in implementation. The data collection portion of the second phase would last approximately 6-12 months: the biggest uncertainty here is the time at which the County can have its various GIS data layers (including assessment data) in a readily accessible format. The data analysis portion of the second phase would last 6-9 months. The reporting phase would last about 3-6 months, depending on the amount and type of local review and revision.

The County is in the process of building its GIS capacity. That process is likely to go into and through Summer 2000. Verification and clean-up of the data sets will probably take at least another year. Thus, development of the GIS is programmed as an ongoing task for all three phases of project.

OVERVIEW OF PROJECT PHASES AND TASKS

Following is a brief overview of work program tasks by phase. Each phase of the project, and the specific methodologies are described in more detail in the chapters 4, 5 and 6.

PHASE I: START-UP

The Start-up Phase includes work the County needs to do to prepare for implementation of the remaining parts of the work program. Much of the work that one would otherwise expect to find at the start of a buildable land analysis will already have been completed as part of the project this report summarizes. Methods and data sources have been identified, and various jurisdictions have reviewed and agreed to those methods. This Phase could include:

- Agreement on final methods, definitions and jurisdictional data collection responsibilities;
- Agreement on project management and coordination;
- Staffing and staff assignments;
- Consultant search and selection (if consultants are used); and
- Project kick-off meeting(s).

The Start-up Phase lays the groundwork for the remaining tasks in the work program. It also sets in place systems for how the project will be managed, coordination with local jurisdictions, and any additional county policies that may be needed to implement the buildable lands program.

PHASE II: DATA COLLECTION, ANALYSIS, AND EVALUATION

This Phase provides a detailed description of tasks with recommendations about procedures for collecting and monitoring data on land capacity, growth and development, land needs (demand) estimates, planned and actual densities, policies, and interjurisdictional coordination. A summary of the outputs of this phase is presented below (the specific methods are described in Chapter 5).

Buildable Land Demand Analysis (Type and Density of Development)

1. *Development history.* Determine residential densities and intensities of commercial and industrial development achieved during the period 1 January 1995 to 31 December 2000 in cities and unincorporated UGAs:

a. Calculate single-family residential net densities in recorded formal plats during 1995-2000 in cities and unincorporated UGAs by comprehensive plan and zoning designation.

b. Calculate single-family residential net densities in recorded short plats during 1995-2000 in cities and unincorporated UGAs by comprehensive plan and zoning designation.[1]

c. Calculate multiple family residential net densities for new apartments/condos from building permits issued during 1995-2000 in cities and unincorporated UGAs by comprehensive plan and zoning designation.

d. Summarize net residential density results by generalized/regional comprehensive plan designation categories (low, medium, and high density residential) by city and unincorporated UGA.

e. Calculate net floor area ratios for new commercial and industrial structures from building permits issued between 1 January 1995 and 31 December 2000 in cities and unincorporated UGAs by comprehensive plan and zoning designation.

f. Summarize net floor area ratio results by generalized/regional comprehensive plan designation categories (commercial and industrial) by city and unincorporated UGA.

2. *Land Need Calculation.* Determine remaining residential, commercial, and industrial land requirements necessary to achieve the adjusted[2] Countywide Planning Policy 2012 population and employment targets by city and unincorporated UGA:

   a. Document the number of net new housing units developed by type (single-family and multiple family including subsets of each) and density range from 1 January 1992 to 31 December 2000 for each city and unincorporated UGA.

   b. Calculate remaining housing unit needs by type and density range for the 2001-2012 period for each city and unincorporated UGA using 1992-2000 past trend analysis and extrapolation, combined with relevant adopted housing policy direction, to reach adjusted 2012 population targets (also add in any "redeveloped" housing units from land supply calculations)

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[1] This step is only necessary for jurisdictions where lots created by short subdivision during 1995-2000 constitute a substantial number or proportion of total lots recorded during 1995-2000.

[2] Adjusted for annexations to April 1, 2001

c. Calculate net buildable land area needed by generalized/regional comprehensive plan designation category to accommodate the remaining housing unit needs for the 2001-2012 period at net residential densities observed from 1995-2000 for each city and unincorporated UGA.

d. Document net new commercial and industrial employment added from March 1990 to March 2001 for each city and unincorporated UGA.

e. Calculate remaining commercial and industrial employment growth anticipated for the 2001-2012 period for each city and unincorporated UGA using 1990-2001 past trend analysis and extrapolation, to reach adjusted 2012 employment targets (also add in employment associated with any "redeveloped" employment sites from land supply calculations)

f. Calculate net buildable land area needed by generalized/regional comprehensive plan designation category (commercial and industrial) to accommodate the remaining commercial and industrial employment anticipated for the 2001-2012 period at net commercial and industrial floor area ratios observed from 1995-2000 for each city and unincorporated UGA.

3. *Comparison.* Compare the results of steps 2(c) and 2(f) to the results of step k below to determine if an adequate supply of buildable land exists within UGAs.

Buildable Land Supply Analysis

The principal steps are:

a. Classify all land as developed, under-utilized/redevelopable, partially-vacant, vacant, or undevelopable.

b. Estimate total acres of land by comprehensive plan designation.

c. Estimate total vacant acres of land by comprehensive plan designation.

d. Estimate total unbuilt acres of partially-vacant parcels by comprehensive plan designation.

e. Estimate total under-utilized/redevelopable acres by comprehensive plan designation

f. Calculate gross potentially buildable acres by comprehensive plan designation (c + d + e)

g. Calculate total acres considered built-out (developed), by comprehensive plan designation (b – f)

h. Estimate acres of land with environmental constraints/critical areas which preclude development on remaining developable acres by comp plan designation and type of critical area:

   (1) Wetlands and buffers

   (2) Streams and buffers

   (3) Geologically hazardous areas

   (4) Aquifer recharge areas

   (5) Fish and wildlife habitat

   (6) Frequently flooded areas

i. Calculate total estimated gross buildable unconstrained land area by comprehensive plan designation (f – h)

j. Estimate the amount of the total estimated gross buildable land area by comprehensive plan designation that is:[3]

   (1) Required for future rights-of-way

   (2) Required for other future public purposes

   (3) Considered unlikely to have adequate water/sewer facilities provided during the remaining portion of the 20-year planning period

   (4) Considered unlikely to be made available for development during the remaining portion of the 20-year planning period

k. Calculate total estimated net buildable land area by generalized/regional comprehensive plan designation categories to compare with estimated land requirements (i – j).

Phase III: Consolidation and reporting

The final phase builds on the data gathered in Phase 2 to answer the key policy questions required by the GMA and presents a framework for the preparation of the five-year growth monitoring

[3] Jurisdictions should ensure that these land estimates do not double-count land already removed from the buildable land supply due to previous consideration of environmental constraints in step h or market availability in determining land classification in step a.

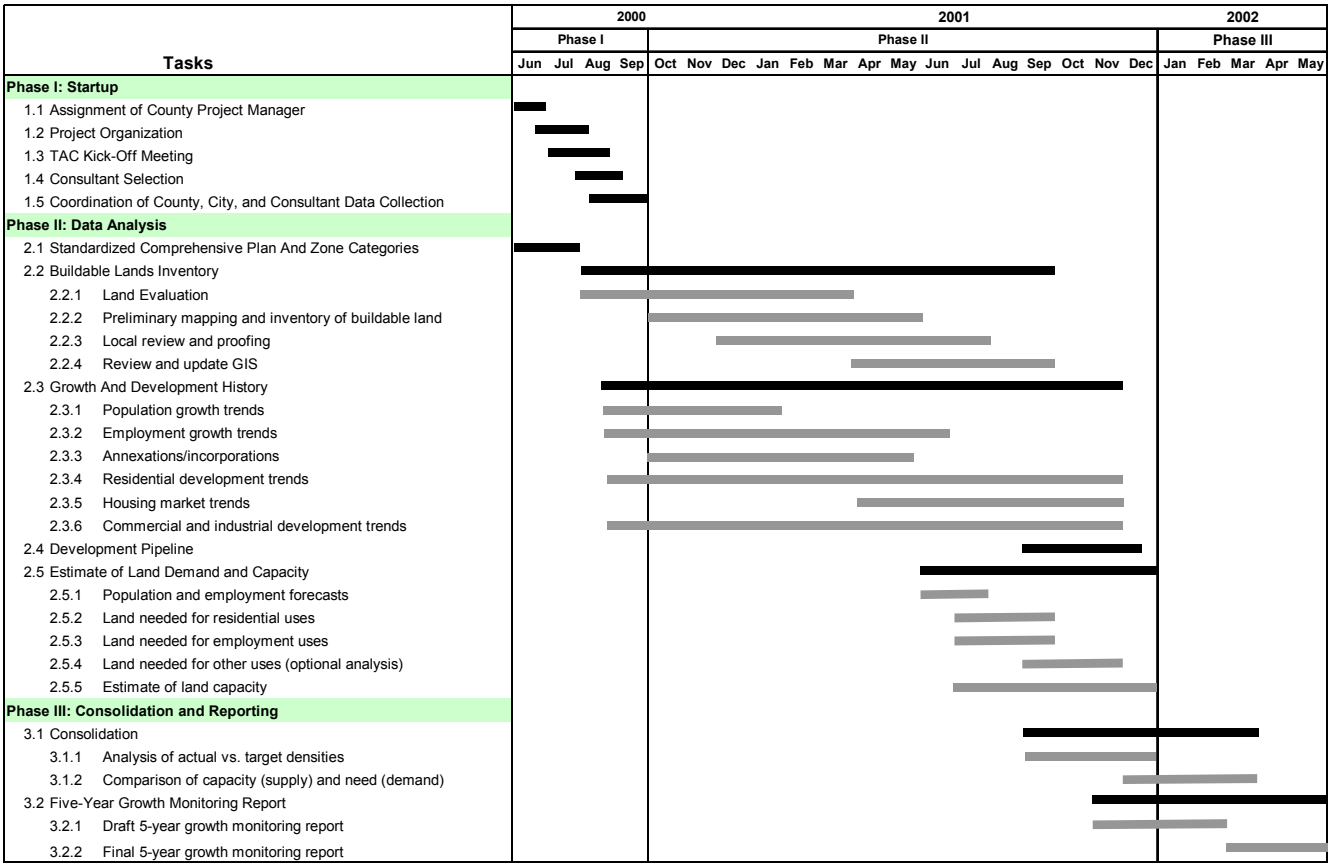
report. Those policy questions are described in the Phase 2 analysis requirements above.

This section concludes with a description of the report development and review process and a proposed outline of the five-year growth monitoring report for Snohomish County.

SCHEDULE OF TASKS

Figure 3-1 shows a general schedule of tasks, by phase and month. The schedule assumes the project will begin in July 2000 and be completed by May 2002. The deadline for completing the five-year growth monitoring report is September 2002. The figure also shows that some Phase II tasks can begin during Phase I.

Figure 3-1. Schedule of tasks



PROJECT ADMINISTRATION

PROJECT MANAGEMENT AND STAFFING

The County will manage the work program. The likely manager is Steve Toy, who will be assisted by staff in his department. Other County staff will assist Toy on various aspects of the work:

- County Assessor. The assessment staff are not staff to the project, but some time from assessment staff will probably be needed occasionally to make sure the assessment data are correct and being interpreted properly. The budget for the work program assumes that this small amount of time is covered as part of typical inter-office coordination between planning and assessment staff: there is no specific budget allocation for assessment staff.

- GIS. The County is updating its GIS capabilities, and particularly its ability to use assessment data, which is critical to the methods proposed in this project. These activities are already part of the County's current effort to establish basic GIS functionality using a countywide parcel base map. One key feature of the County's GIS development plan involves a decentralized approach for user creation and maintenance of centrally-stored GIS data. As such, the cartography section of County Planning and Development Services has developed significant GIS capabilities that will be applied to this project.

In addition to County staff, each city will have staff involved in data collection and review. For jurisdictions with staff planners, the expectation is that they would have these responsibilities (see Chapter 5 for a discussion of specific tasks). For small jurisdictions with no planners, some of the work may be able to be done by city staff, or County staff or consultants may need to do the bulk of the technical work.

The work program also presumes modest review and assistance from service providers, but such assistance is presumed to be standard coordination and does not have a budget allocation.

PROJECT REVIEW

The work program presumes that the current Technical Advisory Committee (TAC) remains in place for this project: representatives may change, but the interests represented should not. For the bulk of the project, it is the TAC that provides technical review.

At a few key places in the work program, more extensive public review will be desirable. The public body that this project reports to is

Snohomish County Tomorrow (SCT), and, ultimately, the County Council and City Councils. As with any other GMA planning process, there are also opportunities for cities and the County to gather public input on the development of the buildable lands data and analysis by holding public workshops, meetings with stakeholder groups, and planning commission workshops. Through these forums, the general public will have an opportunity to review and comment on the data and materials being developed to address the buildable lands requirement at the individual city or UGA level.

PROJECT COSTS

A key issue in the implementation of the buildable lands work program is the cost to the County and cities. Table 3-1 summarizes estimated project effort and cost by jurisdiction type.[4] The estimates show a total project cost of about $350,000. The majority of the project costs is for labor ($339,000). We estimate that the project will require about 11,500 hours of staff time to complete at a melded hourly rate of $30 per hour.

Because the County is the designated coordinating entity for this project, and because they will be responsible for a substantial amount of the technical work, 61% of total project cost is allocated to the County. The TAC recommends that the small cities in "Group 4" be eligible for buildable lands funding, but that they be given the option of participating in the buildable lands data collection effort as a condition of receiving the funding. For Group 4 cities that decide not to participate, the County agrees to do the necessary buildable lands work for them. Funds initially allocated to the small cities that "opt out" in this way would be retained by the County to help cover the costs of doing their work.

A more detailed discussion of the cost estimates, including rate assumptions, city groupings, and detailed labor estimates is presented in Appendix D.

[4] The cost estimates do not reflect the use of consultants to implement portions of the buildable lands program.

Table 3-1. Estimated project effort and cost (all costs in thousands)

Jurisdiction type	Staff Hours	Labor Cost	Direct Cost	Total Cost	% of Total Cost
Snohomish County	7,128	$210	$4	**$214**	61%
Consultants	0	$0	$0	**$0**	0%
Group-1 Cities (3)	1,486	$44	$2	**$46**	13%
Group-2 Cities (8)	1,932	$57	$3	**$60**	17%
Group-3 Cities (4)	506	$15	$1	**$16**	4%
Group-4 Cities (5)	448	$13	$1	**$14**	4%
Subtotal All Cities	4,372	$129	$7	**$136**	39%
Total County, Consultant, All Cities	**11,500**	**$339**	**$11**	**$350**	**100%**

Source: ECONorthwest, 2000

Chapter 4

Phase I: Start-up

Much of the work that one would otherwise expect to find at the start of a buildable land analysis will already have been completed as part of the project this report summarizes. Methods and data sources have been identified, and various jurisdictions have reviewed and agreed to those methods. Nonetheless, some organization at the beginning of the project may be required to address the following topics:

- Final methods and definitions. This report essentially completes this task, however, some additional work may be necessary to refine methods and definitions as the County begins to implement them.
- Project management. This report makes recommendations on scope, schedule, budget, and responsibilities. Since it has been developed with the assistance of the TAC, there should be little left to do. The County will need to officially assign a County project manager to coordinate the project activities through the life of the project.
- Staffing and staff assignments. Overall coordination and management of the project is important to its success. Appendix D provides estimates of staffing and costs that have been accepted by the TAC. It may be necessary to make some adjustments based on final information about available funding.
- Request for proposals. If the County chooses to use a consulting team to conduct elements of the project, it will need to agree on what the work program, schedule, and budget for the consultant will be. The County would then draft and issue a request for proposals from qualified consultants. This process will take at least six weeks from initiation to contract; probably longer.
- Project kick-off meeting. This is the last step in the startup phase. The County will organize a project kick off meeting with the jurisdictions to get organized and review the scope and sequence of project tasks.

Most of the tasks above have already been largely accomplished as part of this project; this work program describes the agreements of the TAC about these issues. Thus, the work effort is primarily about process, As noted in Chapter 3, we organize the Tasks chronologically.

It is important to note that some of the Phase II data collection work (see Chapter 5) can overlap with the startup tasks. Many of the data elements will not require additional discussion or formal agreement. Examples include population and employment data, annexations, building permits, and subdivision data.

For our discussion of scheduling in this phase and subsequent ones (Chapters 5 and 6), we assume that the project starts in July 2000 and runs 22 months through the end of May 2002. It will be clearer to give specific dates then general times like "Month 5." If the project starts later, the dates will have to be adjusted.

TASK 1.1: ASSIGNMENT OF COUNTY PROJECT MANAGER

We assume that the manager will be Steve Toy, and that his role in the project will be formally acknowledged by the County Planning and Development Services Department.

TASK 1.2: PROJECT ORGANIZATION

The County Project Manager will check on all deadlines and funding sources to make sure that they are correct and approved as reported in this document. He will make any necessary adjustments. He will assign staff to the project. He will prepare an agenda for, and convene, the TAC kick-off meeting.

TASK 1.3: TAC MEETING

The purpose of this meeting is to make any final decisions about scope, budget, schedule, staffing, or procedures. It should include discussion and agreement on the basic program of agency, interest group, and citizen involvement and review. This meeting could include discussion of consultant selection procedures.

TASK 1.4: CONSULTANT SELECTION (OPTIONAL)

Depends on TAC decisions. If it is decided that a consultant is needed, then allow a minimum of six weeks from release of RFP to signing of contract. Our experience with County contracting suggests it could easily take twice that long.

TASK 1.5: FINAL AGREEMENTS ON SCOPE

Meeting(s) to make sure everyone knows the objectives, procedures, deadlines, and responsibilities.

SUMMARY OF PHASE I

PRODUCTS

Product 1: Final scope, schedule, and budget for the project
Schedule: By end of July 2000
Discussion: This report may be sufficient. If minor amendments are made, they should be documented in a memorandum attached to this report. If major amendments are made, this

report should be changed and reprinted.

Product 2: Interim interjurisdictional agreement on scope, products, schedule, and responsibilities
Schedule: By mid August 2000
Discussion: In order for the technical work on this project to commence according to this schedule, there needs to be interim interjurisdictional agreement on the recommended buildable lands analysis approach. This agreement may be informal (e.g., an e-mail response to a request for approval) or semi-formal (e.g., a returned signature on a letter from the County to a city planning director or elected official noting that this work program will be implemented). Formal interjurisdictional acceptance of the recommended buildable lands methodology and work program awaits final SCT approval, which usually takes an additional 4 to 8 months.

Product 3: Decision on hiring consultant(s) under contract (optional)
Schedule: By mid August 2000
Discussion: If the TAC and County decide to hire a consultant, then this Phase requires an RFP, evaluation of responses, selection of consultant, and negotiation and signing of a contract.

TAC AND PUBLIC MEETINGS

Meeting 1: TAC meeting
Schedule: End of July 2000
Decisions: Final agreement on scope, budget, schedule, responsibilities

Meeting 2: Project kick-off meeting /Consultant selection (optional)
Schedule: Mid-August 2000
Decisions: TAC, other city reps, County staff, (consultants**)**

Chapter 5

Phase II: Data Collection, Analysis, and Evaluation

This chapter provides recommendations for a comprehensive, coordinated data collection system and steps to analyze and evaluate the data. The methods described in this chapter are derived from the GMA reporting requirements. Specifically, the GMA requires that the five-year monitoring report answer a number of questions:[1]

- What is the actual density and type of housing that has been constructed in UGAs since the last comprehensive plan was adopted or the last five-year evaluation completed? Are urban densities being achieved within UGAs? If not, what measures could be taken, other than adjusting UGAs, to comply with the GMA?

- How much land was actually developed for residential use and at what density since the comprehensive plan was adopted or the last five-year evaluation completed? Based on this and other relevant information, how much land would be needed for residential development during the remainder of the 20-year comprehensive planning period?

- How much land was actually developed for commercial and industrial uses within the UGA since the last comprehensive plan was adopted or the last five-year evaluation was completed? Based on this and other relevant information, how much land would be needed for commercial and industrial development during the remainder of the 20-year comprehensive planning period?

- To what extent have capital facilities, critical areas, and rural development affected the supply of land suitable for development over the comprehensive plan's 20-year timeframe?

- Is there enough suitable land in each county and its cities to accommodate the county-wide population growth for the remainder of the 20-year planning period (based on the forecast by the state Office of Financial Management and the subsequent allocations between the county and cities)?

- Does the evaluation demonstrate any inconsistencies between the actual level of residential, commercial, and industrial development that occurred during the five-year review period compared to the

[1] *Buildable Lands Program Guidelines*, Washington State Community, Trade, and Economic Development Department, July 2000.

vision contained in the county-wide planning policies and comprehensive plans and the goals and requirements of the GMA?

- What measures can be taken that are reasonably likely to increase consistency during the subsequent five-year period, if the comparison above shows inconsistency?

We considered several ways to organize the research that would respond to these questions. The most obvious is to organize by question. That organization does not work particularly well because many of the questions posed above require data from several sources: the work program would end up describing all the data sources and data collection techniques for the first few questions and then would have to refer back to those questions when answering subsequent ones. Alternatively, one could organize according to the data sources needed to answer the questions. But there are so many data sources that such an arrangement would read more like a long list than an organization.

We chose to organize the discussion of the work plan for Phase II around six major categories of tasks that, collectively, cover all of the data needed to answer all of the required questions about land base, development patterns, and land capacity to support forecasted development:

- Standardized comprehensive plan and zoning categories
- Buildable lands inventory
- Growth, development, and density history
- Development pipeline
- Estimate of land demand
- Estimate of land (development) capacity

Phase II gathers data and does analyses needed to be able to answer the questions above. It does not, however, include the write-up of answers to those questions: that happens in Phase III (Chapter 6).

Much of the data needed for the buildable lands analysis will come from County data systems. The County is in the process of updating its tax lot assessment data so that it is compatible with GIS reporting. But the County intends to verify other data layers and add new ones. According to County staff, that could be a year-long process. Thus, the County GIS update will be occurring at the same time that other data for the buildable lands analysis are being collected and evaluated. This work plan does not break out the County update effort separately: it is assumed to be integrated with data collection related to two key components of the GMA requirements: (1) buildable lands, and (2) development trends.

TASK 2.1 STANDARDIZED COMPREHENSIVE PLAN AND ZONING CATEGORIES

A key first step in the growth monitoring process is getting agreement on the relationship between comprehensive plan designations and zoning districts on a countywide basis. This is necessary for consistency in any countywide analysis.

A regional plan designation classification system will, by necessity, be general. We recommend that the classifications be broken out by broad use categories (residential, commercial, industrial, mixed-use, public, and parks/open space). The regional plan designation classification, however, may not be suitable for local analysis of land needs, particularly when reviewing local plan designation or zone change requests. Jurisdictions should consider performing a more detailed analysis of land needs by local plan designations and zoning.

ECO requested cities provide information on comprehensive plan designations and zoning districts in the *Buildable Lands Questionnaire.* Table 5-1 provides a sample matrix, based on survey responses, that identifies the relationship between regional and local comprehensive plan designations. A more detailed version of the matrix is presented in Appendix E.

The matrix has not been fully reviewed by participating jurisdictions and may change. The result of this task will be a generalized regional plan classification matrix that will allow a regional plan designation classification to be applied as a parcel attribute in the County's parcel database.

Table 5-1. Sample standardized comprehensive plan and zoning categories

	Generalized Regional Plan Designations							
CITY	Urban Low Density Residential	Urban Medium Density Residential	Urban High Density Residential	Urban Commercial	Urban Industrial	Mixed Use	Public	Park/Open Space
Snohomish County	R-7,200 PRD-7,200 R-8,400 PRD-8,400 R-9,600 PRD-9,600 WFB	LDMR PRD-LDMR T R-7,200 PRD-7,200 WFB	MR PRD-MR LDMR PRD-LDMR	NB PCB CB GC FS BP	BP LI HI IP			
Everett	R-S	R-1 R-2 R-1A	R-2A R-3L R-3 R-4 R-5	B-3 C-1 B-2				A-1
Edmonds	RS-12 RS-20	RS-6 RS-8	RM-1.5 RM-2.4 RM-2.4 RM-3	CG, CG2 CG/CG2 CW BP BN MU		BC		
Lynnwood	RS-12 RS-9 RS-8 RS-7	RML	RMM RMH RMHR	BC BN CG PRC PCD B-4 B-2 C-2	BTP LI	MU	P-1	
Mountlake Terrace	SFR RS 7200	RS 8400 RML	RML RMM RMM MHP MHP	CG CG SDD BC BC BC/D	LI/OP LI/OP		PFS PFS	POS REC
Marysville	R-4.5 R-6.5	R-8 R-12	R-18 R-28	CB GC DC		MU		
Mukilteo	RD 7.2 RD 7.5 WFB RD 8.4 RD 9.6 RD 9.6 (S) RD 12.5 RD 12.5 (S)		MR MRD	PCB(S) MR BP DB CB CB (S) PCB PCB(S) PSP WMU	BP PI IP LI HI OS			
Bothell (part in Snoh. Co.)	R1 (detached units) R2 (detached units) R3 (detached units) R4 (detached units) R5 (detached units)	R6 (detached units) R8d (detached units) R8a (attached units ok) MHP	R11 (detached units) R15 (detached units)	OP NB CB GC	LI SSHO			
Mill Creek	LDR PRD 7200	MDR PRD 7200	HDR	CB NB OP PCB BP		MU/HDR		
Monroe								
Snohomish								
Arlington	MDR MHDR	OT	HDR	NC GC CBD HC BP	AI I		AR	
Brier	RS RS			BN			P UC	OS
Lake Stevens	LDR ER NC CR P/SP WR WR CR P/SP	MDR SR WR UR HUR NC CR P/SP	HDR MFR NC CR P/SP	D/LC LB CBD CR P/SP SRC SRC CR P/SP P/SP PBD PBD LR P/SP	LI CR LI P/SP GI GI LI CR	MU MU CR	P/SP P/SP CR P/SP SA P/SP SA	
Stanwood	SR-12.4 SR-9.6 SR-7.0	SR-5.0	MR	NB MB I MB II GC	LI GI			
Sultan	LMD	MD	HD	HOD+ UC ED	HOD+ UC			
Granite Falls								
Gold Bar								
Darrington	R-SF	R-MD		CD	LI/M			
Woodway	R-87 R-43 R-14.5 UR			C				

Source: Snohomish County Buildable Lands Questionnaire, ECONorthwest, 2000
Note: Table 5-1 only shows the relationship between regional plan designations and local zoning, but does not show the relationship between local zoning and local plan designation. Some jurisdictions have zoning districts that may fall under more than one local plan designation.

Required data elements

Following is a list of required data elements for this portion of the analysis. Existing data elements are in normal typeface; new data elements are in italics.

Tax lot identifier
Local plan designation
Regional plan designation
Local zoning

Summary of steps

1. Gather information on zoning districts by city including minimum lot size standards, coverage requirements, and other pertinent data.
2. Group the districts by use (residential, commercial, industrial, mixed).
3. Look for common breaks in density and group districts by density.
4. Develop regional classification categories and apply a classification to each local zoning district. Present the results in a matrix.
5. Send the regional classification matrix to local jurisdictions for review and comment.
6. Make any necessary adjustments to the classification matrix.

The matrix should be in the form of a spreadsheet or database file that can be merged with the tax lot data. A key issue that is likely to confront the County and cities that have GIS systems is that zoning districts are likely to have data entry inconsistencies in the current databases (for example, a low density residential district might be listed as R1, R-1, or R-1SR [R-1 with site review]). Existing classifications will need to be scrubbed for inconsistencies if the cross-classification matrix is to work properly.

SUMMARY OF TASK 2.1

Product: Regional plan designation/zoning cross-classification matrix
Schedule: Sept-Oct 2000
Discussion: County will develop matrix, cities will provide additional data if necessary

TASK 2.2 BUILDABLE LANDS INVENTORY

The buildable lands inventory involves several steps and may require application of different methodologies depending on the jurisdiction and

availability of data. Jurisdictions with GIS will probably want to complete the inventory in-house, while jurisdictions without GIS will work with the County to develop and verify land coverage data.

The basic steps in the buildable lands inventory include (1) agreement on definitions, (2) preliminary mapping, (3) local review and proofing, and (4) final amendments to the GIS coverages.

Applying a common set of definitions is important to ensure consistency across jurisdictions. In general, the definitions strive to classify lands into a set of mutually-exclusive categories. The definitions are embedded in the methodological discussions that follow.

2.2.1 LAND EVALUATION

2.2.1.1 Generalized land classification system

Chapter 2 presented a common set of definitions for this study. The definitions include six broad land classifications:

- *Developed land* is land that is developed consistent with the comprehensive plan designation of the tax lot, at densities that do not allow additional land divisions, and is unlikely to redevelop over a 20-year period. Most local governments include park and open space land in this category.

- *Vacant land* generally includes tax lots that have no structures or have buildings with improvement values of under $10,000. The County will develop maps that show: (1) land with $0 improvement value; (2) land with $1 to $10,000 of improvement value; and (3) land with $10,001 to $25,000 of improvement value; and (4) land with more than $25,000 in improvement value. Communities would then conduct field inspections (particularly for larger parcels) to verify whether the $10,000 threshold represents the majority of vacant land. This threshold could be adjusted upwards or downwards based on the results of the field review. In general, the method assumes that communities will accept the $10,000 threshold, but allows local flexibility in making a final determination. In some instances, communities may desire to flag specific parcels as vacant despite their being over the $10,000 threshold. Communities may elect to classify larger parcels or key parcels with strategic locations or planning opportunities as vacant in those instances.

- *Partially-vacant land.* For single-family residential land, the method requires a comparative analysis of actual lot sizes with minimum lot size for the underlying zoning district. This analysis will result in a distribution of lot sizes that the County can use for mapping, local review, and final determination of a

threshold. We expect that threshold will fall somewhere between two and 2.5 times the minimum parcel size for the underlying zone. We recommend 2.5, which accounts for the fact that many parcels will have houses located in such a way that further partitioning will not be practical.

Communities can further refine this screening rule by assuming a maximum improvement value would preclude further development of land. For example, Metro in Portland used a $350,000 threshold for its most recent land productivity estimates. This approach recognizes that some residential development occurs on very large lots and that owners of those residences have no intention to further divide their property. We recommend that the method use the distribution of improvement to land values shown in Table 5-2, cross-correlated with the ratio of actual to minimum lot sizes to set this threshold. This matrix of rules can be implemented in a database or spreadsheet format with look-up tables. Alternatively, it could be simplified into a simple rule of improvement-value-per-acre.

For other uses (multiple family residential, commercial, and industrial) the analysis is more complicated because there is not the simple relationship between development type and amount of developed land that exists with single-family dwelling units (i.e., as a general rule one can be relatively safe in assuming that the house and landscaped yard do not take more than a quarter or half acre). For other uses, however, building footprints can vary substantially. Our understanding is that the assessment data base has a field for "first-floor square footage" that has been completely and reliably populated. It is unclear at this time whether the new version of the assessor database can export this data in the way that it has in the past. If the data can be extracted, then the field can be used as a proxy for building footprint. There are also fields for the square footage of other floors. Outside of large downtowns, a typical floor-area ratio (the ratio of total built space to developed lot size) is around 0.25. Thus, a rule could be something like: add up all floor area; divide by 0.25: subtract from tax-lot size; if result is great than 1 acre, classify all the difference as partially vacant. Using the County's 1998 digital orthophotos already in GIS format, check to see if parcels initially assigned a partially-vacant status indeed have remaining developable land (i.e., ensure that the unbuilt portion of the property is not covered by parking or industrial storage yards, etc). As for single-family uses, an additional screen of improvement-value-per-acre could be added to refine the preliminary selection.

- *Under-utilized land* includes tax lots zoned for more intensive uses than that which currently occupies the property. For instance, a single-family home on multifamily-zoned land is considered under-utilized. The under-utilized land category includes potentially redevelopable land which is defined as land on which development has already occurred but on which, due to present or expected market forces, there exists the strong likelihood that existing development will be converted to more intensive uses during the planning period. For the purposes of this study, redevelopable land will be considered a category of under-utilized land (a more detailed discussion on this topic is in the Definitions section of Chapter 2).

  Most jurisdictions use a simple ratio of improvement to land value to determine redevelopment potential. Because improvement to land value ratios are a crude indicator of redevelopment potential, plotting the distribution of improvement to land value ratios provides a continuum of lands that can be considered more to less likely to redevelop. Table 5-2 provides a sample table for displaying the distribution of land with redevelopment potential.

  Not all, or even a majority of parcels that meet these criteria for redevelopment *potential* will be assumed to redevelop during the planning period. The issue of *how much* land might redevelop over the planning period can be determined. The amount of land that redevelops depends on a variety of factors including the vacant land supply, regional economic conditions, and City policies. It is reasonable to assume that the range will be between 20% and 80% of lands with low improvement to land value ratios. Table 5-2 below can be filled in with percentages for each cell as an assumption of how much will redevelop. For example, the analysis might assume that 50% of commercial and office land with improvement to land value ratios between 0 and 0.25 would redevelop over a 20-year period, and that 20% with improvement to land value ratios of between 0.5 and 1.0 would redevelop. We recommend the County conduct analysis of selected subareas to develop the redevelopment assumptions.

Table 5-2. Developed parcels by improvement/land value ratio

Description	Acres				
	Comm/ Office	Ind.	Res.	Total Acres	Percent of Total Acres
Parcels with more redevelopment potential					
Imp/Land Ratio Between > 0 and < .25:1					
Imp/Land Ratio Between .25:1 and .5:1					
Imp/Land Ratio Between .5:1 and 1:1					
Subtotal					
Parcels with less redevelopment potential					
Imp/Land Ratio Between 1:1 and 2:1					
Imp/Land Value Between 2:1 and 3:1					
Imp/Land Value > 3:1					
Subtotal					
Total					

Source: ECONorthwest, 2000

The analysis here has two parts: (1) identifying under-utilized land that is *potentially* redevelopable (and, by implication, has a high likelihood of being redeveloped), and (2) estimating what percent of the forecasted development (by type) is likely to be accommodated on under-utilized land.

We recommend the following steps for making a preliminary estimate of under-utilized lands:

1. *Single-family residential.* No lands designated for single-family uses are considered under-utilized. If lands are developed at densities below the allowable density, they should be classified as partially-vacant.

2. *All other uses*. If the land is in any other designation and the current use is inconsistent with a plan designation that allows more intensive use, then the land should be classified as under-utilized. In instances where land is in single-family use, but designated for multiple family use, the development potential is the target density minus the number of existing units. This rule may have to be adjusted for assessed value using an approach as proposed in Table 5-2 (e.g., a high-value single-family unit on land designated for multi-family use is less likely to convert than a low-value unit).

For multiple-family, commercial, and industrial uses, we recommend analyzing, by city, land use and plan designation, lot size, ratios of the value of improvements to land value. This analysis would display the distribution of these variables and create cross-correlations between them. The analysis allows identification of clear break points for different uses and provides a more defensible method than choosing some arbitrary rule-based threshold. Moreover, local jurisdictions would have an opportunity to review and comment on the distributions. We anticipate that final decisions on the rules would be made at a TAC meeting. A typical rule is that ratios of less than somewhere between 1.0 and 1.5 define under-utilized land.

The method above defines land that is under-utilized and, therefore, *potentially* redevelopable. But while it is typical to assume that vacant, unconstrained, serviceable land is readily developable during a 20-year planning period, the same assumptions are not made about under-utilized land, which is generally assumed to be harder to develop. Moreover, a key reason for a buildable land analysis is to determine whether there is a sufficient supply of developable land inside a UGA, or whether methods to increase UGA capacity need to be implemented. That clearly depends on assumptions about *how much of the under-utilized land will redevelop during the planning period*. Since the definition of under-utilized land is somewhat arbitrary, it is not sufficient to simply assume that 100% of all under-utilized land will support redevelopment, and that the need for vacant land will be commensurately reduced. The empirical evidence and casual observation suggests that a lot of the potentially redevelopable land will *not* redevelop, and some land not identified as redevelopable *will* redevelop. In our opinion the key issue is *not* about the amount and location of underutilized land, but about how that land accommodates demand, and reduces the need for vacant land and, hence, expansions of UGAs.

There are several approaches to estimating the amount of population and employment that will be accommodated via redevelopment on under-utilized tax lots (described in order of most difficult/time consuming to least difficult/time consuming):

- Every city completes a redevelopment study, looking at historical evidence about the amount of development

that has gone on tax lots that were not vacant at the time of development;

- The County completes an analysis of sample areas of the County, selected to be representative of different city types; or
- No new work is conducted—the rules are based on work done in King County or other comparable areas.

However the relationship between total development and redevelopment is established, it is then used *to reduce estimates of demand for land, by type, before making estimates of the need for vacant land.* Applying the deductions on the demand side allows communities to set redevelopment targets.

The percentages applied will be based on a redevelopment analysis conducted by the County. That study will look at redevelopment activity in selected subareas. It should include an analysis of redevelopment by type, plan designation, and densities before and after redevelopment.

- *Undevelopable land*—tax lots that are undevelopable by policy.

Required data elements

Following is a list of required data elements for this portion of the analysis. Existing data elements are in normal typeface; new data elements are in italics.

Tax lot identifier
Land classification
Improvement value
Land Value
Ratio of improvement value to land value (calculated)
Lot size

Summary of steps

In response to the previous three issues (definitions for vacant, partially vacant, and underutilized/redevelopable land), we are amending the methods in Chapter 5 to reflect the following rule-based method for classifying all land into mutually exclusive categories:

1. *Classify vacant lands.* Flag all parcels in one of the following categories:

   Vacant—no improvement value

Vacant—improvement value between $1 and $10,000
Vacant—improvement value between $10,001 and $25,000
Developed—all parcels with improvement values over $25,000

2. *Classify unbuildable lands.* For all lands classified as vacant in step 1, compare minimum lot size allowed by zoning to actual lot size. Flag all lots that fall under the minimum lot size threshold as *potentially undevelopable because of size*, and map as such for review by local jurisdictions to determine whether truly undevelopable. If review of specific tax lot configurations and set-back requirements determines that some of these lots are, in fact, buildable, reallocate them by hand back to the "vacant" category.

3. *Refine developed land classification.* Re-classify developed parcels as:

   Developed
   Partially vacant
   Under-utilized/redevelopable

   This analysis requires several steps:

   a. Identify partially vacant single-family residential land. Use the threshold based on the analysis described under the partially vacant land definition. The threshold will include a ratio of actual lot size to minimum lot size for the underlying zone (2.5 for example). It will also include a maximum improvement to land value ratio. Land within the two criteria will be classified as partially vacant. Other single-family residential land will be either classified as under-utilized/redevelopable or developed.

   b. Complete analysis of multiple-family, commercial, and industrial land (see discussion above). Identify partially vacant multiple-family, commercial, and industrial land. Use improvement to land value ratios to flag other multiple-family, commercial, and industrial land as either potentially under-utilized/redevelopable or developed.

   c. Flag lots for field inspection. Communities could choose to skip this step or only conduct field inspection for very large lots.

   d. Revise classification based on field inspections.

4. *Classify land as under-utilized/redevelopable*. The steps are described in detail earlier in this chapter.

5. *Develop preliminary maps.* Create maps showing a parcel base with parcel classifications. The County has 1998 digital orthophotos from the State Department of Natural Resources

(DNR) covering most of Snohomish County. Tax lots flagged as partially vacant will be plotted over the orthophotos to facilitate the field inspections.

6. *Field verification.* Distribute preliminary maps to communities for review and comment.

7. *Revise preliminary maps.* Revise maps based on local comments.

2.2.1.2 Land-use classification (property use codes)

The RCWs and WACs define a list of two-digit property use codes with which counties are to code properties for ratio and abstract reporting purposes. Counties may elect to use a more detailed land use code system using additional digits. Historically, Snohomish County used a five-digit Property Use Code. With the implementation of Ascend™ and ProVal™ the county is converting to a three-digit coding system.

The three-digit property use codes used by the county provide more detail than is necessary to meet GMA requirements for land use tracking. The abstract categories and ratio strata, however, do not provide sufficient detail. None of the classification schemes address the issue of mixed-use development on a single parcel or tax lot.

Many options exist for land use classification schemes. The most desirable would allow identification of the various types of uses, and would allow for information on mixed uses. The ideal approach would be to create a related land use table to the standard assessment file. Unfortunately, most GIS programs make it difficult to work with related files without related parcel coverages. Creating a sub-tax lot level parcel coverage is not a feasible alternative for the County at this time. Moreover, in an ideal situation jurisdictions could use the land-use codes maintained by the County.

A review of the ProVal extract files provided by County staff suggests that ProVal includes considerable data on improvements. The system does, however, include the ability to code multiple land uses on a single tax lot. It was unclear, however, whether ProVal allows related records for multiple uses on a tax lot. The ability to assign square footage of floor area to multiple uses is important in evaluating net densities in mixed-use developments.

Alternatives that could be applied include:

- Using the County's codes and floor area data and doing sample analysis to develop rules for calculating net densities in mixed-use zones;
- Applying an approach similar to Federal Way which doesn't use land use codes, but tracks improvements (in square feet of floor area or dwelling units) in nine categories: (1) single-family residential, (2) multiple family residential, (3) retail, (4) office, (5)

industrial, (6) institutional, (7) hotels, (8) recreation, and (9) schools.

Required data elements

Following is a list of required data elements for this portion of the analysis. Existing data elements are in normal typeface; new data elements are in italics.

Tax lot identifier
Property classification (property use code)
Generalized land use classification (see Appendix E for example)
Built area (should be broken down by land use type)
Dwelling units

Summary of steps

1. Review existing County classifications (property use codes).
2. Create a crosswalk table that relates County land use classifications with generalized classifications.
3. Apply the crosswalk to populate the generalized land use classification field.

2.2.1.3 Inventory and mapping of constraints and critical areas

The GMA requires communities to inventory "critical areas" that include environmental constraints. Critical areas include wetlands, groundwater recharge areas, fish and wildlife conservation areas, frequently flooded areas, and geologically hazardous areas. The following sections describe each constraint and methods used to collect data for that constraint.

At its May meeting the TAC decided that communities should only deduct lands for constraints that have a policy basis. In other words, communities must have policies that preclude development for lands to be removed from the buildable lands inventory. In some instances, jurisdictions may have policies that require density reductions. These policies should be recognized in the capacity analysis.

All critical area reductions described in the sections which follow assume that the reductions will be based on the land area associated with the critical area and, if applicable, any surrounding buffer area.

2.2.1.3.1 Wetlands

A comprehensive countywide inventory of wetlands does not exist. Three data sources exist to map wetlands: (1) a 1986-1989 inventory completed by Snohomish County that covers about two-thirds of the UGA, including many cities, (2) the national wetlands inventory (NWI), and (3) soils maps that identify hydric soils.

The County wetland and stream inventory was a field review that provides a relatively high level of accuracy. However, according to County staff, more detailed site inspection at the time of subsequent permit application review revealed an overall 13% underestimate of actual wetland area measured in the original inventory. As a result, previous County land capacity estimates have adjusted the inventoried wetland acres upward by 13% to account for this observation. It is recommended that this adjustment to the County wetland inventory be continued in areas covered by the inventory. This adjustment would not be applied however in areas where the wetland inventory has been overridden by more accurate delineations provided by jurisdictions during the field review stage of the buildable lands inventory process.

The County plans to convert its inventory to a digital format rectified with the County's tax lot boundaries by mid-2001. The County should use its data in areas covered by that inventory.

For areas not covered by the County inventory, NWI data could be applied, however, NWI data typically underestimates wetland areas when field delineations are conducted. Thus, an alternative method is necessary for estimating wetlands in areas not covered by the County inventory.

The SEPA process and local review of development applications require delineation of wetlands as a part of development review. Thus, having an accurate tax lot-level inventory available for the entire county, while desirable, is not necessary.

Using the three data sets, the County can develop a reasonable estimate of wetlands. The analysis would correlate the relationship between the NWI coverage, the County wetland inventory coverage, and hydric soils. Wetland area would be estimated as a function of hydric soils. The process would assume all areas identified in the NWI are wetlands, and some percentage of hydric soils, based on the relationship between the County wetland inventory coverage and soil type, would be applied to areas with hydric soils.

The deduction would be a tax lot attribute in the GIS coverage, however, the result would be a derived value based on the relationship and would be shown only in the aggregate.

Required data elements

Following is a list of required data elements for this portion of the analysis. Existing data elements are in normal typeface; new data elements are in italics.

Tax lot identifier
National wetlands inventory
Local wetlands inventories (where they exist)
Soils (from County soil survey)
Wetlands acres
Actual or derived acres flag

Summary of steps

1. Gather data: NWI, soils coverages, and other wetlands inventories or delineations that local jurisdictions have completed
2. For areas with site-specific inventories or delineations, overlay the wetland coverage with a hydric soils coverage for the analysis area
3. Calculate the percentage of areas in hydric soils that are also identified as wetlands
4. Apply that percentage at a tax lot level to tax lots with hydric soils
5. Store the implied wetland area in a separate field in the parcel coverage
6. Use the wetland data as a general deduction; site-specific delineations will still be required when development occurs

2.2.1.3.2 Areas with a critical recharging effect on aquifers used for potable water

Areas with a critical recharging effect on aquifers used for potable water will be inventoried and deducted from the buildable lands base. The County is currently updating its regulations that protect aquifer recharge areas. Should the County's process result in the identification of specific geographic areas for new groundwater recharge protection before the 2002 buildable lands report deadline, then this mapped information will be used in the County's buildable lands analysis.

Like other critical areas, aquifer recharge areas should be mapped as an overlay coverage in the County's GIS. The process for identifying

aquifer recharge areas will rely on a combination of work with water districts, local jurisdictions, the County, and state agencies.

Required data elements

Following is a list of required data elements for this portion of the analysis. Existing data elements are in normal typeface; new data elements are in italics.

Tax lot identifier
Area (sq ft or acres) in groundwater recharge areas
Wellhead on site?
Present or future aquifer recharge area

Summary of steps

1. Meet with service districts and cities that presently use groundwater resources, or may potentially use groundwater in the future to identify key issues and gather data on existing groundwater wells and plans for future wells.
2. Map existing identified aquifer recharge areas.
3. Identify and map areas that are identified in service provider plans.
4. Identify potential future aquifer recharge areas.

2.2.1.3.3 Fish and wildlife habitat conservation areas

The proposed 4(d) rules under review by the National Marine Fisheries Service, brought about by Endangered Species Act (ESA) protection requirements for chinook salmon and bull trout, will probably require the County to place greater emphasis on the identification and conservation of critical fish and wildlife habitat areas. Like other critical areas, these areas will be mapped as a separate GIS coverage.

Snohomish County will work with the Department of Natural Resources (DNR) to identify and map fish and wildlife habitat conservation areas. These areas will be mapped as an overlay coverage to the parcel database.

One approach the County could use in the absence of detailed inventories is to apply a buffer around streams with critical anadromous fish habitat. If not all streams have been inventoried for fish habitat, the County could apply buffers based on stream class. GIS applications make buffering a relatively simple operation. The County has already done this analysis for chinook salmon and bull trout habitat.

Required data elements

Following is a list of required data elements for this portion of the analysis. Existing data elements are in normal typeface; new data elements are in italics.

Tax lot identifier
Type of conservation area (fish/wildlife, other?)
Area (sq ft or acres) in conservation areas
Area in conservation buffer

Summary of steps

1. Classify all streams by habitat type
2. Determine habitat buffer (possible county policy)
3. Identify fish conservation areas
4. Identify other habitat conservation areas
5. Map conservation areas
6. Use GIS to buffer conservation areas

2.2.1.3.4 Frequently flooded areas

The County already has this data in digital format from the Federal Emergency Management Agency's Flood Insurance Rating Maps (FIRM). The FIRM maps are certainly an acceptable inventory of areas subject to flood damage.

The FIRM maps are updated relatively infrequently; some jurisdictions may wish to revise the flood area boundaries based on more current information such as aerial photos from a recent flooding event. Moreover, as development occurs in the County, the hydrologic cycle of drainages will be impacted. Jurisdictions may want to model the impact of urbanization and creation of impervious surfaces.

Data on frequently flooded areas will be stored as a GIS data layer. The data layer should show floodways and floodplains. If desired, the floodplains could be mapped in contours that represent the frequency of flood events (e.g., 5, 10, 50, 100, and 500 year events).

Required data elements

Following is a list of required data elements for this portion of the analysis. Existing data elements are in normal typeface; new data elements are in italics.

Tax lot identifier
FEMA FIRM District
Area (sq ft or acres) in floodway
Area in floodplain

Summary of steps

1. Review FEMA FIRM maps.
2. Make any desired adjustments to FIRM 100-year boundaries.

2.2.1.3.5 Geologically hazardous areas

These include areas prone to landslides or unstable soils and faults. The County has data that allows analysis of slope based on 20' contours. While slope is a good indicator of instability and landslide risk, soil types are also an important indicator. Some soils are more prone to instability than others. The County has a methodology to use surface geology combined with slope to define geologically hazardous areas. We recommend this methodology be used for any areas that have not been analyzed and mapped.

While the GMA requires communities to inventory critical areas, jurisdictions have discretion to regulate land uses using different methods. For example, some jurisdictions may regulate development on steep slopes by prohibiting development on any slope over 25%; others may not prohibit development, but instead use transfer of development rights (TDRs) that effectively reduce densities on geologically hazardous areas.

In applying the definitions, however, local jurisdictions should review local policies to determine whether the critical areas have "absolute" constraints backed by policy that preclude development, or partial constraints that require development at lower densities.

Areas with geologic hazards will be mapped as a GIS coverage.

Required data elements

Following is a list of required data elements for this portion of the analysis. Existing data elements are in normal typeface; new data elements are in italics.

Tax lot identifier
Area in slopes over 25%
Area with unstable soils or landslide potential

Summary of steps

1. Create a digital elevation model using the slope coverage. Develop slope contours at 10% intervals, or other intervals as determined by the County.
2. Identify areas with unstable soils or with high probability of landslide.
3. Map geologic hazards.
4. Local jurisdictions can use the data to determine deductions based on geologic hazards.

2.2.1.4 Comprehensive plan designation and zoning

To evaluate land supply and land need, the County and cities will need to develop GIS layers that show the geographic extent of comprehensive plan designations and zoning. These GIS layers can then be merged into the tax lot database as a parcel attribute.

One foreseeable problem exists with including comprehensive plan designation and zoning as a tax lot attribute: some tax lots have multiple designations. Several possible solutions exist to this problem. One is to create multiple related records to the tax lot with split zoning that includes the area in each district. This is the most accurate, but also the most time consuming to work with. Another is to classify the tax lot as the district that touches the center (centroid) of the parcel. A third is to classify the tax lot with the designation that has the largest area. We recommend using the third approach unless jurisdictions indicate that using single designations will result in significant inaccuracies in the inventory results.

Required data elements

Following is a list of required data elements for this portion of the analysis. Existing data elements are in normal typeface; new data elements are in italics.

Tax lot identifier
Jurisdiction
Plan designation
Zoning

This tax lot attribute should also be accompanied by two lookup table that includes a comprehensive and current list of all comprehensive plan designations (table 1), and zoning districts (table 2).

Summary of steps

1. Obtain GIS coverages of comprehensive plan designations and zoning for those jurisdictions that have them. Rectify with the County's tax lot file.

2. Obtain hard copy maps of comprehensive plan designation and zoning for those communities that do not have digital maps. Digitize the maps.

3. Create lookup database of all comprehensive plan designations and zoning districts.

4. Merge GIS coverages of comprehensive plan designations and zoning districts as new attribute in tax lot database.

2.2.1.5 Other tax lot attributes

The GMA requires additional data to be collected beyond data that allows classification of tax lots and constraints. Two variables that should be included in the database for all tax lots are serviceability (i.e., a flag that indicates the probability of the tax lot being serviced during the planning period), and a market factor (which most communities apply as a general deduction).

For serviceability, buildable land staff will work with local sewer and water utilities to determine whether a parcel is: (1) serviced, (2) able to be serviced, (3) likely to be serviced, or (4) unserviceable during the 20-year planning period. Parcels that are identified as unserviceable during the planning period would be deducted from the 20-year supply of buildable lands.

Other market availability adjustments are of two types. The first category reflects the fact that some land may be held for speculative or other purposes and may not be on the market during the 20-year period. The other reflects the variety of site and other factors (economic conditions, access, location, etc) that affect the marketability of a site.

The market availability factor is intended to account for the fact that not all vacant tax lots will be available for development over the planning period. The market availability factor will be applied as a general deduction after the other steps of the inventory are complete. Different factors will be applied for residential, commercial, and industrial lands.

The key assumption is what percentage of land to assume will not be available for development during the planning period. The County will contact land developers and realtors in different areas of the County to discuss market issues and agree on a market availability deduction.

Commercial and industrial parcels may have other non-environmental constraints that affects their ability to develop. These characteristics include: parcel size, marginal sites (brownfields, high environmental

clean-up costs, new ESA requirements along riverways, poor access), and prime sites (greenfields, urban service availability, good access, few environmental constraints).

For commercial and industrial lands, cities should strive to provide sites in a variety of sizes and locations. Table 5-3 shows a sample matrix for inventorying commercial and industrial sites.

Table 5-3. Sample commercial and industrial site matrix

Type/size class	Number of tax lots	Acres	Env. constraints	Other constraints	Percent of vacant land
Commercial					
Plan Designation 1					
Fully vacant					
< 1 acre					
1-2.49 acres					
2.5-4.99 acres					
5-9.99 acres					
10-19.99 acres					
20-49.99 acres					
50 or more acres					
Partially vacant					
Same acreage categories					
Under-utilized/redevelopable					
Plan Designation 2					

While the acreage categories may change, the table provides a distribution of land by size and classification. Additional variables could be included such as serviceability ratings, access, marketability, etc.

Required data elements

Following is a list of required data elements for this portion of the analysis. Existing data elements are in normal typeface; new data elements are in italics.

Tax lot identifier

Service classification

Other site constraints

Summary of steps

1. Develop serviceability coding system (for example, 1-serviced; 2- planned for service within 20-year period; 3-not serviced)
2. Assign serviceability code
3. Deduct tax lots not serviceable within 20-year period from buildable lands inventory
4. Classify other site constraints
5. Deduct other site constraints
6. Deduct land based on market availability factor

2.2.2 PRELIMINARY INVENTORY AND MAPPING OF BUILDABLE LANDS

After definitions are agreed upon, the next step is to conduct the preliminary inventory and mapping. The preliminary inventory and mapping may be conducted by individual jurisdictions or by County staff depending on a jurisdiction's capacity to conduct the mapping.

The definitions will result in a set of algorithms that allow the initial classification to be largely automated. This step also requires development of constraint coverages. Specifically, the preliminary inventory and mapping requires the following coverages:

- Parcels (linked to basic assessment data)
- Critical areas (each critical area described in subtask 2.1.2.1 will be mapped with a separate coverage)
- Other deductions (utility easements, areas planned for major roads, water and sewer facilities, electrical substations, and other public facilities)

The next step is for County PDS cartography staff to develop a set of maps that shows land classifications and constraints for review by local jurisdictions.

Summary of steps

1. Gather data and create coverages.
2. Create maps showing tax lots by classification with critical areas and other constrained areas overlays. Maps showing 1998 digital orthophotos as backdrop will also be useful for local ground truthing.
3. Deliver maps to local jurisdictions

2.2.3 LOCAL REVIEW AND PROOFING

After the initial data collection and mapping step, jurisdictions will have a staff level review of the maps with field verification where necessary. Cities will return maps annotated with revisions to the County PDS cartography department for updating. This step may require several iterations to develop accurate maps. It will also require two or more TAC meetings or workshops at which jurisdictions can share problems and solutions, and ensure that any variations in definitions or techniques are acceptable.

Summary of steps

1. Gather recent aerial photographs or other data sources for the review.
2. Review maps for accuracy on land classification, critical area overlays, and other deductions.
3. Annotate maps with proposed revisions. Flag questionable areas and compare with both GIS and tabular data.

2.2.4 REVIEW AND UPDATE GIS

As described in Tasks 2.1.2 and 2.1.3, most of the work with respect to local land supply analyses will be the responsibility of the communities and County staff. For the inventory component, communities will work with County staff to develop a consistent data structure for local communities. The County will be responsible for generating the tax lot-level data from the GIS and the communities will be responsible for analyzing and verifying the supply data.

For unincorporated areas in UGAs, County staff will analyze and verify the supply data, with the possible assistance of staff from cities associated with the unincorporated UGA.

The County will identify which constraints exist in each community and facilitate the development of those data layers in the GIS where they do not presently exist. Communities will conduct field work to verify the constraints. Table 5-4 summarizes the steps and responsibilities for the land inventory process.

Table 5-4. Summary of steps Land Supply Inventory Process

Step	Participant	Comments
1. Develop database structure	County	County staff will develop a consistent database structure for the residential land inventories; city review
2. Create tax lot database	County	County staff will generate a tax lot inventory for all tax lots within the city limit and UGAs of participating communities
3. Preliminary analysis	County	The County will conduct a preliminary analysis of the tax lot databases to identify vacant, buildable lands.
4. Map preliminary analysis	County	The County will pass data from the preliminary analysis back to GIS for mapping
5. Field verification	Local jurisdictions	Local jurisdictions will field check the inventories using the database and maps
6. Revise maps	County	Based on local field work, County staff will revise maps and generate a revised database
7. Revised analysis	County	The County will revise the buildable lands analysis using the revisions from the field verification and revised maps
8. Final mapping	County	County staff will prepare a set of final maps for each participating community

SUMMARY OF TASK 2.2

Product 1: Generalized land classification
Schedule: July-December 2000
Discussion: This is a generalized classification that will be used to determine whether land is in the buildable inventory. Classifications will be agreed on during Phase I startup; County will apply those classifications based on rules described in Task 2.2.

Product 2: Land use classification system
Schedule: July-December 2000
Discussion: The land use classification system is necessary for analysis of densities. The system will allow inventories to include the number of dwelling units and built space by type for each tax lot. Categories will be agreed on during Phase I startup; County will apply based on rules described in Task 2.2.

Product 3: Inventory of critical areas
Schedule: August 2000 - June 2001
Discussion: This product will result in a series of GIS coverages of critical areas, or estimates of critical areas at the tax lot level. Areas will be stored as a tax lot attribute.

Product 4: Other deductions
Schedule: August 2000 - June 2001
Discussion: This product will result in a series of GIS coverages of other areas for deduction from the buildable lands inventory, or estimates of critical areas at the tax lot level. Areas will be stored as a tax lot attribute.

Product 5: Buildable lands inventory
Schedule: January 2001 - December 2001
Discussion: This product will result in a series of GIS coverages of other areas for deduction from the buildable lands inventory, or estimates of critical areas at the tax lot level. Areas will be stored as a tax lot attribute.

TASK 2.3 GROWTH, DEVELOPMENT, AND DENSITY HISTORY

Much of the data required for the growth, development, and density history is already being gathered and analyzed in the annual Growth Monitoring Report. Moreover, the Growth Monitoring Report applied specific methods for gathering and analyzing data. The methods applied for the growth and development trends will be generally based on the SCT 1999 report with local modifications.

2.3.1 POPULATION GROWTH TRENDS

The analysis of population growth trends in the 5-year report should generally follow the analysis in the annual monitoring reports.

Required data elements

Following is a list of required data elements for this portion of the analysis. Existing data elements are in normal typeface; new data elements are in italics.

Population components (natural increase and net migration) for Snohomish and other nearby counties for the past 10 years.
Vital statistics (births, deaths)
Population by year for Snohomish County, its UGAs, and cities
Forecast population during the planning period for the County, each UGA, and each city

Summary of steps

1. Compare population components (natural increase and net migration) with other nearby counties
2. Analyze vital statistics (births, deaths)
3. Compare annual population increase over the past 10years with other nearby counties

4. Summarize population increase by year for Snohomish County and its cities
5. Compare estimated population with forecast population for the County, each UGA, and each city

2.3.2 EMPLOYMENT GROWTH TRENDS

The analysis of employment growth trends in the 5-year report should generally follow the analysis in the annual monitoring reports.

Required data elements

Following is a list of required data elements for this portion of the analysis. Existing data elements are in normal typeface; new data elements are in italics.

Employment growth over the past 10 years compared for Snohomish and other nearby counties
Median household income over the past 10 years for Snohomish County
Unemployment rates since 1980
Forecast employment for the planning period years for the county, UGAs, and cities

Summary of steps

1. Compare employment growth over the past 10 years compared to other nearby counties
2. Compare observed population/employment ratios for the past 10 years for Snohomish and other nearby counties
3. Analyze changes in median household income over the past 10 years
4. Analyze unemployment rates since 1980
5. Compare employment estimates and forecast employment for the past 10 years for the county, UGAs, and cities

2.3.3 ANNEXATIONS/INCORPORATIONS

The analysis of annexations in the 5-year report should generally follow the analysis in the annual monitoring reports.

Required data elements

Following is a list of required data elements for this portion of the analysis. Existing data elements are in normal typeface; new data elements are in italics.

Annexations certified by OFM annually since February 1993 and the population, employment, and area (in acres) annexed for the County and each city

List of all annexations certified by OFM including date of annexation, acres annexed, total number of housing units annexed, total number of vacant housing units annexed, employment annexed, and assessed value by use annexed.

Summary of steps

1. Analyze annexations certified by OFM annually since February 1993 and the population, employment, and area (in acres) annexed for the County and each city
2. Compare the percentage of each UGA annexed as of the date of the 5-year report
3. Analyze all annexations certified by OFM including date of annexation, acres annexed, total number of housing units annexed, total number of vacant housing units annexed, employment annexed, and assessed value by use annexed.

2.3.4 RESIDENTIAL DEVELOPMENT TRENDS

Key indicators of residential development include lot creation, rural subdivisions, and building permits. The following sections describe methods for gathering data on each of these indicators. While a considerable amount of data is already being collected, some jurisdictions will probably have to adopt procedures to collect additional data on residential development, particularly in the area of building permits.

2.3.4.1 Residential lot creation

The discussion of residential lot creation focuses exclusively on lots created through subdivisions or short plats for single-family residences. Within unincorporated portions of the UGA, the County has adopted a minimum density standard of four dwelling units per net acre (a little over three dwelling units per gross acre assuming a 20% net to gross conversion factor). Thus, the key analysis here is a comparison of actual vs. target densities.

Required data elements

Following is a list of required data elements for this portion of the analysis. Existing data elements are in normal typeface; new data elements are in italics.

Parent parcel identifier (allows determination of location of parcel—city limit, UGA)
Parent parcel comprehensive plan designation
Parent parcel zoning
Parent parcel area
Number of lots in subdivision or short plat
Area of subdivision or short plat in tax lots
Area in subdivision or short plat *not* in tax lots
Area in subdivision or short plat in streets and other public right-of-way
Area in subdivision or short plat in critical areas or open space

2.3.4.2 Rural cluster subdivision activity

The data requirements for rural cluster subdivision activity are basically the same as those for residential lot creation (see above).

2.3.4.3 Residential building permit activity

Monitoring building permits provides a measure of the rate at which residential land is being developed. The data collection requirements differ substantially for single-family and multiple family permits.

All of the necessary data on density for single-family development is available through the subdivision or short plat. As a result, the procedures used to gather the data for the previous growth monitoring reports is sufficient for developing estimates of the number of single-family permits and the net density of the development.

Additional data are required to calculate gross and net density for multiple family or mixed-use development. This will require local jurisdictions to gather new information not provided for previous reports. Ideally, each jurisdiction would provide data for all multiple family and mixed-use development that occurred between 1995 and 2000.

Required data elements

Following is a list of required data elements for this portion of the analysis. Existing data elements are in normal typeface; new data elements are in italics. This method applies only to multiple family developments; single-family developments have already been analyzed through formal and short plats. The required data elements to develop an accurate estimate of gross and net densities are basically the same as for subdivisions and short plats but at the site level:

Parcel identifier (allows determination of location of parcel—city limit, UGA)
Comprehensive plan designation
Zoning
Area (in square feet or acres)
Number of dwelling units in development
Area (in square feet or acres) in streets and other public right-of-way (if any)
Area (in square feet or acres) in critical areas or open space

Gathering this data will require review and analysis of site plans for each development. For some jurisdictions, this could be dozens or possible hundreds of site plans. Conducting the review on a sample basis would be a possibility where jurisdictions lack sufficient resources to conduct a 100% sample.

Summary of steps

1. Analyze the number and density of lots created by subdivisions and short plats.
2. Compare actual and target densities for lots created by subdivisions and short plats
3. Analyze gross and net densities, by comprehensive plan designation
4. Summarize individual subdivision plats
5. Summarize residential building permits issued by plan designation and housing type (including multiple family and manufactured home permits)
6. Compare recent residential densities with historic densities (pre-GMA)

All summaries need to include county, UGA, and city totals for the period 1995-2000 for each comprehensive plan designation. Previous growth monitoring reports did not include analysis of multiple family development.

2.3.5 HOUSING MARKET TRENDS

Conducting a analysis of housing market trends is not explicitly required by the GMA, but is a useful tool in monitoring housing affordability. The 1999 Growth Monitoring Report included a housing market analysis that reviewed rental rates and housing sales.

The rental price analysis is based on data derived from The Apartment Vacancy Report published semi-annually by Dupre + Scott

Apartment Advisors, Inc. The data are derived from a survey of apartment managers or building owners with 20 or more units.

The housing sales analysis is based on data extracted from the County Assessor's system on deed transfers that are indicative of market sales.

Required data elements

Following is a list of required data elements for this portion of the analysis. Existing data elements are in normal typeface; new data elements are in italics.

Median housing sales price
Number of sales
Vacancy rates
Median apartment rental rates
Average household incomes

Summary of steps

All of the data elements described above are described in detail in the *1999 Snohomish County Tomorrow Growth Monitoring Report*. Subsequent residential market analysis should simply update the data in that report.

2.3.6 COMMERCIAL AND INDUSTRIAL DEVELOPMENT TRENDS

Previous Growth Monitoring Reports have not included an analysis of commercial and industrial trends. An analysis of gross and net densities, and floor area is required by the GMA. The Economic Development Council also maintains a database of industrial sites. This database can be used as a cross-reference on development trends.

Required data elements

The required data elements to develop an accurate estimate of gross and net densities and floor area ratios (FARs) for commercial, office are similar as for multiple family development.

Parcel identifier (allows determination of location of parcel—city limit, UGA)
Comprehensive plan designation
Zoning
Area in tax lot (in square feet or acres)
Gross floor area in development
Area (in square feet or acres) in streets and other public right-of-way (if any)
Area (in square feet or acres) in critical areas or open space

Gathering this data will require review and analysis of site plans for each development. For some jurisdictions, this could be dozens or possible hundreds of site plans. Conducting the review on a sample basis would be a possibility where jurisdictions lack sufficient resources to conduct a 100% sample.

Summary of steps

1. Analyze the amount of land consumed by type of development
2. Analyze gross square feet of floor area by type of development
3. Analyze floor area ratio by type of development
4. Analyze gross and net density of commercial and industrial development
5. Review the EDC database as a cross reference

SUMMARY OF TASK 2.3

Product 1: Population and employment data
Schedule: August 2000 - May 2001
Discussion: The five-year report needs to include a discussion of population and employment trends. Historical data is available in the annual growth monitoring reports.

Product 2: Incorporations/Annexations
Schedule: August 2000 - May 2001
Discussion: This product will be an update of the data on annexations and incorporations in the annual growth monitoring reports.

Product 3: Residential land trends
Schedule: August 2000 - May 2001
Discussion: This product will update the residential analysis in the annual growth monitoring reports.

Product 4: Residential market analysis
Schedule: January 2001 - August 2001
Discussion: This product will be a current county- and city-level discussion of residential trends. The updated analysis should apply data available from the 2000 Census.

Product 5: Commercial and Industrial land trends
Schedule: August 2000 - May 2001
Discussion: This product will be an update of commercial and industrial development trends from the annual growth monitoring reports.

TASK 2.4 DEVELOPMENT PIPELINE

The development pipeline refers to buildable land that is committed for development. The development pipeline includes two elements: formal

and short plats with final approval, and issued building permits. The TAC determined that land in the development pipeline would not be addressed in the buildable land supply analysis, but would instead be considered if necessary to adjust future average density assumptions.

Required data elements

Data gathered as a part of the residential, commercial and industrial trend analysis.

Summary of steps

1. Select base date for buildable lands inventory
2. Identify all formal and short plats with final approval, and issued multiple-family residential, commercial and industrial building permits
3. Include information about the density of development in the pipeline by type with the historical trends in those densities for construction during the last five years (Task 2.3, above) in making the assessment of future development density by land use type (Task 2.5).

SUMMARY OF TASK 2.4

Product 1: Summary of current projects
Schedule: August 2000 – May 2001
Discussion: The development pipeline analysis will include a list of approved projects at the time of the base buildable land inventory date.

TASK 2.5 ESTIMATE OF LAND DEMAND AND CAPACITY

This section presents a discussion of data sources and approaches for density tracking. Cities must evaluate densities since adoption of GMA comprehensive plans. This analysis must go beyond recorded single-family residential subdivisions for the cities and county since 1995; it must include recorded single family residential short plats, multi-family residential development, and commercial/industrial development.

2.5.1 POPULATION AND EMPLOYMENT FORECASTS

Future 5-year reports will require development or evaluation of population and employment forecasts. For this report, however, the County will use the adopted 1992-2012 forecasts contained in Appendix B of the Countywide Planning Policies of Snohomish County.

Required data elements

Local population and employment forecasts. If local forecasts do not exist, then population and employment forecasts by the Puget Sound

Regional Council (PSRC) can be used. The PSRC forecasts are for transportation analysis zones (TAZs) which do not generally follow city limits. Thus, some adjustments to the PSRC forecasts is required.

Summary of steps

Development of new population forecasts is not necessary for this analysis. The following steps represent one approach to forecasting local employment.

1. Gather year 2000, 2010, and 2020 estimated employment as reported in the 1999 TAZ-level PSRC projections
2. Cross-check PSRC TAZ-level against geocoded Department of Employment Security 1998 reported covered employment (augmented by 1995 estimated government/education employment).
3. Allocate forecast non-government employment in TAZs whose boundaries do not correspond to the planning area boundaries based on the 1998 distribution of covered employment for each TAZ.
4. If possible, allocate total employment to PSRC generalized sectors.

2.5.2 LAND NEEDED FOR RESIDENTIAL USES

Appendix B described the basic framework for estimating land needed for residential uses. Residential land need is based on population forecasts.

Required data elements

The housing assessment requires specific demographic and housing data, as well as a local population forecast. Following is a list of data and assumptions required to complete the housing forecast.

Population forecast
Estimated persons in group quarters for the planning period
Generalized vacancy rate
Persons per occupied unit for forecast period
Housing type split
Density by housing type

Summary of steps

1. Project the number of new persons during the planning period.
2. Identify relevant national, state, and local demographic and economic trends and factors that will affect the 20-year projection

of structure type mix. This analysis considers trends in factors such as age, household size, migration patterns, employment, household income, and other factors that affect not only overall demand for housing, but also the type of housing. Key factors include assumptions about average household size and persons in group quarters. Average household sizes in most metropolitan areas have decreased in the past 20-30 years. Also, identify and consider any housing policies or goals adopted by jurisdictions that would affect assumptions regarding future year housing units by structure type. If the housing need assessment assumes a change in household size over the forecast period, that change must be applied not only to new housing units, but also to population in existing housing units.

It is more difficult to find good data to support assumptions on persons in group quarters. Assumptions about persons in nursing homes and assisted living situations can be based off of age distributions and historic ratios; other group quarters such as dormitories may be more difficult. One approach is to conduct interviews with organizations such as universities that manage group quarters facilities.

3. Estimate the number of additional needed units by structure type. At a minimum, communities should estimate the number of single-family and multiple family dwelling units needed over the planning period. More robust models make distinctions between single family lot sizes, and types of multiple family units (i.e., duplexes, row houses, garden apartments, etc). The U.S. Census data provides a baseline for this analysis, however, local policy can have a strong influence on the mix of housing types.
4. Determine the needed density ranges for each plan designation and the average needed net density for all structure types. The density assumptions are generally based on a combination of analysis of past development, and policy. The analysis of past development allows estimates of how close to allowable densities development has achieved. Local policy should provide for density targets both at the community level, and the individual comprehensive plan designation or zoning district level.

2.5.3 LAND NEEDED FOR EMPLOYMENT USES

The forecast of employment-supporting land need is based on employment forecasts and ratios of employee per land area (acre).

Required data elements

Following is a list of data and assumptions required to complete the employment forecast.

Employment forecast (by sector)
Employees per acre (by sector)
Square feet of built space per employee (by sector)

Summary of steps

1. *Develop employment projections*. Based on historic data and regional and statewide projections, or other available data, develop a sector-level employment projection. There are several ways to work from state or county-level forecasts to local forecasts. For the purpose of this project, we simply assume that such forecasts are available and provide no further explanation about how to make such forecasts.

2. *Analyze existing employment patterns by sector*. This step is intended to determine the amount of employment to allocate to broad employment sectors: commercial, industrial, and office at a minimum. While county-level forecasts are commonly more detailed that the three sectors described above, information on employee-per-acre factors to estimate land need is generally not as detailed.

   A further complication arises in that some employment locates on land designated for other uses (i.e., a commercial use in an industrial zone), and that employment types can mix on a single site (i.e., office employees on a mill site). While this may be a useful analytical step, most communities do not have the employment data that allows analysis of employment at the individual firm and tax lot level. It is more common to work with employment at the industry sector level.

3. *Determine employee per acre ratios*. Employee per acre (EPA) ratios allow conversion of jobs into land. Developing the EPA assumptions can be difficult since few empirical analyses of employee per acre ratios exist. Most jurisdictions apply ratios of between 10 and 35 depending on the area and the employment type. Common data sources for EPA ratios include studies in other jurisdictions, or using the Bureau of Economic Analysis ES-202 employment tapes to locate employment on individual sites. Some communities also have business inspection systems maintained by the local fire marshall that tie employment to specific sites.

4. *Apply the ratios to employment forecasts by sector*. This step applies employment per acre ratios to changes in employment by sector for the forecasting period. The output of this analysis is an estimate of land demand by employment sector. For large employers conducting interviews and allocating employment by hand may yield more accurate results. It is particularly important to determine whether a few large employers that may constitute a

majority of employment in a particular jurisdiction are expecting to grow, and if so, the extent to which they expect to do so on land that the buildable land analysis would define as vacant. Many large employers have sufficient land to accommodate future expansion.

5. *Determine aggregate demand for employment-supporting land.* This step divides the employment estimated in the previous step to that which is likely to locate on industrial and commercial (divided, to the extent possible, into office and retail) land, and that which is likely locate on non-industrial lands. The final result is an estimate of the demand for industrial, retail, and office land.

2.5.4 LAND NEEDED FOR OTHER USES (OPTIONAL ANALYSIS)

An optional analysis is to estimate land needed for other uses. The most typical approach is to calculate these on the basis of acres per 1000 individuals. Jurisdictions should gather data on the following uses using adopted standards, interviews with service providers, analysis of existing land use patterns, or application of ratios developed for other communities.

Specifically, the analysis should include the following uses:

- Parks/Open space
- Schools
- Municipal offices
- Rights-of-way
- Police/Fire facilities
- Stormwater drainage/detention
- Water storage
- Wastewater treatment and pump stations
- Landfills or transfer stations

Communities may not have data on all of these other uses, however, an analysis of how much land is presently used for each facility, and whether existing facilities are meeting community standards (if they exist).

Table 5-5 shows an example of how communities should track existing public lands and make estimates of the amount of public land needed over the planning period.

Table 5-5. Example of Public Lands table

		Parks	Service 2 etc
Existing Conditions	Acres		
	% of all City acres		
	Acres/1000 people		
LOS	Acres/1000 people		
Estimated Need	Total Acres		
	Acres in large parcels		

Consideration of public land requirements takes place at the time of the land supply analysis by removing land for public purposes from the potential residential, commercial or industrial land supply, based on local standards or generalized reduction factors. Each jurisdiction must review its local standards to determine reductions for specific public uses; if no standards exist, the data in the table provide information on existing ratios. The existing ratios can be used without modification as *de facto* standards, or communities can make modifications to those values. No matter what values are used, communities need to document clearly the assumptions, and provide rationale for the assumption.

Required data elements

Following is a list of data and assumptions required to complete the assessment of land needed for other uses.

- Standards for parkland
- Acres per 1000 persons used for other non-residential, non-employment uses
- Population forecast
- Standards for other uses

Summary of steps

1. Gather existing city or jurisdiction standards for other uses if they exist.
2. Evaluate existing ratios of other land uses on a per 1000 person basis, per 1000 dwelling unit basis, or as a percentage of total land in the planning area.
3. Apply ratios or standards to forecast of new population, dwelling units, or land consumption.

TASK 2.5.5 ESTIMATE OF LAND CAPACITY

Snohomish County's General Policy Plan (GPP) land use policy 1.A.9 requires UGAs to be re-evaluated at least every five years to determine if they are capable of meeting the county's 20-year population and employment projections. The land capacity estimates, when compared with the inventory data, provide the basis for evaluating the need for UGA adjustments.

Land capacity is an estimate of the amount of development that land can accommodate given land use regulations. Several approaches are available to estimate capacity. A starting point is generally an estimation of "theoretical" capacity, or the maximum intensity a site could be developed at given policy constraints (e.g., plan designation, zoning, minimum service requirements, and so on). For example, if a one-acre site has zoning regulations that allow 100% lot coverage and up to three floors, the theoretical capacity on that site would be 130,680 square feet of built space (43,560 sq. ft./acre x 3 floors). Planners commonly describe capacity or intensity of development in terms of floor area ratios (FAR). FAR is simply the amount of built space on a site divided by the area of the site. The example above equates to a (FAR) of 3.0 (130,680/43,560=3.0).

It is typical for capacity analyses to make deductions from the theoretical capacity for public uses, right-of-way, and other land uses that reduce the buildable area of a lot. This approach recognizes real-world factors that affect the amount of buildable area on any given tax lot. Taking deductions for specific factors is one variation on estimating theoretical capacity. FARs based on zoning then allow estimations of the maximum amount of built space that could be built.

Development, however, frequently occurs at densities that are less than what is allowed under existing zoning. Using adjusted FARs based on recent development, one can develop market-based estimates of capacity. The method proposed below is a combination of a theoretical capacity approach and a market-based approach.

Required data elements

The capacity analysis builds on data gathered in the previous tasks. Specifically, the analysis relies on data that will be in the standard parcel file.

Summary of steps

1. The source of this information is assessor records.

2. Evaluate parcels based on current ownership and future plans. The following parcels were excluded:

    - Parcels owned by public agencies.

- Any parcel with a current approved building permit.
- Parcels unlikely to ever be developed (cemeteries, areas with powerline easements, etc)
- Vacant parcels under the same ownership as intensively developed parcels (for example, a parcel next to a major corporate campus that will probably serve as the corporation's expansion area) [2]

3. Classify parcels as described in the Buildable Lands Inventory section of this chapter: Fully Developed; Partially-Vacant; Under-Utilized/Redevelopable; Vacant; and Undevelopable.
4. Deduct for critical areas at the parcel level. These include (1) wetlands, (2) wetland buffers, (3) streams, (4) steep slopes , and (5) others as required by jurisdictions. The resulting square footage is the buildable area.
5. Use the density analysis to determine appropriate density and floor area ratio (FAR) factors to apply to the buildable area. (Including actual density and FAR factors for areas with approved subdivision/development in the pipeline.)
6. Aggregate buildable areas by zone and compute the amount of lot coverage that could be developed based on zoning restrictions (setbacks, etc).
7. Multiply the buildable area by the density factor to obtain the capacity estimate.

Table 5-5 shows a sample matrix for estimating land capacity.

[2] Such a parcel is technically available for development. However, its development ultimately depends on the factors that affect development of the business that owns the land. Conducting interviews with major employers is a good approach for gathering information concerning future expansion plans.

Table 5-5. Sample matrix for land capacity

Land Classification/Variable	Plan Designation 1	Plan Designation 2	Plan Designation 3	Total
Vacant Land				
Vacant buildable residential acres (from inventory)[1]				
Target density (DU/net acre)				
Net to gross adjustment factor				
Target density (DU/gross acre)				
Dwelling units				
Partially-vacant land				
Other land classifications…				
Under-utilized land				

[1] Assumes all unbuildable land deductions were already made

SUMMARY OF TASK 2.5

Product 1: Residential land need analysis
Schedule: January 2001 - December 2001
Discussion: Estimate of residential land need, by city and county subarea.

Product 2: Employment land need analysis
Schedule: January 2001 - December 2001
Discussion: Estimate of land needed for employment, by city and county subarea.

Product 3: Other land needs
Schedule: January 2001 - December 2001
Discussion: Estimate of land needed for other uses, by city and county subarea.

Product 4: Residential land capacity analysis
Schedule: January 2001 - December 2001
Discussion: Estimate of residential land capacity, by city and county subarea.

Product 5: Employment land capacity analysis
Schedule: January 2001 - December 2001
Discussion: Estimate of land needed for employment, by city and county subarea.

Chapter 6 Phase III: Consolidation and Reporting

The previous chapter was organized around five tasks of data collection and evaluation. We noted that these tasks are strongly correlated with, but not identical to, questions that GMA requires a five-year growth monitoring program to address. Thus, the information collected in Phase II must be consolidated and reported in a way that meets GMA requirements and makes sense to planners, policymakers, and the public in Snohomish County jurisdictions. This chapter provides our recommendations.

The GMA requires that the five-year monitoring report:

- Determine whether a county and its cities are achieving urban densities within UGAs by comparing growth and development assumptions, targets, and objectives with actual growth and development that has occurred in the county and its cities.
- Identify reasonable measures, other than adjusting UGAs, that will be taken to comply with the Growth Management Act (GMA), including increasing consistency between actual development and plan assumptions.

The first issue requires a comparison of recent development trends, land demand estimates, and land capacity. The second addresses measures communities can take to address inconsistencies in actual development and plan assumptions. This chapter addresses the two final components of the work plan: consolidation and reporting.

TASK 3.1 CONSOLIDATION

Chapter 5 listed the seven key categories of questions that the buildable lands program is intended to answer. It described data sources and methods to complete parts of the required analysis, but did not directly address the specific GMA reporting requirements, or how to structure a report consistent with those requirements. This section addresses specific indicators and approaches to answer those questions.

3.1.1 ANALYSIS OF ACTUAL VS. TARGET DENSITIES

Chapter 5 presented methods for evaluating actual densities. The key questions posed by the GMA on actual and target densities are:

- What is the actual density and type of housing that has been constructed in UGAs since the last comprehensive plan was adopted or the last five-year evaluation completed?
- Are urban densities being achieved within UGAs?

- If not, what measures could be taken, other than adjusting UGAs, to comply with the GMA?

Following are specific measures to determine residential densities and intensities of commercial and industrial development achieved during the period 1 January 1995 to 31 December 2000 in cities and unincorporated UGAs. We describe specific measures below.

3.1.1.1 Net densities in formal plats

The process of platting determines the ultimate density in single-family subdivisions. This measure requires analysis of net densities in recorded formal plats during 1995-2000 in cities and unincorporated UGAs by comprehensive plan and zoning designation.

Summary of steps

1. Gather data on all recorded plats for the analysis period. Key data are described in Task 2.3.4. The key data include area of the parent parcel, number of lots created, area of lots created, and acres in critical areas.

2. Subtract critical area from the area of the parent parcel. This results in buildable lot area.

3. Subtract areas in new lots from area of the parent parcel. This results in areas used for public facilities. Divide areas in public facilities by buildable lot area to obtain the gross buildable to net buildable factor.

4. Divide the area in new lots by the number of lots. This results in the net density.

5. Compare actual density with target density.

3.1.1.2 Net densities in short plats

The short plat process is similar to the formal plat process. This measure analyzes single-family residential net densities in recorded short plats during 1995-2000 in cities and unincorporated UGAs by comprehensive plan and zoning designation. This analysis is needed only in areas/cities where a significant proportion of new residential lots created since 1995 have been through the short subdivision process.

Summary of steps

The steps are the same as those described for formal plats in subtask 3.1.1.1.

3.1.1.3 Net densities in multiple family developments

Multiple family densities differ from single-family densities in several ways. Typically, no land divisions are involved with a multiple family

development. Moreover, by definition, multiple family development has three or more units on a tax lot. This measure calculates multiple family residential net densities for new apartments/condos (in 3+ unit structures) from building permits issued during 1995-2000 in cities and unincorporated UGAs by comprehensive plan and zoning designation.

Summary of steps

1. Gather data on all multiple family building permits issued for the analysis period. Key data are described in Task 2.3.4. The key data include area of the parent parcel, number of units created, area of public access and any other public uses, and area of critical areas. It may be necessary to review the site plan to obtain the required data.
2. Subtract critical area from the area of the parent parcel. This results in buildable lot area.
3. Subtract areas in public access or any other public areas from buildable area. This results in net buildable area.
4. Divide the net buildable area by the number of dwelling units. This results in the net density.
5. Compare actual density with target density.

3.1.1.4 Net residential densities by plan designation

This measure requires that information on lot sizes and number of dwelling units is stored as a parcel attribute. It calculates net residential density by generalized/regional comprehensive plan designation categories (low, medium, and high density residential) by city and unincorporated UGA. The analysis is relatively simple using a spreadsheet program.

Summary of steps

1. Extract data on all tax lots in residential uses.
2. Sort the data by city/UGA (if necessary) and plan designation.
3. Calculate subtotals of dwelling units, total acres, and net buildable acres for each city/plan designation.
4. Divide the total acres by the number of dwelling units to calculate gross residential density.
5. Divide the net buildable acres by the number of dwelling units to calculate net residential density.
6. Compare actual density with target density.

3.1.1.5 Net densities in commercial and industrial development

GMA requires analysis of actual densities in commercial and industrial development. This measure analyzes net floor area ratios (FARs) for new commercial and industrial structures from building permits issued between 1 January 1995 and 31 December 2000 by type of development.

Summary of steps

1. Gather data on all commercial and industrial building permits issued for the analysis period. Key data are described in Task 2.3.4. The key data include area of the parent parcel, building footprint, number of floors, total built space in the building, area of public access and any other public uses, and area of critical areas. It may be necessary to review the site plan to obtain the required data.

2. Subtract critical area from the area of the parent parcel. This results in buildable lot area.

3. Subtract areas in public access or any other public areas from buildable area. This results in net buildable area.

4. Divide the net buildable area in by the total building area. This results in the net floor area ratio.

5. Compare actual density with target density.

3.1.1.6 Net densities in commercial and industrial development by plan designation

This measure is a city-level or regional analysis of net densities of commercial and industrial development. This measure analyzes net floor area ratios (FARs) for new commercial and industrial structures from building permits issued between 1 January 1995 and 31 December 2000 in cities and unincorporated UGA by comprehensive plan and zoning designation.

Summary of steps

1. Extract data on all tax lots in commercial or industrial uses.

2. Sort the data by city/UGA (if necessary), use, and plan designation.

3. Calculate subtotals of total built space, total lot area, and net buildable lot area for each city/plan designation.

4. Divide the total lot area by the total built space to calculate gross density.

5. Divide the net buildable lot area by the total built area to calculate net density.

6. Compare actual density with target density.

3.1.2 COMPARISON OF CAPACITY (SUPPLY) AND NEED (DEMAND)

Chapter 5 presented methods for evaluating land supply and demand. The key questions posed by the GMA on capacity and demand are:

- How much land was actually developed for residential use and at what density since the comprehensive plan was adopted or the last five-year evaluation completed? Based on this and other relevant information, how much land would be needed for residential development during the remainder of the 20-year comprehensive planning period?
- How much land was actually developed for commercial and industrial uses within the UGA since the last comprehensive plan was adopted or the last five-year evaluation was completed? Based on this and other relevant information, how much land would be needed for commercial and industrial development during the remainder of the 20-year comprehensive planning period?
- To what extent have capital facilities, critical areas, and rural development affected the supply of land suitable for development over the comprehensive plan's 20-year timeframe?
- Is there enough suitable land in each county and its cities to accommodate the county-wide population growth for the remainder of the 20-year planning period (based on the forecast by the state Office of Financial Management and the subsequent allocations between the county and cities)?

The following steps will determine remaining residential, commercial and industrial land requirements necessary to achieve the adjusted[1] County Planning Policy 2012 population and employment targets by city and unincorporated UGA.

3.1.2.1 Residential development trends and land demand

This measure uses recent development history as an indication of future development trends and densities. The purpose is to document the number of net new housing units developed by type (single-family and multiple family including subsets of each) and density range from 1 January 1995 to 31 December 2000 for each city and unincorporated UGA. Subtasks 2.3.4 and 2.5.2 provide the necessary data.

Summary of steps

1. Analyze residential development trends using data gathered in subtask 2.3.4. At a minimum, new units should be grouped by broad categories (e.g., single-family, multiple family, mobile homes) and type

[1] Adjusted for annexations to April 1, 2001

within categories (i.e., single-family detached, single-family attached, duplex, etc.).

2. Calculate net density by type of dwelling unit (see subtask 3.1.1 for methods).

3. Calculate remaining housing unit needs by type and density range for 2001-2012 period for each city and unincorporated UGA using 1992-2000 past trend analysis and extrapolation, in order to reach adjusted 2012 population targets (also add in any "redeveloped" housing units from land supply calculations).

4. Calculate net buildable land area needed by generalized/regional comprehensive plan designation category to accommodate the remaining housing unit needs for the 2001-2012 period at net residential densities observed from 1995-2000 for each city and unincorporated UGA.

3.1.2.1 Commercial and industrial development trends and land demand

This measure uses recent development history as an indication of future development trends and densities. The purpose is to document the amount of net new floor space developed by type (commercial and industrial by type of use) and density range from 1 January 1995 to 31 December 2000 for each city and unincorporated UGA. Subtasks 2.3.4 and 2.5.2 provide the necessary data.

Summary of steps

1. Document net new commercial and industrial employment added from March 1990 to March 2001 for each city and unincorporated UGA.

2. Calculate remaining commercial and industrial employment anticipated for the 2001-2012 period for each city and unincorporated UGA using 1990-2001 past trend analysis and extrapolation, in order to reach adjusted 2012 employment targets (also add in employment associated with any "redeveloped" employment sites from land supply calculations)

3. Calculate net buildable land area needed by generalized/regional comp plan designation category (commercial and industrial) to accommodate the remaining commercial and industrial employment anticipated for the 2001-2012 period at net commercial and industrial floor area ratios observed from 1995-2000 for each city and unincorporated UGA.

Summary of Task 3.1

Product: Comparison of actual and target densities
Schedule: May 2001 - May 2002
Discussion: County will develop matrix, cities will provide additional data if

necessary

Product 2: Analysis of capacity and demand, Chapter in five-year report
Schedule: May 2001 - May 2002
Discussion: The GMA

TASK 3.2 FIVE-YEAR GROWTH MONITORING REPORT

The final step in the work program is to assemble the 5-year growth monitoring report.

3.2.1 DRAFT 5-YEAR GROWTH MONITORING REPORT

The data derived from the methods discussed in Phase II and III of the work program provide the basis for writing the five-year growth monitoring report. An outline of the report is presented in Appendix F.

3.2.2 FINAL 5-YEAR GROWTH MONITORING REPORT

The final 5-year report will be prepared based on comments from local jurisdictions and other interested parties generated by review of the draft report. Preparation of this final 5-year report will entail the review and recommendation of the Snohomish County Tomorrow (SCT) Planning Advisory Committee and Community Advisory Board, before it is transmitted as an information item to the SCT Steering Committee. The final report would also be sent to the Washington State Department of Community, Trade and Economic Development.

Summary of Task 3.2

Product: Final five-year growth evaluation report
Schedule: January - May 2002
Discussion: Review of draft report, changes based on comments, final report.

Appendix A Overview of State Requirements and Local Policies

This appendix summarizes relevant state requirements for buildable lands inventories and land needs analyses. It draws from relevant sections of the Growth Management Act (GMA) and Washington State law, the *Buildable Lands Program Guidelines* of the State Community, Trade, and Economic Development Department (CTED), and Snohomish County policies adopted to implement the state requirements.

STATE REQUIREMENTS

GROWTH MANAGEMENT ACT GOALS AND REQUIREMENTS

The GMA established 14 goals to guide local government planning. These goals address sprawl reduction, concentrated urban growth, economic development, environmental protection, adequate infrastructure, affordable housing, and regional transportation, among others. [RCW 36.70A.020 and RCW 36.70A.480(1)]. Implementation occurs primarily at the local level through a framework that includes:

1. County-wide planning policies
2. Comprehensive plans
3. Development regulations
4. Capital budgets and other ongoing local activities
5. Optional incentive programs.

The GMA requires establishment of urban growth areas (UGAs) for incorporated towns and cities that are defined so as to contain a 20-year supply of buildable land for urban growth. Urban growth is not allowed outside UGAs. Development within UGAs must be at urban densities (generally, a minimum of four residential units per acre), with some exceptions for areas with significant critical area constraints. Natural resource lands outside UGAs are designated for long-term commercial agriculture, forestry, and mineral extraction. Certain environmentally sensitive lands are designated as critical areas.

THE BUILDABLE LANDS PROGRAM

In 1997, ESB 6094 (codified as RCW 36.70A.215) established specific reporting requirements for development. These requirements are commonly referred to as the "buildable lands program."

The Buildable Lands Program is required for six Western Washington counties (Clark, King, Kitsap, Pierce, Snohomish, and Thurston) and all 101 cities and towns within their boundaries. The program requires local governments to compare anticipated growth against actual development over time to answer two questions: (1) Do local governments have enough suitable land inside the UGA to accommodate the growth anticipated during the remaining portion of the 20-year planning period? and (2) Are urban densities being achieved in urban growth areas?

The primary purposes of the Buildable Lands Program, as described in the statute, are to:

- Determine whether a county and its cities are achieving urban densities within UGAs by comparing growth and development assumptions, targets, and objectives with actual growth and development that has occurred in the county and its cities.
- Identify reasonable measures, other than adjusting UGAs, that will be taken to comply with the Growth Management Act (GMA), including increasing consistency between actual development and plan assumptions.

STATE RECOMMENDED PROCESS FOR ADDRESSING STATE REQUIREMENTS

The Buildable Lands Program Guidelines document produced by CTED describes how communities can implement the Buildable Lands Program requirements. The Guidelines suggest jurisdictions follow a five-step process for review to evaluate land supply and compare them with local plans and policies:

1. Preparation

- Have a comprehensive plan and development regulations in place, reflecting growth needs and targets, consistent with the GMA;
- Adopt county-wide planning policies to establish a review and evaluation program;
- Provide for methods to resolve inconsistencies in collection and analysis of data.

2. Annual Data Collection

- Identify types of key data (i.e., data "on urban and rural land uses, development, critical areas, and capital facilities" to evaluate land supply), and how they will be collected within each county;
- Collect key data annually, using procedures and methods, as

appropriate, to be able to conduct an evaluation every five years.

3. Evaluation

- Gather other data that will be needed for evaluating local progress.
- Evaluate the relevant data at five-year intervals, with the first evaluation completed by September 1, 2002;
- Determine whether the data show inconsistencies in how growth and development occurred, compared to what was envisioned in the local plans and policies, especially for urban densities and land supply;
- Summarize the results of the evaluation.

4. Actions for consistency

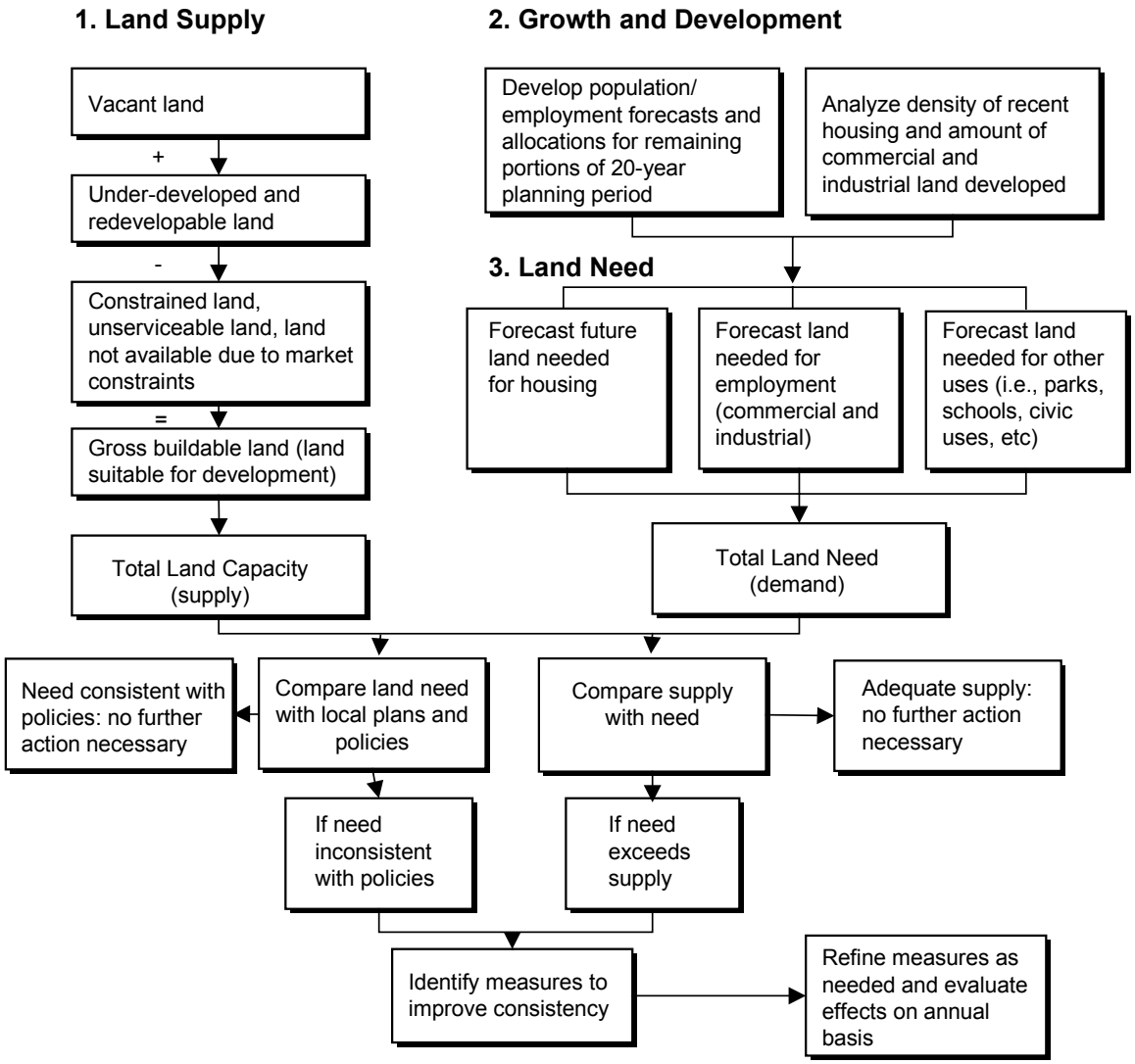
- Consider the reasons for any inconsistencies and identify possible actions (other than expanding urban growth areas) to be taken;
- Adopt and implement any necessary actions that are reasonably likely to increase consistency;
- Determine, annually, whether the actions taken to increase consistency have been effective and make necessary changes.

5. Maintenance

- Make any necessary adjustments to data collection methods for the next phase;
- Continue the review and evaluation cycle.

In summary, the GMA requires communities to develop growth targets and to monitor how close development is to those targets. Figure A-1 provides a flow diagram of steps 2-4 of the process.

Figure A-1. Overview of GMA buildable land program requirements



Requirements of RCW 36.70A.215
Purposes: Determine whether a county and its cities are achieving urban densities in urban growth areas, and to identify reasonable measures, other than adjusting UGAs, to comply with GMA.

Step 1. Land capacity analysis - estimate supply of buildable land and buildable land capacity
Step 2. Determine the actual density of housing and the amount of land developed for commercial and industrial use within the UGA since Comprehensive Plan approval or last periodic review
Step 3. Estimate land need based on information developed in step 2.
Step 4. Compare land need and land supply. If need exceeds supply, identify measures, if not, review land need for consistency with local plans and policies
Step 5. If inconsistencies exist, implement measures to address inconsistencies, conduct annual monitoring and evaluation.

LOCAL BUILDABLE LANDS POLICIES

Snohomish County has completed a considerable amount of work towards addressing the GMA Buildable Lands Program requirements. Prior to the passage of the Buildable Lands Program requirements,

the County completed the *Urban Growth Area Residential Land Capacity Analysis* and the *Employment Land Capacity Analysis* (unincorporated areas) in 1995.

Subsequent to the passage of the Buildable Lands Program requirements, Snohomish County Tomorrow (SCT) accepted state grant funds to begin implementation of the state requirements. As a part of the implementation process, SCT developed and implemented a work program designed to address the requirements of the GMA. The products of that work included Countywide Planning Policies intended to implement the GMA requirements.

The County-wide Planning Policies UG-2c and HO-9 require that SCT develop and implement a coordinated, long-term growth and housing monitoring program. Policy UG-2c1 lists the data indicators that need to be analyzed annual as part of the program:

(a) Estimated population and employment growth;

(b) Annexations and incorporations;

(c) Residential and non-residential land consumption;

(d) Land supply and land values relative to demographic changes; and

(e) Availability and affordability of housing.

The SCT 1999 Growth Monitoring Report provides a detailed analysis of these data indicators.

IMPLICATIONS FOR THIS STUDY

The GMA requirements for a Buildable Lands Program can be stated in a single sentence. Their purpose is to ensure that counties and cities make some estimate, for 20 years, of how much growth they expect, how much land that growth will need, how much land that growth has already consumed, the pattern (location and density) of that land consumption, and how much land is available to accommodate the growth that is still expected over the planning period.

Once one moves beyond the purposes into the details of the methods by which a county and its cities would develop consistent estimates of those variables of interest, things quickly get more complicated. Figure A-1 hints at those complications.

For the purposes of this project, and the development of methods for buildable land analysis, we make the following assumptions relating to state and local policy:

- *The County's interpretation of the relevant state statutory requirements is that the 1992-2012 forecasts do not need to be updated for this study*. State law requires the OFM to update population forecasts at the County level every five or when decennial Census data are available. The present coordinated population forecast for Snohomish County is for the period between 1992 and 2012. The Census was initiated in April 2000; the preliminary Summary Tape File 1A data will probably be available sometime in 2001.

  This study will not prepare new demand forecasts, which will be developed as part of the County's required 10-year review that will occur after this buildable lands study is completed. Instead, it will compare the amount of growth since the last official forecast to an estimate of the amount of growth that has occurred since that forecast to determine whether there is enough land to accommodate the growth that is expected during the remaining portion of the GMA planning period.

STATE AND COUNTY BUILDABLE LAND POLICIES

Following are excepts of the relevant sections of the state buildable lands statute (RCW 36.70A.21), and policies that Snohomish County adopted in response to the state requirements

WASHINGTON BUILDABLE LANDS STATUTE

RCW 36.70A.215 Review and evaluation program.

(1) Subject to the limitations in subsection (7) of this section, a county shall adopt, in consultation with its cities, county-wide planning policies to establish a review and evaluation program. This program shall be in addition to the requirements of RCW 36.70A.110, 36.70A.130, and 36.70A.210. In developing and implementing the review and evaluation program required by this section, the county and its cities shall consider information from other appropriate jurisdictions and sources. The purpose of the review and evaluation program shall be to:

  (a) Determine whether a county and its cities are achieving urban densities within urban growth areas by comparing growth and development assumptions, targets, and objectives contained in the county-wide planning policies and the county and city comprehensive plans with actual growth and development that has occurred in the county and its cities; and

  (b) Identify reasonable measures, other than adjusting urban growth areas, that will be taken to comply with the requirements of this chapter.

(2) The review and evaluation program shall:

(a) Encompass land uses and activities both within and outside of urban growth areas and provide for annual collection of data on urban and rural land uses, development, critical areas, and capital facilities to the extent necessary to determine the quantity and type of land suitable for development, both for residential and employment-based activities;

(b) Provide for evaluation of the data collected under (a) of this subsection every five years as provided in subsection (3) of this section. The first evaluation shall be completed not later than September 1, 2002. The county and its cities may establish in the county-wide planning policies indicators, benchmarks, and other similar criteria to use in conducting the evaluation;

(c) Provide for methods to resolve disputes among jurisdictions relating to the county-wide planning policies required by this section and procedures to resolve inconsistencies in collection and analysis of data; and

(d) Provide for the amendment of the county-wide policies and county and city comprehensive plans as needed to remedy an inconsistency identified through the evaluation required by this section, or to bring these policies into compliance with the requirements of this chapter.

(3) At a minimum, the evaluation component of the program required by subsection (1) of this section shall:

(a) Determine whether there is sufficient suitable land to accommodate the countywide population projection established for the county pursuant to RCW 43.62.035 and the subsequent population allocations within the county and between the county and its cities and the requirements of RCW 36.70A.110;

(b) Determine the actual density of housing that has been constructed and the actual amount of land developed for commercial and industrial uses within the urban growth area since the adoption of a comprehensive plan under this chapter or since the last periodic evaluation as required by subsection (1) of this section; and

(c) Based on the actual density of development as determined under (b) of this subsection, review commercial, industrial, and housing needs by type and density range to determine the amount of land needed for commercial, industrial, and housing for the remaining portion of the twenty-year

planning period used in the most recently adopted comprehensive plan.

(4) If the evaluation required by subsection (3) of this section demonstrates an inconsistency between what has occurred since the adoption of the county-wide planning policies and the county and city comprehensive plans and development regulations and what was envisioned in those policies and plans and the planning goals and the requirements of this chapter, as the inconsistency relates to the evaluation factors specified in subsection (3) of this section, the county and its cities shall adopt and implement measures that are reasonably likely to increase consistency during the subsequent five-year period. If necessary, a county, in consultation with its cities as required by RCW 36.70A.210, shall adopt amendments to county-wide planning policies to increase consistency. The county and its cities shall annually monitor the measures adopted under this subsection to determine their effect and may revise or rescind them as appropriate.

(5)(a) Not later than July 1, 1998, the department shall prepare a list of methods used by counties and cities in carrying out the types of activities required by this section. The department shall provide this information and appropriate technical assistance to counties and cities required to or choosing to comply with the provisions of this section.

(b) By December 31, 2007, the department shall submit to the appropriate committees of the legislature a report analyzing the effectiveness of the activities described in this section in achieving the goals envisioned by the county-wide planning policies and the comprehensive plans and development regulations of the counties and cities.

(6) From funds appropriated by the legislature for this purpose, the department shall provide grants to counties, cities, and regional planning organizations required under subsection (7) of this section to conduct the review and perform the evaluation required by this section.

(7) The provisions of this section shall apply to counties, and the cities within those counties, that were greater than one hundred fifty thousand in population in 1995 as determined by office of financial management population estimates and that are located west of the crest of the Cascade mountain range. Any other county planning under RCW 36.70A.040 may carry out the review, evaluation, and amendment programs and procedures as provided in this section. [1997 c 429 § 25.]

SNOHOMISH COUNTY BUILDABLE LANDS COUNTYWIDE PLANNING POLICIES

UG-14 Establish a review and evaluation program, which includes an annual data collection component, pursuant to RCW 36.70A.215 ("Buildable Lands Program"). The evaluation component required by the Buildable Lands Program will be completed no later than September 1, 2002. Subsequent evaluations shall occur at least once every five years. This evaluation may be combined with the review and evaluation of county and city comprehensive land use plans and development regulations required by RCW 36.70A.130(1), and the review of urban growth areas required by RCW 36.70A.130(3).

a. Procedures Report: Using the Snohomish County Tomorrow process, develop a buildable lands analysis procedures report for the evaluation required by the Buildable Lands Program, that is accepted by the Snohomish County Tomorrow Steering Committee, and is used by all Snohomish County jurisdictions when conducting their buildable lands review and evaluation. The procedures report shall address the following issues:

1. Multi-year work program and schedule;
2. Jurisdictional responsibilities for data collection, analysis and reporting;
3. Five-year buildable lands review and evaluation methodology, including a methodology for establishing an accurate countywide baseline inventory of commercial and industrial lands;
4. Annual data collection requirements;
5. Coordinated interjurisdictional data collection strategy; and
6. Content of the five-year buildable lands review and evaluation report.

b. Identification of Reasonable Measures:

A list of reasonable measures that may be used to increase residential, commercial and industrial capacity in UGAs, without adjusting UGA boundaries, shall be developed using the Snohomish County Tomorrow process. The Snohomish County Tomorrow Steering Committee will recommend to the County Council a list of such reasonable measures. The County Council will consider the recommendation of the Steering Committee and will add a new Appendix to the countywide planning policies that contains a list of reasonable measures. Once adopted, the County Council will use the list of reasonable measures to evaluate all UGA boundary expansion proposals consistent with UG-14(d).

c. Procedures for Resolving Inconsistencies in Collection and Analysis of Data:

In the event of a dispute among jurisdictions relating to inconsistencies in collection and analysis of data, the affected jurisdictions shall meet and discuss methods of resolving the dispute. In the event a successful resolution cannot be achieved, the Snohomish County Tomorrow Steering Committee shall be asked to meet and discuss resolution of the matter. In such instances, the Steering Committee co-chairs will make every effort to ensure that all Steering Committee jurisdictions are present and in attendance, and that the affected jurisdictions are provided with proper notice of such discussion. Nothing in this policy shall be construed to alter the land use power of any Snohomish County jurisdiction under established law.

d. Expansion of the Boundary of an Individual UGA: Expansion of the boundary of an individual UGA to include additional residential, commercial and industrial land shall not be permitted unless it complies with the Growth Management Act, and one of the following four conditions are met:

1. The expansion is a result of the five-year buildable lands review and evaluation required by RCW 36.70A.215.

2. The expansion is a result of the review of UGAs at least every 10 years to accommodate the succeeding twenty years of projected growth, as required by RCW 36.70A.130(3).

3. All of the following conditions are met for expansion of the boundary of an individual UGA to include additional residential land:

   (a) Population growth within the UGA (city plus unincorporated UGA combined) since the start of the twenty-year planning period, equals or exceeds 50% of the additional population capacity estimated for the UGA at the start of the planning period, as documented in the annual Snohomish County Tomorrow Growth Monitoring Report;

   (b) An updated residential land capacity analysis conducted by city and county staff for the UGA confirms the accuracy of the above finding using more recent residential capacity estimates and assumptions; and

   (c) The county and the city or cities within the UGA consider reasonable measures adopted as an appendix to the Countywide Planning Policies pursuant to UG-14(b) that could be taken to increase residential capacity inside the UGA without expanding the boundaries of

the UGA.

4. Both of the following conditions are met for expansion of the boundary of an individual UGA to include additional commercial and industrial land:

   (a) The county and the city or cities within that UGA document that commercial or industrial land consumption within the UGA (city plus unincorporated UGA combined) since the start of the twenty-year planning period, equals or exceeds 50% of the developable commercial or industrial land supply within the UGA at the start of the planning period. In UGAs where this threshold has not yet been reached, the boundary of an individual UGA may be expanded to include additional commercial or industrial land if the expansion is based on an assessment that concludes there is a deficiency of larger parcels within that UGA to accommodate the remaining commercial or industrial growth projected for that UGA. Other parcel characteristics determined to be relevant to the assessment of the adequacy of the remaining commercial or industrial land base, as documented in the Procedures Report required by UG-14(a), may also be considered as a basis for expansion of the boundary of an individual UGA to include additional commercial or industrial land; and

   (b) The county and the city or cities within the UGA consider reasonable measures adopted as an appendix to the Countywide Planning Policies pursuant to UG-14(b) that could be taken to increase commercial or industrial land capacity inside the UGA without expanding the boundaries of the UGA.

HO-9 Implement a coordinated monitoring program to evaluate progress towards achieving housing goals and objectives on a countywide and jurisdictional level. Such a monitoring program shall entail the preparation of a housing monitoring report every five years or more frequently if housing conditions warrant. The housing report will include an assessment of the adequacy of the jurisdictions' supply of developable residential building lots, the jurisdictions' supply of land for non-residential land uses, the location of urban growth boundaries, and an assessment of the jurisdictions' strategies for achieving their housing objectives. The preparation of the housing report may be combined with the review and evaluation program required by UG-14.

ED-3 Designate locations for commerce and industry in the land use element and in urban growth areas. Jurisdictions are encouraged to

adopt measures in their local comprehensive plans which help to preserve their designated industrial and commercial land base for long-term regional economic benefit.

Appendix B

Framework for Buildable Lands Analysis

This appendix describes a framework for buildable land analyses. The general methods it describes provide the theoretical background to the detailed work program outlined in Chapters 4, 5 and 6 that provides a methodology specific to Snohomish County and its communities. Consequently, there may be some instances where inconsistencies exist between the material contained in this appendix and the more specific methods recommended in previous chapters. In these instances, the approaches outlined in the previous chapters should be given greater consideration since they are the result of extensive Technical Advisory Committee review and discussion.

The appendix is organized as follows:

- Overview of a typical buildable lands analysis
- Approaches to analyzing demand for and supply of land

OVERVIEW OF BUILDABLE LANDS ANALYSIS

A buildable land analysis as defined by state law has not only a *supply* component, but also a *demand* component. The GMA requires local governments to address two questions: (1) Do local governments have enough suitable land to accommodate the growth anticipated during the remaining portion of the 20-year planning period? and (2) Are urban densities being achieved in urban growth areas?

The first question embodies both supply and demand elements. The supply element is embedded in the phrase "do local governments have enough land." The demand element is addressed in the second part of the question: "to accommodate the growth anticipated during the remaining portion of the 20-year planning period."

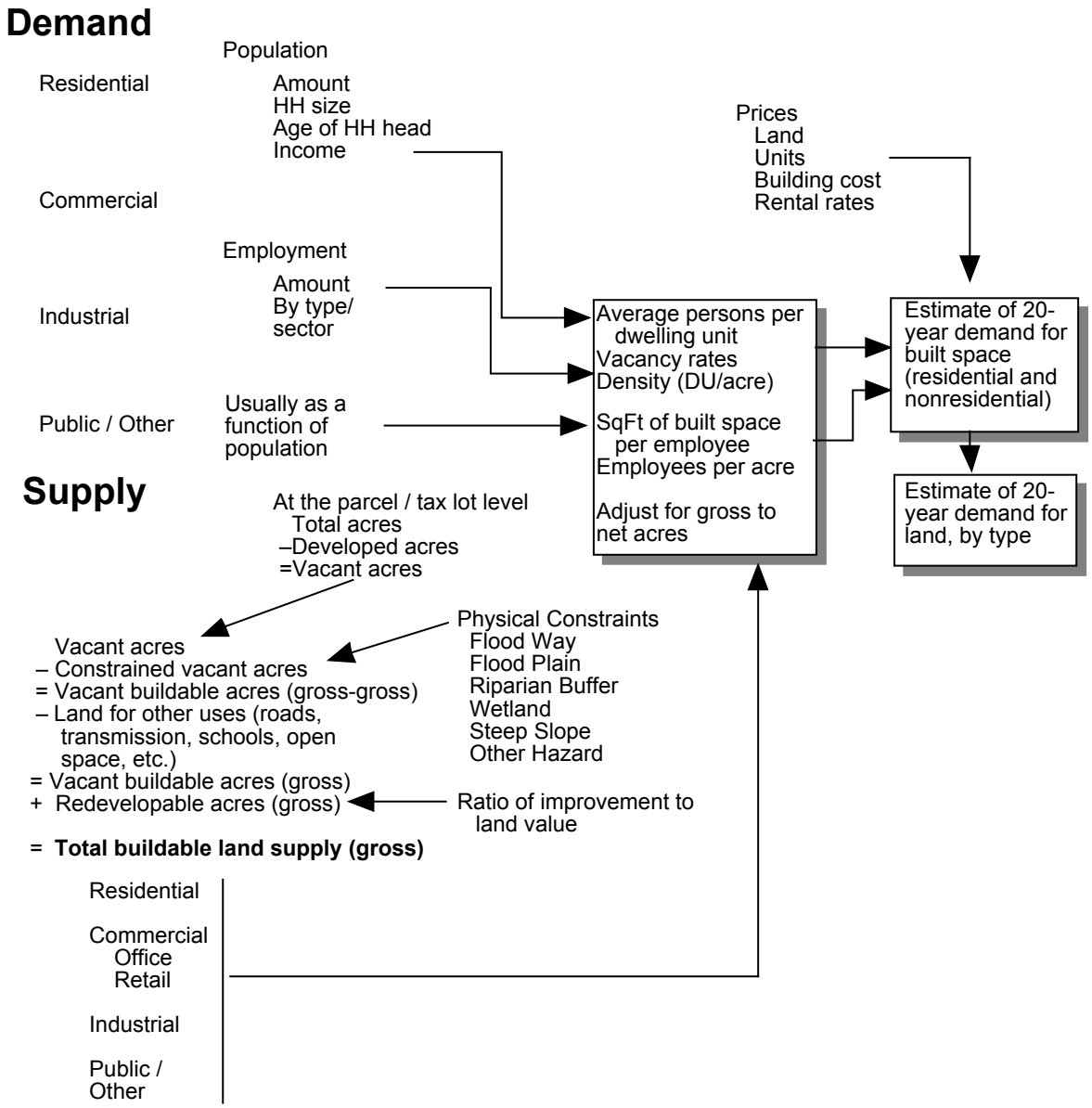
Figure B-1 shows the relationship between the supply and demand components of a buildable lands analysis.

DEMAND FOR LAND

Demand for land is typically characterized through analysis of national, regional, and local demographic and economic data. For residential uses, population and households drive demand. For the residential sector, for example, information about the characteristics of households is used to identify types of housing that will be affordable to area households. For non-residential uses, an employment forecast is the primary driver of demand for

land, and is converted to estimates of the probable absorption rates for commercial and industrial lands.

Figure B-1: Components of a Land Needs Assessment



Source: ECONorthwest

Thus, a demand analysis typically includes the development of population and employment forecasts and a housing market analysis. The data generated from the demand analysis, combined with density assumptions, lead to an estimate of *land need (demand) by type*.

Population and employment forecasts are the cornerstone of any land demand analysis. To assess land demand at the city or urban growth area level, requires small area forecasts. The problems associated with small area

forecasts are well known and documented. Following are several reasons why forecasts for small cities are highly uncertain:

- Projections for population in most cities and counties are not based on deterministic models of growth; they are simple projections of past growth rates into the future. They have no quantitative connection to the underlying factors that explain why and how much growth will occur.

- Even if planners for small cities had a sophisticated model that links all these important variables together (which they do not), they would still face the problem of having to forecast the future of the variables that they are using to forecast growth (in, say, population or employment). In the final analysis, all forecasting requires making *assumptions* about the future.

- Comparisons of past population projections to subsequent population counts have revealed that even much more sophisticated methods than the ones used in planning studies "are often inaccurate even for relatively large populations and for short periods of time."[1] The smaller the area and the longer the period of time covered, the worse the results for any statistical method.

- Small cities start from a small base. A new subdivision of 100 homes in a community of one million persons has an effect on total population that is too small to measure. That same subdivision in a community of 1,000 increases the City's population by about 25%. If phased in over three years, for example, the City's average annual growth rate during that period would be over 15%.

- Especially for small cities in areas that can have high growth potential (e.g., because they are near to concentrations of demand in neighboring metropolitan areas, or because they have high amenity value for recreation or retirement), there is ample evidence of very high growth rates in the short-term; there are also cases (fewer) of high growth rates sustained over 10 to 30 years.

There are at least two important reasons for discussing population and employment forecasting at this point:

- Forecasts of population and employment drive everything else in the land demand estimates: population growth means more households; more households need more houses; more houses need more buildable residential land; employment growth means more land needed for commercial, industrial, and office uses.

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[1]Murdock, Steve H., *et. al.* 1991. "Evaluating Small-Area Population Projections." *Journal of the American Planning Association*, Vol. 57, No. 4, page 432.

- Forecasts of population and employment are frequently developed to the county level by state economists or demographers. Those county-level forecasts are then "coordinated" at the local level through a process that considers a variety of local factors: land supply, services, location, etc. The jurisdictions then agree on local allocations that sum to the county control total.

The purpose of this discussion is not to describe a method to develop local population and employment forecasts. Rather, it is to point out the role that forecasts play in a buildable lands analysis.

In addition to the problems of developing accurate forecasts for small areas, another issue is important: the base year and the target year for the forecasts must be common for the county control totals, and the jurisdictions. Moreover, the base year for the forecasts must match the base year for the land inventory component of the analysis to prevent a mismatch between demand and supply. We address the implications for Snohomish County's situation in Chapter 5.

LAND NEEDED FOR HOUSING

Residential land demand estimates begin with population forecasts. Those forecasts are then translated into needed dwelling units by making assumptions regarding the number of persons in group quarters, average household size (some times disaggregated by type of dwelling unit), and vacancy rates. Total residential dwelling units are typically disaggregated by housing types, which are then related back to plan designations or zoning districts. Finally, residential units are turned into needed acres (by dwelling unit or lot type) by applying density assumptions.

The following steps provide the general structure for a housing demand analysis:

1. Project the number of new persons during the planning period. Issues with population forecasts were discussed in the previous section.
2. Identify relevant national, state, and local demographic and economic trends and factors that will affect the 20-year projection of structure type mix. This analysis considers trends in factors such as age, household size, migration patterns, employment, and other factors that affect not only overall demand for housing, but also the type of housing. Key factors include assumptions about average household size and persons in group quarters. Average household sizes in most metropolitan areas have decreased in the past 20-30 years. If the housing need assessment assumes a change in household size over the forecast period, that change must be applied not only to new housing units, but also to population in existing housing units. The sidebar shows one approach to addressing changing household sizes. It is more difficult to find good data to support assumptions on persons in group quarters. Assumptions about persons in nursing homes and assisted living situations can be based off of age distributions and historic

ratios; other group quarters such as dormitories may be more difficult. One approach is to conduct interviews with organizations such as universities that manage group quarters facilities.

3. Describe demographic characteristics of the population and, if possible, household trends that relate to demand for different types of housing (e.g., household income, household size, age of household head, percent of income paid for housing and tenure). This step would ideally allow a cross-correlation of the variables listed above which could be built into a model that predicts demand for housing by type based on income, household size, and age of household head. Even if these were the only three significant variables influencing housing preferences (they are not), and if they each only had four subcategories (e.g., age of head 18-30, 31-40, 41-55, 55+) they would lead to 64 different household types (4*4*4).

   More rigorous specifications of demand and supply equations are possible, but are typically beyond what are feasible or necessary for a local land assessment aimed at meting GMA requirements.

4. Determine the types of housing that are likely to be affordable to the projected households, based on household income, household size, age of household head, tenure data and trends, and knowledge about national, state, and location housing trends, and local housing policies. This step attempts to correlate housing types with housing affordability. Developing a plausible model that predicts demand for housing at different price ranges over a 20-year period is, for all practical purposes, unrealistic. For example, economists generally do not develop forecasts of household income out more than a few years. Moreover, the forecast of each variable carries uncertainty, that uncertainty is compounded if one attempts to correlate those forecasts.

Typical Method for Calculating Needed Dwelling Units

Future (forecasted) population
- Current (estimated) population

= population increase (future - current)

- persons in group quarters

= persons in new dwelling units

÷ persons per dwelling unit

= occupied dwelling units
- demolitions

+ vacant dwelling units

+ additional units needed to accommodate decreased household size of existing households

= Total needed dwelling units

5. Estimate the number of additional needed units by structure type. At a minimum, communities should estimate the number of single-family and multiple family dwelling units needed over the planning period. More robust models make distinctions between single family lot sizes, and types of multiple family units (i.e., duplexes, row houses, garden apartments, etc). The U.S. Census data provides a baseline for this analysis, however, local policy can have a strong influence on the mix of housing types.

6. Determine the needed density ranges for each plan designation and the average needed net density for all structure types. The density assumptions are generally based on a combination of analysis of past development, and policy. The analysis of past development allows estimates of how close to allowable densities development has achieved. Local policy should provide for density targets both at the

community level, and the individual comprehensive plan designation or zoning district level.

The analysis also needs to be specific about whether gross or net densities are being applied.[2] Step 6 is a crucial step in the context of the GMA requirements. The monitoring provisions of the GMA require local governments to compare actual to planned density of development for the period from the last plan review to the effective date of the new analysis. The density assumptions are generally applied by housing type (e.g., single-family/multiple family), and sometimes by lot size for single-family. Each housing type gets a density assumption. Most methodologies use net densities, which are converted to gross acres using a net-to-gross factor.

LAND NEEDED FOR EMPLOYMENT

This section describes methods for estimating land needed for employment. These estimates typically begin with employment forecasts.[3] Those forecasts are sometimes disaggregated by sector and then related to specific plan designations or zoning districts. Employment is then converted to land need by applying assumptions about employees per acre, or square feet of built space per employee and floor-area ratios (FAR).

Several methods exist to determine industrial land need. The most appropriate method depends on the data available. Basic methods such as extrapolation of past development trends or ratios of industrial acres per employee or per total land area are appropriate for small communities where data are limited. These methods, however, only forecast land demand in the aggregate: they cannot provide reliable estimates by sector or type.

For larger communities that have better data sources, forecasting employment-supporting land need is usually based on ratios of employee per land area (acre). The sidebar illustrates a typical method for estimating demand for commercial and industrial lands. The basic steps in this analysis are:

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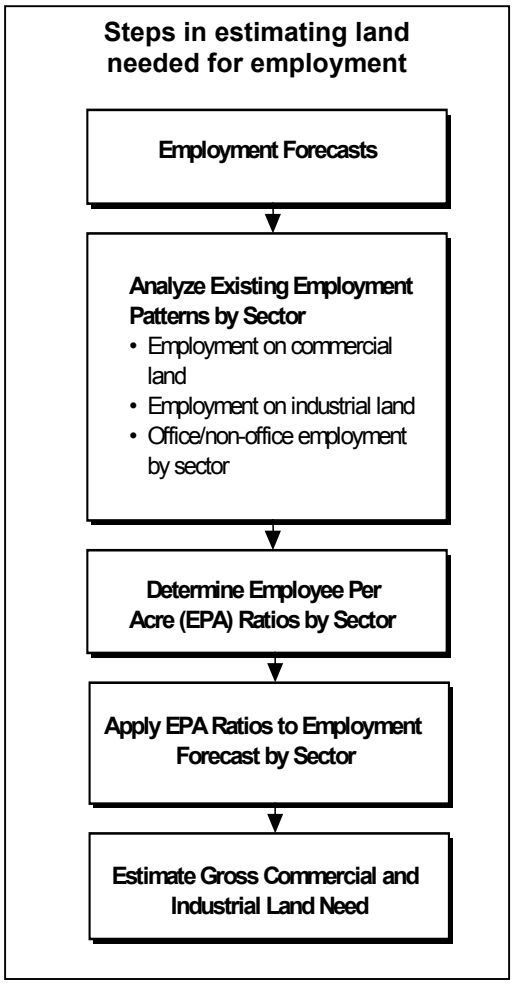
[2] A Gross Vacant Acre is an acre of vacant land before land has been dedicated for public right-of-way, private streets, or public utility easements: in general, that means the land is in larger acreages and has not yet been subdivided. For example, a standard assumption is that about 20% of land in a subdivision is used for streets and utilities: if so, then a gross vacant acre will yield only about 35,000 sq. ft. (80% of a full acre) for lots.

A Net Vacant Acre is an acre of vacant land after land has been dedicated for public right-of-way, private streets, or utility easements. A net vacant acre has 43,560 square feet available for construction, because no further street or utility dedications are required: all the land is in lots.

[3] A forecast of employment, thus, is a demand side forecast that drives demand for land. This report does not describe how employment forecasts are made: it assumes, however, that they have been made and are available at the local geography for which the land need estimates are being made.

1. *Develop employment projections*. Based on historic data and regional and statewide projections, or other available data, develop a sector-level employment projection. There are several ways to work from state or county-level forecasts to local forecasts. For the purpose of this project, we simply assume that such forecasts are available and provide no further explanation about how to make such forecasts.



2. *Analyze existing employment patterns by sector*. This step is intended to determine the amount of employment to allocate to broad employment sectors: commercial, industrial, and office at a minimum. While county-level forecasts are commonly more detailed that the three sectors described above, information on employee-per-acre factors to estimate land need is generally not as detailed.

A further complication arises in that some employment locates on land designated for other uses (i.e., a commercial use in an industrial zone), and that employment types can mix on a single site (i.e., office employees on a mill site). While this may be a useful analytical step, most communities do not have the employment data that allows analysis of employment at the individual firm and tax lot level. It is more common to work with employment at the industry sector level.

3. *Determine employee per acre ratios*. Employee per acre (EPA) ratios allow conversion of jobs into land. Developing the EPA assumptions can be difficult since few empirical analyses of employee per acre ratios exist. Most jurisdictions apply ratios of between 10 and 35 depending on the area and the employment type. Common data sources for EPA ratios include studies in other jurisdictions, or using the Bureau of Economic Analysis ES-202 employment tapes to locate employment on individual sites. Some communities also have business inspection systems maintained by the local fire marshall that tie employment to specific sites.

4. *Apply the ratios to employment forecasts by sector*. This step applies employment per acre ratios to changes in employment by sector for the forecasting period. The output of this analysis is an estimate of land demand by employment sector. For large employers, conducting interviews and allocating employment by hand may yield more accurate results. It is particularly important to determine whether a few large employers that may constitute a majority of employment in a particular jurisdiction are expecting to grow, and if so, the extent to which they expect to do so on land that the buildable land analysis would define as vacant. Many large employers have sufficient land to accommodate future expansion.

5. *Determine aggregate demand for employment-supporting land.* This step divides the employment estimated in the previous step to that which is likely to locate on industrial and commercial (divided, to the extent possible, into office and retail) land, and that which is likely

locate on non-industrial lands. The final result is an estimate of the demand for industrial, retail, and office land.

LAND NEEDED FOR OTHER USES

Residential and employment uses together typically account for on the order of 80% to 95% of land needed to accommodate growth. Land is also needed for other public or quasi-public purposes such as parks, open space, churches, fraternal organizations, and so on.

All things being equal, land used for public facilities such as schools, hospitals, governments, churches, parks, and other non-profit organizations will expand as population increases. Many communities have specific standards for parks. School districts typically develop population projections to forecast attendance and need for additional facilities.

With some exceptions, the assumptions applied to the supply analysis consider public and institutional lands unavailable to meet land needs for residential, commercial, and industrial uses. The issue to consider is whether *additional* public and institutional land will be required over the analysis period.

There are several approaches for estimating land needed for these other uses. One approach is to assume that all or part of such land needs are already covered in the residential or employment land need estimates. One might argue, for example, the land needed for new elementary schools is already accounted for as part of either the net-to-gross reduction in buildable residential land, or the allocation of government and education employment (to offices, schools, sewer treatment plants, parks, and so on).

Most approaches, however, allocate extra land to these uses. One approach is to estimate need as a function of population (usually expressed as acres needed per 1000 persons). A study done by ECO for Metro, in Portland Oregon, estimated land needed for other uses at about 25 acres per 1000 persons or 60 acres per 1000 dwelling units.

The other approach is to estimate need as a function of residential acres. ECO recently analyzed developed land coverage for all 67 UGBs within the Willamette Valley of Oregon. While considerable variation existed among communities, the average ratio for all of the communities was about 55% residential land and 45% land for all other uses (including land for employment). On average about half of the land classified as developed for employment and all other uses (23%) was in public, semi-public, and other uses that do not support private employment.

SUPPLY OF BUILDABLE LAND

The general steps for estimating the supply of buildable land are:

1. Calculate gross vacant acres, by zoning district or plan designation, including fully vacant and partially vacant tax lots.

2. Calculate gross buildable vacant acres by zoning district or plan designation by subtracting unbuildable acres from total acres.
3. Calculate net buildable acres by zoning district or plan designation by subtracting land for future public facilities from gross buildable vacant acres. This step should differentiate between platted land (no deductions for public facilities) and tract land (deductions for public facilities).
4. Calculate total net buildable acres by zoning district or plan designation by adding redevelopable acres to net buildable acres.

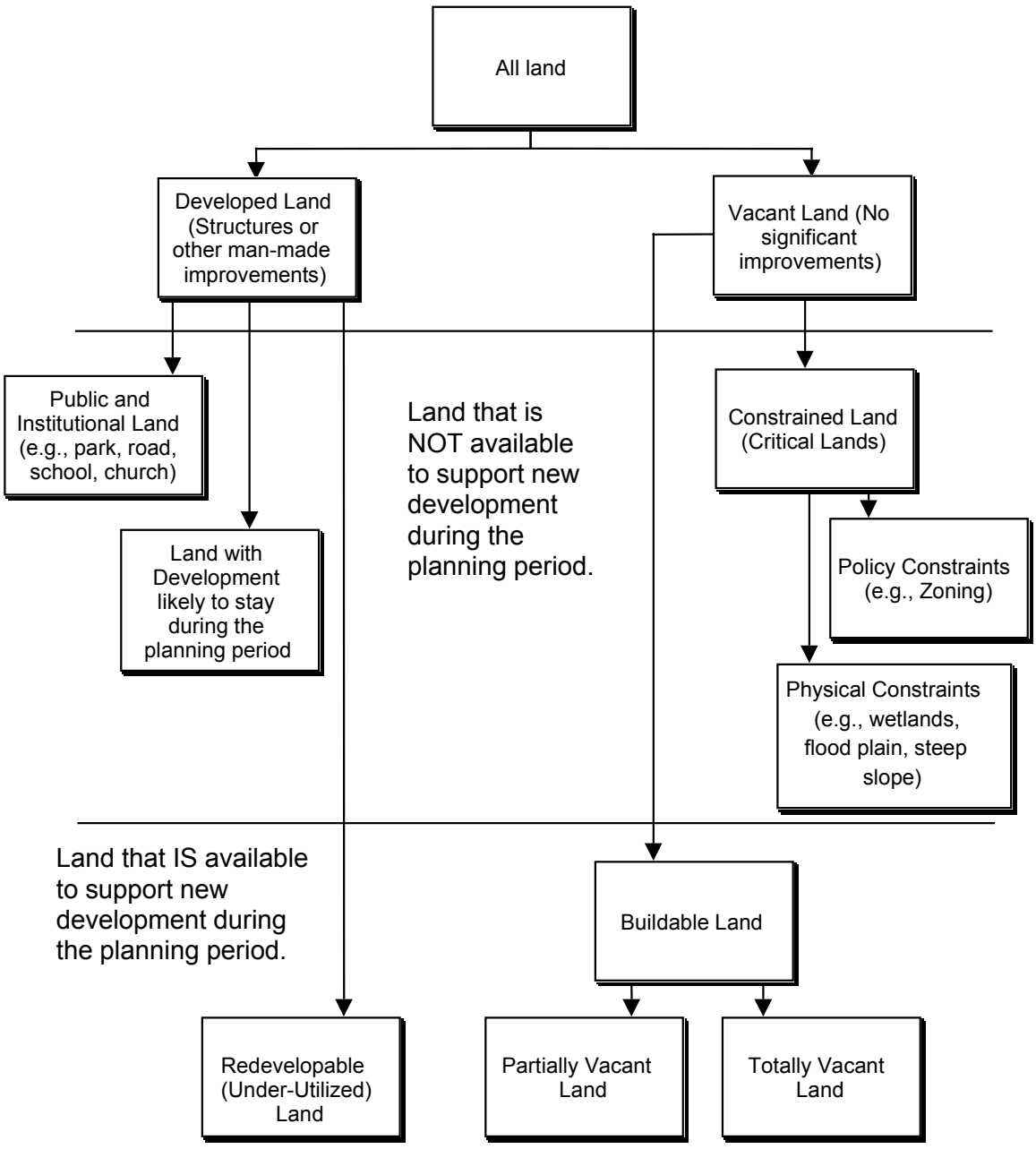
There are many ways that "vacant land" and "buildable land" can be defined. Figure B-2 shows one way that is internally consistent and compatible with statutory guidelines.

Figure B-2 illustrates that:

- Vacant land means land without structures or other significant man-made improvements. (A typical threshold for defining "significant manmade improvements" is tax lots that have no structures or have buildings with improvement values of under $10,000.) In general, "vacancy" is not a difficult determination to make: most people walking the land or looking at an aerial photograph could agree on what land was covered by significant structures that constituted existing development (and thus precluded new development unless the existing development were demolished). The trick is to define "vacancy" and "buildability" without individual examination of every plot of land; i.e., to define it in ways that existing data bases and GIS sources can be to show the amount and location of such land.
- Vacant land that is constrained (either physically or legally) is not buildable. Constrained land is conceptually identical to what state law refers to as *critical areas*. Such land may be constrained by natural features such as slopes, wetlands, and designated floodways. Some of those features may be absolute constraints on development (water courses, cliffs); in most cases, however, physical constraints lead to unbuildable land because of policies that apply to them (e.g., though there are no physical impediments to building in a floodplain, policy prohibits it for several reasons related to the public good). Other policy constraints might include zoning (which often limits use or density) and public facilities (e.g., limits on service extensions).

  A key issue regarding environmental constraints is overlap. For example, areas that are within drainageways may also be in the 100-year floodplain and be protected wetlands. In previous studies we have addressed this overlap using GIS overlays that provide aggregate constraint figures. This is crucial to prevent double-counting of constrained acres.

Figure B-2: Classification scheme for urban land



Source: ECONorthwest

Figure B-3 summarizes the relationship between development status and constraint status. It starts at the top with all land, which is then categorized as developed or vacant. Land in the middle third of the figure is not available for development; land in the bottom third is.

Figure B-3. Relationship between development status and constraint status

<table>
<tr><th rowspan="3">Constraint Status</th><th colspan="4">Land Status</th></tr>
<tr><th colspan="2">Vacant</th><th colspan="2">Developed</th></tr>
<tr><th>Complete</th><th>Partial</th><th>Redevelopable Threshold</th><th>Not Assumed Redevelopable</th></tr>
<tr><td>No Constraints</td><td colspan="3" rowspan="2">Land that is available for development</td><td>No development potential</td></tr>
<tr><td>Constraints that reduce development potential</td><td>No development potential</td></tr>
<tr><td>Complete Constraints</td><td>No development potential</td><td>No development potential</td><td>No development potential</td><td>No development potential</td></tr>
</table>

Source: ECONorthwest

- Complications occur when the physical assessment of vacancy gets overlaid on tax lot boundaries. If tax lot boundaries did not have to be considered, then every square foot of land can be characterized as vacant or developed. Tax lot boundaries, however, often lump developed and vacant land together on the same tax lot (e.g., one house on a three-acre lot). Thus, on a tax-lot level vacant land that is not constrained (i.e., buildable land) comes in two varieties: *totally vacant* (no significant improvements on the tax lot) and *partially vacant* (or, symmetrically in GMA terms, *partially used*). Partially vacant land consists of tax lots occupied by a use but which contain enough land to be further subdivided without need of rezoning. For low-density residential lands, tax lots over one acre are generally considered partially vacant. For all other uses, tax lots with building coverages that leave vacant portions larger than the minimum allowable lot size for the underlying zoning district are generally considered partially vacant.

- *Redevelopable* land is not vacant, but it is available to support some of the new development demanded by increasing population and employment. Redevelopment occurs on redevelopable land. *Infill* is sometimes lumped with redevelopment. Logic of Figure B-2, however, suggests that it be treated separate. Redevelopable land is developed; infill land is either vacant or partially vacant. Infill is not a type of vacant land, but a condition of a tax lot relative to surrounding tax lots. If surrounding tax lots are primarily developed, then an isolated buildable tax lot (i.e., a tax lot totally or partially vacant) is also an infill tax lot.

  In the language of the GMA, redevelopable land is either synonymous with, or a large subset of, *under-utilized* land. Under-utilized land is

land in tax lots zoned for more intensive uses than that which currently occupies the property. For instance, a single-family home on multifamily-zoned land will is considered under-utilized. Several approaches could be applied to determine redevelopable or under-developed tax lots. Improvement-to-land-value ratios are frequently applied to determine redevelopment potential. However, subjective judgment is required to identify at what level redevelopment may occur.

In summary, the big steps for estimating the amount of buildable land are: *Classification of land into several mutually exclusive categories*. Thus, in the logic of Figure B-2 there are three types of land that can support new development: buildable vacant land, buildable partially-vacant land, and redevelopable land. Common data sources are use codes maintained by county assessors, or field inventories.

Table B-1 illustrates a tabular summary of land supply data. The supply analysis should use GIS data to develop a summary of land supply that can be cross-referenced geographically, by attribute. This is possible for all communities in Snohomish County, where the County GIS Department has planning information and coverages at the tax-lot level or is intending to build those coverages based on procedures outlined in this report.

Table B-1. Sample Buildable Residential Lands Worksheet

Tax Lot#	Total Acreage	*Minus* Developed acreage	*Equals* Gross vacant acreage	*Minus* Constrained acres	*Equals* Gross buildable vacant acres	*Minus* Acres for public facilities (25%)	*Equals* Net buildable vacant acres	*Plus* Redevelop-able acres	*Equals* Total net buildable acres
Single-Family (Low Density Residential)									
1202	10.0	0.0	10.0	1.1	8.9	2.2	6.7	-	6.7
1400	5.0	1.0	4.0	0.0	4.0	1.0	3.0	-	3.0
1506	8.0	8.0	0.0	0.0	0.0	0.0	0.0	4.0	4.0
Subtotals							9.7	4.0	13.7
Multi-Family Residential (High Density Residential)									
2000	20.0	0.0	20.0	2.0	18.0	4.5	13.5	-	13.5
4500	3.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0
Subtotals							13.5	3.0	16.5
Total Net Buildable Acres							23.2	7.0	30.2

Source: ECONorthwest, 2000.

Many different approaches exist to modeling land supply in a GIS format. The County already has tax lot boundary information linked to basic assessment records. Most jurisdictions create separate data layers for vacant lands, constraints, land uses and other attributes. Some, however, map land

use (including vacant lands) at the sub tax-lot level. Our experience is that maintaining a separate vacant lands coverage is better both from and administrative and analytical standpoint.

Appendix C Evaluation of Local Conditions

BACKGROUND

The methods that will be used to conduct the buildable lands analysis should be consistent with the abilities of different cities to provide the type of information needed for such analysis. Thus, ECONorthwest collected information about available data, data-collection systems, and staff resources from local jurisdictions required to participate in the Buildable Lands Program. ECO and the Technical Advisory Committee used the results of this research to refine the proposed methods for the buildable lands analysis.

This appendix addresses two categories of questions: (1) What data do local governments have for addressing land demand and supply issues, and (2) Do local governments have any special needs—i.e. beyond those met by complying with state requirements—for land demand or supply information? Examples of data that go beyond the strict requirements of the state law include long-term maintenance of land monitoring systems, tracking development "in the pipeline," and dealing with annexations.

The research conducted by ECO that consisted of the following elements:

- Meetings with the TAC,
- A buildable lands program questionnaire administered to all 20 incorporated cities in Snohomish County by ECO,
- Two work sessions with jurisdictions to discuss survey results,
- Review of a survey of services providers administered by Snohomish County staff.

A summary of findings as they relate to the design of the buildable lands work program follows. At the end of this appendix are the results of the survey for those who want more detail.

FINDINGS

Two workshops were held with cities on April 11, 2000, in Snohomish County Planning and Development Services offices in Everett. The morning meeting was attended by Southwest Snohomish County cities (Bothell, Edmonds, Everett, Mukilteo, Brier, Mountlake Terrace) and County staff. The afternoon meeting was attended by staff from the cities of Lake Stevens, Marysville, Stanwood and Gold Bar, plus the County.

The workshops enabled Snohomish County and ECONorthwest to gain a better understanding of the technical and staffing capabilities of local jurisdictions. The workshops consisted of an overview of the Snohomish

County Buildable Lands project and progress summary, preliminary results of the jurisdictional land use database survey, a discussion of issues raised by these results and other technical and logistical concerns the city representatives had about completing the project.

In general, cities supported the structure of the methods presented, which can be summarized as the following tasks:

1. Start-up

a. Definitions

b. Procedures

2. Standardization of land use / zone designations (making a bridge between individual city categories and definitions, and some common, County-wide definition of land use by type and density)

3. Preliminary buildable land maps for cities to review, developed by the County using:

a. Assessment data

b. Other County data layers

c. Aerial photographs

4. City review and correction of maps (through any combination of GIS, other data sources, aerials, or field checking)

5. County digitizing of vacant and redevelopable land

6. Final review by cities

7. Consolidated analysis and reporting (draft and final report)

Other technical points were discussed that have been incorporated into the proposed methods. These points included:

- Cities with GIS capabilities will correct draft maps digitally using GIS; smaller cities will use aerial photographs and field work.

- The TAC should probably continue to convene as part of the implementation of the buildable lands analysis so that the project can capitalize on the knowledge its members have gained thus far.

- The presentation of parcel-based maps showing various GIS data layers to the public is an issue that needs to be managed carefully. The County and cities must carefully plan to present the data in a such a way that the public can comment and provide valuable input at a level of detail useful for the project objectives.

- Regarding treatment of projects in the development pipeline, the cut-off point between vacant tract land and vacant platted land should be final plat approval; the cut-off point between vacant land and developed land should be a building permit.

Survey Summary

This section summarizes the results of the *GMA Buildable Lands Program Survey* administered to the 20 cities that must participate in the buildable lands program, and Snohomish County. The beginning of this section reports the response rate of the survey, and the rest of this section follows the structure of the survey to summarize the responses. The survey questions from which points in this summary are drawn are referenced parenthetically in this fashion: (*See Question 1*). The survey is reprinted at the end of this appendix.

HOW MANY CITIES HAVE RESPONDED TO THE SURVEY?

Table C-1 shows the jurisdictions included in the Buildable Lands program, the population of cities included in the Program, and the jurisdictions that responded to the survey. Table C-1 shows which cities are included in the "Large Cities" and "Small Cities" categories; these categories are used to summarize results in this Appendix.

Table C-1. Jurisdictions responding to the survey

City	1998 Population	Responded to survey?
Snohomish County		Yes
Large Cities	**255,352**	
Everett	84,330	Yes
Edmonds	38,610	Yes
Lynnwood	33,110	Yes
Mountlake Terrace	20,360	Yes
Marysville	19,740	Yes
Mukilteo	16,810	Yes
Bothell (part in Snoh. Co.)	12,850	Yes
Mill Creek	10,692	Yes
Monroe	10,690	
Snohomish	8,160	
Small Cities	**30,707**	
Arlington	6,635	Yes
Brier	6,295	Yes
Lake Stevens	5,740	Yes
Stanwood	3,130	Yes
Sultan	2,885	Yes
Granite Falls	1,985	
Gold Bar	1,672	Yes
Darrington	1,235	Yes
Woodway	990	Yes
Index	140	
Total population in surveyed cities:		286,059

As of May 3, Snohomish County and 16 out of 20 cities had responded to the survey. Cities that have responded to the survey to date compose over 90% of total population for the cities included in this study.

LAND USE DATABASE

HOW MANY JURISDICTIONS HAVE AN INVENTORY OF EXISTING LAND USE?

The following jurisdictions indicated they have an inventory of existing land use:

- Snohomish County.
- All communities: 11 of 16 respondents.
- Large communities: 8 of 8 respondents.
- Small communities: 3 of 8 respondents.

(*See Question 1*)

WHAT FORMAT IS THE LAND INVENTORY IN?

Snohomish County is currently developing a countywide inventory in ArcInfo/ArcView as part of their GIS development program. This inventory will be updated almost continuously.

- Five large cities have an inventory in GIS format, all in ArcView except one in MapInfo.
- Two large cities have inventory data or maps in other electronic formats: Dbase and CAD.
- The remaining four cities with an inventory have it on paper only.

(*See Questions 2–3.*)

WHEN WERE THE INVENTORIES LAST UPDATED?

Snohomish County is developing a GIS inventory that will be updated according to the assessor's update cycle, more or less continuously. Among cities:

- Five inventories were updated in 1999 or 2000.
- Four inventories were updated in 1995 or 1996.
- Two inventories were updated in 1992.

The City of Everett indicated they need to update their inventory, which was last updated in 1992. Three cities indicated they update their inventory every five years; one updates every 3–5 years; one updates every 2–3 years, and the four cities update infrequently or as needed.

(*See Questions 4–5*)

WHAT IS THE SOURCE OF LAND INVENTORY DATA, AND WHAT ATTRIBUTES ARE ASSOCIATED WITH THE DATA?

Nine jurisdictions indicate that assessor land use codes are the source for their land use inventory, with all but one of these jurisdictions also using aerial photographs, field verification, building permits, or other methods to augment assessor data. Two cities indicated they get assessor codes from MetroScan, a private vendor of assessment data, and Mill Creek does not augment this with data from other sources. Two cities, Mukilteo and Woodway, do not use assessor codes as a source of data for their land use inventory—the inventories in these cities are based on aerial photos, field verification, and other sources.

All jurisdictions with inventories have them at the tax lot (parcel) level, except Mukilteo which has inventory data at the block/zoning district level.

(*See Questions 6–7*)

Table C-2 shows attributes associated with land inventories in cities that responded to the survey question. In general, large cities track more attributes than small cities.

Table C-2. Attributes associated with land inventory data

	Cities tracking attribute		
Atribute	**All**	**Large**	**Small**
Existing land use	10	8	2
Comp plan designation	7	6	1
Existing zoning	9	7	2
Lot area	8	6	2
Owner name	7	4	3
Public ownership	6	4	2
Land value	7	6	1
Improvement value	4	4	0
Land classification	5	4	1
Number of buildings	5	5	0
Number of housing units	5	5	0
Size of improvements	5	4	1
Year structure(s) built	5	4	1
Site addresses	7	5	2
Public services	3	2	1
Other	1	1	0

(*See Question 8*)

CAN CITIES GENERATE REPORTS THAT COMBINE OR RELATE PARCEL ATTRIBUTES?

Six large cities and Snohomish County indicated they have the system and staff to generate reports that combine or relate parcel attributes. Two cities indicated that available staff time is limited by a large number of projects, and one city indicated their staff are relatively inexperienced with

this type of analysis. Other cities indicated they did not have this capability or did not answer the question.

(*See Questions 9–10*)

DO CITIES HAVE MAPS OF WATER AND SEWER FACILITIES?

Water and Sewer Facilities are mapped on paper in 10 out of 14 responding cities. Snohomish County and six cities have Water and Sewer Facilities mapped in a GIS later, and the City of Marysville is currently working on GIS mapping of these elements. Lake Stevens has Sewer but not Water Facilities mapped as a GIS layer. Snohomish County and the City of Everett are the only jurisdictions that include Water and Sewer Facilities as a tax lot attribute.

Two cities indicated Water or Sewer Facilities are mapped in CAD. Two cities indicated they have separate water districts (Mukilteo and Lake Stevens) and one has a separate sewer district (Mukilteo).

(*See Question 11*)

A recent survey of water and sewer districts by Snohomish County indicated that most districts have maps and many are using CAD programs to generate maps.

DEVELOPMENT HISTORY AND POLICIES

This series of survey questions asked about how jurisdictions track development, and the types of policies adopted in response to the GMA buildable lands program requirements.

HOW MANY COMPREHENSIVE PLANS INCLUDE RESIDENTIAL DENSITY TARGETS?

Snohomish County has adopted a target density of 4 units per net residential acre for unincorporated portions of UGAs. Seven cities indicated they have not adopted target densities. Of the 7 cities that indicated they have adopted target densities,

- three adopted target densities for lands within their city limit,
- five adopted target densities for lands within their city limit and unincorporated UGA,
- three adopted target densities for each plan designation and/or zoning district, and
- one adopted an overall city-wide target density only.

Two cities use net density targets, and four use gross density targets; no city uses both.

(*See Question 12*)

Only 2 of 13 responding cities require minimum density standards for new development.

(*See Question 13*)

HOW MANY CITIES HAVE A ZONING CODE THAT ALLOWS MIXED-USE DEVELOPMENT?

Twelve of fourteen cities responding have a zoning code that allows mixed-use development.

(*See Question 14*)

HOW MANY CITIES HAVE REVISED THEIR GMA COMPREHENSIVE PLAN OR ZONING SINCE JANUARY 1, 1995 IN A WAY THAT IMPACTS ALLOWABLE DENSITIES?

Seven out of thirteen responding cities indicated they have revised their GMA comprehensive plan or zoning code in a way that impacts allowable densities. Comments indicate that in four of these cities changes were made that would increase allowed density.

Snohomish County reported amendments to the County's Planned Residential Development (PRD) code that went into effect September 1995 have generally increased allowable yields. The City of Lake Stevens reports that PRD regulations increased the percentage of land to be dedicated to public use and increased minimum lot areas, and these changes may make it more difficult to achieve maximum allowable density, even though allowable density has not changed.

The City of Stanwood indicated that they passed an ordinance that increased minimum lot size for Planned Residential Units to 10,000 sq. ft., thereby allowing them only in the City's lowest density zone (SR-12.4).

(*See Question 15*)

HOW MANY JURISDICTIONS TRACK INDICATORS OF DEVELOPMENT?

Table C-3 shows development indicators tracked by jurisdictions including Snohomish County. This table shows most jurisdictions track or partially track the indicators listed in Table C-3, and most jurisdictions track them manually or with a combination of manual and electronic means.

Table C-3. Development indicators tracked by jurisdictions

Indicator	Tracked? Yes	No	Part.	System Manual	Elect.	Combo
Total new housing units	11	0	5	9	1	6
Total acres of new residential development	10	2	4	7	2	5
Number of lots platted	13	0	3	9	3	3
Gross acreage of land for new residential lots	11	2	3	9	2	3
Gross acreage of land for new multi-family residential development	10	4	2	8	1	3
Net acreage of land for new residential lots	10	2	4	10	1	3
Net acreage of land for new multi-family residential development	8	5	3	8	0	3
Acres of land developed for new employment uses	10	4	2	9	0	3
Floor area of new commercial and industrial uses developed for employment	10	4	2	7	2	3
Floor area of new residential uses in mixed-use developments	7	4	4	7	1	3

Note: data includes Snohomish County.

(*See Question 17*)

HOW MANY CITIES HAVE HOUSING INVENTORIES THAT TRACK HOUSING BY TYPE OUTSIDE OF THEIR CITY LIMITS?

Of the 16 cities that responded,

- six have inventory for the City Limits only,
- three have an inventory for the City Limits and unincorporated UGA, and
- seven do not have a housing inventory.

In addition, Snohomish County has an inventory for each unincorporated UGA.

Nine cities indicated the sources of their housing inventory:

- four use occupancy permits to build on Census data, and two cities (Mukilteo and Sultan) use this method exclusively,
- two cities use assessment data in conjunction with other sources,
- three use windshield surveys to augment data from other sources,

- three cities conduct a local survey, and one (Woodway) uses this method exclusively (based on building permit data), and

- four cities indicated other sources for their inventory, including aerial photos, MetroScan (a private vendor of assessor data), and OFM annual estimates of population. The City of Mill Creek uses MetroScan exclusively for their housing inventory.

Seven of the city inventories were last updated in 1999–2000, and two were updated in 1995–1996.

(*See Question 18*)

DO ANY CITIES TRACK UNOCCUPIED OR UNDER-UTILIZED BUILDINGS THAT COULD BE USED FOR FUTURE EMPLOYMENT SPACE NEEDS?

No.

(*See Question 19*)

DO JURISDICTIONS TRACK NUMBER OF EMPLOYEES IN EXISTING STRUCTURES?

Snohomish County estimates the number of employees in existing structures based on regional employment data. Three of 15 responding cities track this information from business license data. The Puget Sound Regional Council, however, has an employment database that assigns employment to street addresses. The data are relatively accurate at larger geographic levels, but may not be accurate for individual locations.

(*See Question 20*)

WHAT TYPE OF PERMIT INFORMATION IS TRACKED BY JURISDICTIONS, AND WHAT SYSTEM DO THEY USE?

Table C-4 shows permit information tracked by jurisdictions in Snohomish County, including the County itself. This table shows most responding jurisdictions track most of the listed permit types, and most of this information is tracked on paper systems. Several cities indicated they are using Sierra or Permit Plan software to track permit data. Only Snohomish County tracks any building permit information on GIS.

The City of Lake Stevens indicated that getting most of their permit information would require researching original paper files.

Table C-4. Permit information tracked by jurisdictions

Permit Type	Track permit type	Track data to 1995	Track date of submittal	Tracking System Paper	Elect.	GIS
Building permits issued by type	17	14	14	12	10	1
Approved site plans for multi-family, commercial, and industrial development	12	11	11	11	4	0
Final subdivision approvals	17	14	16	12	7	0
Final short subdivision approvals	17	14	15	12	7	0
Pending subdivisions and short subdivisions under review	17	11	17	12	7	0
Pending multi-family, commercial, and industrial building permits	13	9	13	10	5	0
Certificates of occupancy issued by type	13	11	10	10	4	0

Note: Data includes Snohomish County. Jurisdictions could mark more than one permit type and tracking systems.

(*See Question 21*)

BUILDABLE LANDS INVENTORY

This section of the survey asked about buildable lands information maintained by jurisdictions that could help satisfy some of the GMA buildable lands inventory requirements.

HOW MANY JURISDICTIONS HAVE COMPLETED A LAND CAPACITY ANALYSIS OR BUILDABLE LANDS INVENTORY?

Snohomish County and 10 cities indicated they have completed a land capacity analysis or buildable lands inventory. Three out of four cities that have not completed a capacity analysis or inventory are small cities.

Four cities have recently updated or are currently updating their land capacity analysis or buildable lands inventory.

Snohomish County and six cities last updated their land capacity analysis or buildable lands inventory in 1994–1996.

Nine cities maintain this information on paper. Two cities have this information in a spreadsheet (Marysville and Bothell). The City of Sultan indicated they have this information in GIS. Snohomish County has this information in GIS and database formats.

(*See Question 22*)

WHICH LAND CLASSIFICATIONS WERE USED IN THE LAND CAPACITY ANALYSIS OR BUILDABLE LANDS INVENTORY?

The following classifications are used in jurisdictions' land capacity analysis or buildable lands inventory:

- Vacant land: 11
- Under-utilized/underdeveloped: 6
- Redevelopable: 3
- Partially used: 3
- Undevelopable (constrained): 6

Jurisdictions could mark more than one classification, and the respondents include Snohomish County.

(*See Question 23*)

HOW MANY JURISDICTIONS USED A "MARKET AVAILABILITY" ASSUMPTION IN THEIR LAND CAPACITY ANALYSIS OR BUILDABLE LANDS INVENTORY.

Three cities and Snohomish County. Each of these jurisdictions returned some kind of documentation of the assumptions used with their survey response.

(*See Question 24*)

WHAT TYPE OF BUILDABLE LANDS ANALYSIS HAS BEEN COMPLETED BY JURISDICTIONS?

Table C-5 shows the types of analyses completed by jurisdictions, including Snohomish County. This table indicates that, to the extent the analyses have been completed, they are primarily consistent with GMA requirements.

Table C-5. Analyses completed by jurisdictions

Analysis	City Limit C	City Limit P	UGA C	UGA P
Forecasts				
Population	9	1	7	2
Employment	6	1	5	2
Land Need Analysis				
Housing needs	4	0	4	1
Employment land needs	4	0	4	1
Public facility needs	3	0	3	0
Buildable Land Inventory				
Residential	5	1	4	1
Employment	4	0	4	1
Public/Other	4	1	3	1
Land Capacity Analysis				
Residential	8	0	6	1
Employment	6	0	6	1
Public/Other	7	0	5	1

Note: C=consistent with GMA requirements; P = partially meets GMA requirements. Data includes Snohomish County.

(*See Question 25*)

WHAT TYPES OF ENVIRONMENTAL/CRITICAL AREA CONSTRAINTS WERE EVALUATED BY JURISDICTIONS IN PREVIOUS LAND CAPACITY ANALYSES OR BUILDABLE LANDS INVENTORIES?

Table C-6 shows environmental and critical area constraints tracked by jurisdictions in Snohomish County. This table shows that most responding jurisdictions track wetlands, frequently flooded areas, geologic hazards, and riparian areas; few jurisdictions track other constraints. All of the jurisdictions that responded indicated they used general deduction to estimate constraints.

Table C-6. Types of environmental/critical area constraints included in previous land capacity analyses

Constraint Type	Included	Deduction Type		
		None	General	Site Specific
Wetlands	9		6	
Frequently flooded areas	6		3	
Geologic hazards/steep slopes	9		5	
Riparian zones or corridors	7		5	
Aquifer recharge areas	2			
Fish and wildlife habitat conservation areas	2		1	
Contaminated sites	1			
Other environmental constraints	1			

Note: Data includes Snohomish County.

(*See Question 26*)

WHAT TYPES OF PUBLIC LAND USES WERE INCLUDED IN JURISDICTIONS' LAND CAPACITY ANALYSES?

Table C-7 shows the types of public land uses included in jurisdictions' land capacity analyses.

Table C-7. Types of public land uses included in land capacity analyses

Land Use Type	Included
Parks/open space	8
Schools	5
Municipal offices	5
Right-of-way	5
Police/Fire facilities	5
Stormwater drainage/detention	3
Water storage	4
Wastewater treatment	4
Landfills or transfer stations	2
Power line right-of-ways	4
Roads	6
Airport clear zones	1
Greenbelt	1
Other	0

Note: Data includes Snohomish County.

(*See Question 27*)

CONCLUSIONS

The survey results provide insights on how some of the details of the methods might be addressed. The survey results show, as expected, that larger jurisdictions tend to have more data and better-tracking systems than

smaller jurisdictions. The results also identify areas where additional work is needed:

- Many jurisdictions are not using GIS for their buildable land inventories.
- Many jurisdictions have inventories that will need to be updated as a part of this process.
- Nearly half the responding jurisdictions have not set density targets.
- None of the responding jurisdictions track vacant or under-utilized buildings that could be used to meet future employment space needs.
- Most of the responding jurisdictions are tracking development indicators and building permits, but most of this information is on paper.
- The majority of responding jurisdictions have not completed a land capacity analysis or buildable lands inventory.

There are no issues where all jurisdictions have equivalent data—in other words, the results confirm ECO's hypothesis that there would probably be not a single data item where a single method would apply to all jurisdictions. This finding supports the recommendation that the County develop a common framework and definitions for data collection, but allow jurisdictions different methods and levels of detail and accuracy, depending on local conditions.

The survey identified several issues critical to development of the buildable lands program, including:

- Only 8 of 16 responding cities have the staff and capability to produce reports that combine or relate parcel attributes. Two of these cities indicated that staff time is limited by other projects, and one indicated their staff is relatively inexperienced with this kind of analysis.
- Most cities are tracking building permit activity, but few are associating those with a tax lot or other location identifier. The geographic coding of building permit data is important to identify the location of specific types of development approvals, and to update an inventory of buildable land.
- Few cities are tracking the number of employees in existing buildings. This information will be needed to estimate the future demand for commercial land based on employment forecasts.
- Few cities appear to have addressed the issue of maintaining the buildable lands inventory with information on the development pipeline and serviceability of land.

GMA BUILDABLE LANDS PROGRAM SURVEY MARCH 2000

BACKGROUND

Amendments to the Growth Management Act (GMA) in 1997 require Snohomish County and its cities to collect data on buildable lands and analyze how planning goals are being achieved. The amendments, often referred to as the Buildable Lands Program, require local governments to monitor the amount and density of residential, commercial and industrial development that has occurred since adoption of a jurisdiction's GMA comprehensive plan. Using this information, an evaluation of the adequacy of the remaining suitable residential, commercial and industrial land supply within urban growth areas (UGAs) to accommodate projected growth at development densities observed since the adoption of GMA plans is required every five years. If the results of the 5-year buildable lands evaluation reveal deficiencies in buildable land supply within UGAs, then the county and the cities are required first to adopt and implement reasonable measures that will remedy the buildable land supply shortfall without adjusting UGA boundaries.

In December 1999, Snohomish County contracted with ECONorthwest to prepare a report that would describe methods to be used by the County and its cities in meeting state requirements for a buildable lands analysis. The scope in this project covers only the first step of a larger project: determining and getting agreement on methods to be used by jurisdictions to collect, analyze, and present information about land supply and demand. It will result in a written description of protocols for data collection and analysis, but not in the databases or analyses themselves, which will be developed after this report is completed.

WHY THIS QUESTIONNAIRE?

This questionnaire is intended to gather information from jurisdictions required to participate in the Buildable Lands Program and will be used by ECO and the Technical Advisory Committee to develop methods that meet the GMA requirements and are consistent with local resources. In particular, it will form the basis for an evaluation of local resources and desires, which, in turn, will influence the methods recommended.

The questionnaire is organized in three sections: (1) existing land use databases, (2) development history and policies, and (3) buildable lands inventories. The following information will be useful in completing the questionnaire: comprehensive plan and zoning designations, buildable lands inventory (including data dictionaries), permit tracking systems, and any technical reports you produced to accompany the adoption of your GMA comprehensive plan (e.g., housing and employment needs assessments, etc). Please attach any documents requested or that you think will be helpful in developing the buildable lands methods. For extended comments on any question, attach a separate sheet keyed the question number.

Please complete the questionnaire and send it back to ECONorthwest (address at end of questionnaire) by Thursday, March 23. If you have questions regarding the survey, please contact Bob Parker (541-346-3801) or by e-mail (rgp@darkwing.uoregon.edu).

Jurisdiction _____ Date _____

Department _____

Name _____ Title _____

Address _____

Phone _____ Fax _____ E-mail _____

Land use database

This section asks a series of general questions about your land use databases and the systems your jurisdiction uses to track land use information. This section includes some questions about buildable lands inventories, however, those questions are general in nature. The final section of the survey asks questions about buildable lands that are much more detailed.

Q-1 Does your jurisdiction have an inventory of existing land use?

- ❑ Yes
- ❑ No→ **SKIP to Q-11**

Q-2 What format is your jurisdiction's land inventory in?

- ❑ Hardcopy
- ❑ Electronic
- ❑ Combination (please describe)_____

Q-3 If your inventory is electronic, is your data in GIS format?

- ❑ Yes (specify application software):_____
- ❑ No
- ❑ NA

Q-4 How often is your inventory updated? _____

Q-5 When was your inventory last updated? _____

Q-6 Is your inventory at the tax lot (parcel) level?

- ❑ Yes
- ❑ No→ (If no, first describe at what level of geography the inventory IS organized)

_____

Q-7 What is the source of data for your land use inventory? (check all that apply)

- ❑ Assessor land use codes
- ❑ Aerial photographs
- ❑ Field verification
- ❑ Other (specify) _____

Q-8 What attributes are associated with your tax lot data? (check all that apply)

- ❑ Existing land use (what is the parcel being used for *now*?)
- ❑ Comprehensive plan designation
- ❑ Existing zoning
- ❑ Lot Area (in square feet or acres)
- ❑ Owner name
- ❑ Public Ownership
- ❑ Land value
- ❑ Improvement value
- ❑ Land classification (i.e, developed, vacant, partially-vacant, redevelopable)
- ❑ Number of buildings
- ❑ Number of housing units
- ❑ Square footage of improvements
- ❑ Year structure(s) built
- ❑ Site addresses
- ❑ Public services (i.e., water/sewer available)
- ❑ Other (specify) _____

Q-9 Can your system generate reports that combine or relate various parcel attributes? (i.e., crosstabulation of variables, analysis by groups, overlay analysis, etc)

- ❑ Yes
- ❑ No
- ❑ NA

Q-10 Do you have staff capable of generating such reports?

- ❑ Yes
- ❑ No
- ❑ NA

Q-11 Does your system include data on existing and planned capital facilities? (specifically, sewer and water facilities)

Method	Yes	No	Comments
Water Facilities			
Facilities mapped in paper map	❑	❑	
Facilities mapped in GIS data layer	❑	❑	
Facilities included as tax lot attribute	❑	❑	
Sewer Facilities			
Facilities mapped in paper map	❑	❑	
Facilities mapped in GIS data layer	❑	❑	
Facilities included as tax lot attribute	❑	❑	

Development history and policies

This section asks a series of questions regarding how your jurisdiction tracks development and what types of policies your jurisdiction may have adopted in response to the GMA buildable lands program requirements.

Q-12 Does your Comprehensive Plan include residential density targets? (please check all that apply)

- ❑ Have adopted target densities for lands within city limit
- ❑ Have adopted target densities for lands within city limit and unincorporated UGA
- ❑ Have adopted target densities for each plan designation and/or zoning district
- ❑ Have adopted overall city-wide target density only
- ❑ No adopted target densities

If you have adopted target densities, are the densities expressed in net acres or gross acres?

- ❑ Net densities
- ❑ Gross densities
- ❑ Both (please explain) _____

Net (Buildable) Acre - A Net Acre is an acre of land 100% available for supporting building, after all deductions have been made. Typical deductions are for land that is (1) already developed, (2) in public ownership, (3) constrained by natural features (e.g., water bodies, wetlands, steep slopes), (4) needed for access (public or private streets), or (5) needed for other public purposes (e.g., utility easements, schools). A net acre has 43,560 square feet available for construction, because no further street or utility dedications are required: all the land is in lots.

Gross Acre - Definitions of a Gross Acre vary, depending on how many of the deductions listed to get net acres are assumed. At one extreme, for example, a Gross Residential (vacant) Acre could be defined as all land that is planned or zoned residential and does not have buildings on it. More typical definitions first deducted '1', '2', and '3' above (i.e., a gross acre does not include developed land, land zoned for public use, or land deemed undevelopable because of natural or policy constraints). Thus, Gross Buildable Residential Land is typically defined as the land that is zoned for residential use and buildable, but which still must accommodate non-residential uses (primarily roads) at the sub-division level. Given that definition, a standard assumption is that about 20% of land in a subdivision is used for streets and utilities, and that a gross residential buildable acre will yield only about 35,000 sq. ft. (80% of a full acre) for lots.

If you use a different definition of net or gross acres, please explain here or on attachment:

Q-13 Does your jurisdiction require minimum density standards for new development?

- ❑ Yes → If Yes, please describe
- ❑ No

Q-14 Does your jurisdiction have a zoning code that allows for mixed-use development?

- ❑ Yes → If Yes, please describe
- ❑ No

Q-15 Have there been any revisions to your GMA comprehensive plan or zoning regulations since January 1, 1995 that may impact allowable densities (either by increasing or decreasing allowable yields)?

- ❑ Yes → If Yes, please describe
- ❑ No

Q-16 Please complete the matrix on next two pages by listing your jurisdiction's comprehensive plan designations and descriptions. Please include any standard abbreviations for each plan designation if used by your jurisdiction. Also, please provide a list of implementing zones for each plan designation, along with descriptions for each zone (and any standard zoning abbreviations if used by your jurisdiction). The table below provides a sample of how the matrix should be filled out.

Plan Des	Related Zoning Districts	Abbrv Title	Min Lot Size/Density	Max Lot Size/Density	Target Density
Single-family Res		SFR	5000 sf	10000 sf	6 DU/Net Acre
	Low Density Res	R1	6000 sf	NA	5 DU/Net Acre
	Medium Density Res	R2	5000 sf	8000 sf	8 DU/Net acre
Multiple family Res		MFR	2500/DU	NA	15 DU/Net acre
	Medium-High Density Res	R3	2500/DU	NA	12 DU/Net acre
	High Density Res	R4	2500/DU	NA	20 DU/Net acre
Commercial		C	5000 sf	NA	FAR 2.0
	Neighborhood Comm	NC	5000 sf	1 acre	FAR 0.5

Q-16 Please complete the matrix below by listing your jurisdiction's comprehensive plan designations and descriptions. Please include any standard abbreviations for each plan designation if used by your jurisdiction. Also, please provide a list of implementing zones for each plan designation, along with descriptions for each zone (and any standard zoning abbreviations if used by your jurisdiction). See other side if you need more space. Please include a copy of any materials you think would be helpful in understanding your comprehensive plan designations and zoning districts.

Plan Des	Related Zoning Districts	Abbrv Title	Min Lot Size/Density (Specify density units)	Max Lot Size/Density (Specify density units)	Target Density

Q-16 continued

Plan Des	Related Zoning Districts	Abbrv Title	Min Lot Size/Density (Specify density units)	Max Lot Size/Density (Specify density units)	Target Density

Q-17 Please answer the following questions regarding development tracking in your jurisdiction.

Codes for tracking systems:
M—Manually
E—Electronically
C—Combination (Please explain under "Comments" above)

If your development tracking system is electronically maintained, please describe above under "Comments" the type of software used (e.g., GIS, database, spreadsheet software, etc.)

Indicator	Included (circle one)	Tracking System (circle one)	Comments (use this space to give a reference to any attached comments)
Can determine total new housing units by zone and plan designation each year	Yes No Partially	M E C	
Can determine the total acres of new residential development by zone and plan designation each year	Yes No Partially	M E C	
Can determine the number of lots platted by zone and plan designation each *year, within both formal and short plat subdivisions*	Yes No Partially	M E C	
Can determine the *gross acreage* of land used for new platted residential lots by zone and plan designation each year, within both formal and short plats	Yes No Partially	M E C	
Can determine the *gross acreage* of land used for new multi-family residential development by zone and plan designation each year	Yes No Partially	M E C	
Can determine the *net acreage* of land used for new platted residential lots by zone and plan designation each year, within both formal and short plats	Yes No Partially	M E C	
Can determine the *net acreage* of land used for new multi-family residential development by zone and plan designation each year	Yes No Partially	M E C	
Can determine the number of acres of land developed for new employment uses by zone and plan designation each year	Yes No Partially	M E C	
Can determine the floor area of new commercial and industrial uses developed for employment by zone and plan designation each year	Yes No Partially	M E C	
Can determine floor area of new residential uses separately from new commercial uses for mixed-use developments.	Yes No Partially	M E C	

Q-18 Does your jurisdiction have an inventory of total housing units by housing type (i.e., single-family, multiple family, manufactured homes, etc) that provides more detail than simply the total estimated number of housing units by type within your jurisdiction?

- ❑ Have inventory for city limit only
- ❑ Have inventory for city limit and unincorporated UGA
- ❑ Have inventory for other area(s) (specify) _____
- ❑ Do not have inventory → **Go to Q-19**

If you have an inventory, what is the source of data for the inventory? (Check all that apply)

- ❑ Census
- ❑ Census + occupancy permits
- ❑ Assessment data
- ❑ Windshield survey
- ❑ Local study (specify title and date) _____
- ❑ Other (specify) _____

If you have an inventory, how frequently is it updated?

- ❑ Annually
- ❑ Other time period (specify) _____

When was it last updated?

_____

Q-19 Does your jurisdiction track information on unoccupied (or significantly under-utilized) commercial and industrial buildings that could be used to accommodate future demand for employment space needs?

- ❑ No → Go to the next question
- ❑ Yes → Please answer the following:

  A. What is the data source? _____

  B. How frequently is the data updated?_____

  C. When was the data last updated? _____

Q-20 Does your jurisdiction track estimates of the number of employees within existing commercial and industrial structures?

- ❑ No → Go to the next question
- ❑ Yes → Please answer the following:

  A. What is the data source? _____

  B. How frequently is the data updated?_____

  C. When was the data last updated? _____

Q-21 Please indicate which of the following permits are tracked by your jurisdiction, whether the data are available back to Jan. 1, 1995, whether the data include the data of submittal, and what system(s) used to track the data. Please include any other relevant information in the comments column.

Permit Type	Tracked (Y/N)	Data back to 1/1/95	Data include date of submittal	System (circle all that apply)	Comments
Building permits issued (residential, commercial and industrial)	Y N	Y N	Y N	Paper Database Spreadsheet GIS	
Approved site plans for multi-family residential, commercial and industrial development	Y N	Y N	Y N	Paper Database Spreadsheet GIS	
Final subdivision approvals	Y N	Y N	Y N	Paper Database Spreadsheet GIS	
Final short subdivision approvals	Y N	Y N	Y N	Paper Database Spreadsheet GIS	
Pending subdivisions and short subdivisions under review (both proposed and preliminarily approved)	Y N	Y N	Y N	Paper Database Spreadsheet GIS	
Pending multi-family residential, commercial and industrial building permits under review	Y N	Y N	Y N	Paper Database Spreadsheet GIS	
Certificates of occupancy issued for new residential, commercial and industrial development	Y N	Y N	Y N	Paper Database Spreadsheet GIS	

Buildable lands inventory

This section of the survey asks a series of questions about buildable lands information your jurisdiction may maintain that could help satisfy some of the GMA buildable lands inventory requirements.

Q-22 Has your jurisdiction completed a buildable lands inventory?

- ❑ No → You are done with this survey: thank you.
- ❑ Yes → Please answer the following:
  - A. When was it last updated? _____
  - B. What format is it in? (GIS/paper, etc) _____

Q-23 Please indicate which land classifications were used in your buildable lands inventory/land capacity analysis (check all that apply).

- ❑ Vacant land
- ❑ Under-utilized/underdeveloped land
- ❑ Redevelopable land
- ❑ Partially used land
- ❑ Undevelopable land (constrained or other)

Vacant land - Parcels of land that have no structures or have buildings with very little value.

Under-Utilized Land - All parcels of land zoned for more intensive use than that which currently occupies the property. For instance, a single-family home on multifamily-zoned land will generally be considered under-utilized.

Redevelopable Land - Land on which development has already occurred but on which, due to present or expected market forces, there exists the strong likelihood that existing development will be converted to more intensive uses during the planning period.

Partially-used Land - Are parcels occupied by a use but which contain enough land to be further subdivided without need of rezoning. For instance, a single house on a 10-acre parcel, where urban densities are allowed, is partially developed.

Undevelopable Land - Parcels that are undevelopable due to size (e.g., the parcel is under the minimum lot size for the zone) or environmental constraints.

Please attach any documentation you may have which defines the land classification assumptions that you have used previously.

Q-24 Please indicate whether "market availability" assumptions were used in your buildable lands inventory/land capacity analysis (i.e., you assumed that a certain amount or percentage of land would be held out from development over your plan's 20-year timeframe).

- ❑ No → go to the next question
- ❑ Yes → please answer the following:

  A. Does documentation of the assumptions used exist?

  - ❑ Yes → If yes, return a copy with the completed questionnaire.
  - ❑ No

Q-25 Please indicate whether your jurisdiction has completed any of the following analyses (check all that apply; please write comments in the final column or on an attached sheet).

Analysis	For City Limit	For UGA	Document Name	Date	Reference to Comments
Forecasts					
Population Forecast	**C P**	**C P**			
Employment Forecast	**C P**	**C P**			
Land Need Analysis					
Housing Needs by housing type and density range	**C P**	**C P**			
Employment Land Needs associated with anticipated commercial and industrial employment growth	**C P**	**C P**			
Public Facility Needs by type (see Q-27 matrix)	**C P**	**C P**			
Buildable Lands Inventory					
Residential Land	**C P**	**C P**			
Employment Land	**C P**	**C P**			
Public/Other Land	**C P**	**C P**			
Land Capacity Analysis					
Residential Land	**C P**	**C P**			
Employment Land	**C P**	**C P**			
Public/Other Land	**C P**	**C P**			

Consistency with GMA requirements:
C—Consistent with GMA requirements
P—Partially meets GMA requirements

Please provide copies of any of the above analyses that are complete.

Q-26 What types of environmental/critical areas constraints were included, and how where they estimated?

Constraint Type	Included	If yes, deduction type:	Source of Data (are data mapped, and if so, on paper or GIS?)	Notes on assumptions/definitions how applied
Wetlands	Y N	N G S		
Frequently flooded areas	Y N	N G S		
Geologically hazardous areas/Steep slopes Specify % _____	Y N	N G S		
Riparian zones or corridors	Y N	N G S		
Aquifer recharge areas				
Fish and wildlife habitat conservation areas				
Contaminated sites	Y N	N G S		
Other environmental constraints (specify) _____	Y N	N G S		

Deduction type codes:

N—No Deduction
G—General Deduction
S—Site Specific Deduction (tax lot)

Does documentation of the assumptions used exist? (If yes, return a copy with the completed questionnaire.)

- ❑ Yes
- ❑ No
- ❑ NA

Please attach any documentation of constraint deductions that you think would be helpful.

Q-28 Please indicate if land needed for **future** public purposes other than residential and employment uses is defined and estimated in your land capacity analysis.

Land Use Type	Included	If yes, deduction type:	Source of Data (are data mapped, and if so, on paper or GIS?)	Notes on assumptions/definitions how applied
Parks/Open space	Y N	N G S		
Schools	Y N	N G S		
Municipal offices	Y N	N G S		
Rights-of-way	Y N	N G S		
Police/Fire facilities	Y N	N G S		
Stormwater drainage/detention	Y N	N G S		
Water storage	Y N	N G S		
Wastewater treatment and pump stations	Y N	N G S		
Landfills or transfer stations	Y N	N G S		
Power line right-of-ways	Y N	N G S		
Roads	Y N	N G S		
Airport clear zones	Y N	N G S		
Greenbelt	Y N	N G S		
Other (specify) _____	Y N	N G S		

Deduction type codes:
N—No Deduction
G—General Deduction
S—Site Specific Deduction (known tax lot locations)

Please attach any documentation of public facility deductions that you think would be helpful.

Please return this survey to:

Bob Parker
ECONorthwest
99 West 10th Avenue, Suite 400
Eugene, Oregon 97401

If you have questions concerning this survey, please contact Bob Parker at 541-346-3801 or via e-mail (rgp@darkwing.uoregon.edu)

Thank you for completing the survey

Appendix D

Cost Estimates

OVERVIEW

A key issue in the implementation of the buildable lands work program is project cost. The primary costs will be for labor at the county and city level. To estimate costs for this project, ECO developed a spreadsheet that allocates hours of effort by task, and then turns that into dollars based on assumptions about wage rates. The spreadsheet has three sections (tabs) in addition to this overview:

- Effort By Task shows the estimates of hours, by task, by jurisdiction. It distinguishes between Technical Hours and Meeting Hours. The body of the matrix shows estimated hours for one jurisdiction in each class; the two right-most columns and the bottom row sum for all jurisdictions (cities, County, consultants).
- Hourly Rate shows estimate hourly rates, by labor class, by jurisdiction. It calculates a melded hourly rate (a weighted average rate based on the percentage of each labor type, and its costs, that is expected to work on the project. [For this version of the spreadsheet, hourly rates by labor class for all cities and the County are assumed the same. The spreadsheet allows the rates to be different.]
- Cost Budget shows the costs of the project, by jurisdiction, and the budget allocated to each jurisdiction. It reads hours from Effort By Task and rates from Hourly Rate to calculate cost. At the bottom it has a section that allows a budget allocation, which is blank in this version.

For the estimates, Consultant Hours (and therefore, Consultant Budget) is set to zero. We assume that the County will do all the technical work that a consultant could be hired to do. The County will decide as part of Phase I, Start-up, whether to shift some of its staff hours to a consultant. The spreadsheet would then calculate costs at a different rate. Based on the current estimates, for every hour shifted from the County to a consultant, costs would increase by about $75. Thus, for example, consultant contracts for 600 hours of work (shifted from the County), would add about $45,000 to the cost.

City estimates are tricky. We have tried to make realistic estimates for cities based on the assumptions that (1) the County is doing most of the work, and (2) every city in a class will be equally involved. Our experience with the TAC suggest that cities, even in the same size class, will have different levels of commitment and involvement. Thus, even if the estimates are approximately correct for a given city, the total for all cities in that class will be overestimated because some cities will participate little, if at all.

Because the County is the designated coordinating entity for this project, and because they will be responsible for a substantial amount of the technical work, 61% of total project cost is allocated to the County. The TAC recommends that the small cities in "Group 4" be eligible for buildable lands funding, but that they be given the option of participating in the buildable lands data collection effort as a condition of receiving the funding. For Group 4 cities that decide not to participate, the County agrees to do the necessary buildable lands work for them. Funds initially allocated to the small cities that "opt out" in this way would be retained by the County to help cover the costs of doing their work.

This appendix also includes a summary of city and county responsibilities by task. This is intended to serve as a quick reference to the work program.

CLASSIFICATION OF CITIES

We assumed that the amount of effort (staff time) any city would be required to contribute would be a function of (1) size (population), (2) amount and capabilities of staff, and (3) resources (primarily the availability of staff). Based on these considerations we placed the cities in four groups:

Group 1 Largest Cities with Full GIS Capabilities

- Everett
- Edmonds
- Lynnwood

Group 2 Mid-size Cities with Some GIS Capabilities

- Mountlake Terrace
- Marysville
- Mukilteo
- Bothell
- Mill Creek
- Monroe
- Snohomish
- Arlington

Group 3 Smaller Cities with no GIS and Very Small Staff

- Brier
- Lake Stevens
- Stanwood
- Sultan

Group 4 Smallest Cities with No Planning Staff

- Granite Falls
- Gold Bar
- Darrington
- Woodway

- Index

In general, we allocated fewer hours to small jurisdictions on the assumption that they had:

- Less staff and staff time available
- Less to do (smaller area, less complicated analysis)
- More help from the County

The following tables summarize the cost estimates.

Table D-1. Level of effort, by task, by jurisdiction, TAC recommendation

City labor Budget = $129,000; Tech budget allocated based on average of per capita and growth % estimated hours

	HOURS													
	Tech	Meet	Tech	Meet	Tech	Meet	Tech	Meet	Tech	Meet	TOT HRS	$ (000)	% City $	Direct Cost (allocated by city % in $000)
Group 1														
Everett	751	78							751	78	829	$24.5	19%	$1.33
Edmonds	221	78							221	78	299	$8.8	7%	$0.48
Lynnwood	280	78							280	78	358	$10.6	8%	$0.57
Group 2														
Mountlake Terrace			134	78					134	78	212	$6.3	5%	$0.34
Marysville			232	78					232	78	310	$9.2	7%	$0.50
Mukilteo			164	78					164	78	242	$7.1	6%	$0.39
Bothell			284	78					284	78	362	$10.7	8%	$0.58
Mill Creek			100	78					100	78	178	$5.2	4%	$0.28
Monroe			189	78					189	78	267	$7.9	6%	$0.43
Snohomish			70	78					70	78	148	$4.4	3%	$0.24
Arlington			135	78					135	78	213	$6.3	5%	$0.34
Group 3														
Brier					37	78			37	78	115	$3.4	3%	$0.18
Lake Stevens					54	78			54	78	132	$3.9	3%	$0.21
Stanwood					71	78			71	78	149	$4.4	3%	$0.24
Sultan					32	78			32	78	110	$3.2	3%	$0.18
Group 4														
Granite Falls							23	78	23	78	101	$3.0	2%	$0.16
Gold Bar							20	78	20	78	98	$2.9	2%	$0.16
Darrington							9	78	9	78	87	$2.6	2%	$0.14
Woodway							5	78	5	78	83	$2.5	2%	$0.13
Index							1	78	1	78	79	$2.3	2%	$0.13
TOTAL	1252	234	1308	624	194	312	59	390	2813	1560	4373	$129.0	100%	$7.00

Table D-2. Basis for Calculating level of effort, by task, by jurisdiction, TAC recommendation

				1999 Pop	% City Pop	New Hsng Permits (DU's) 95-99	Ratio of City Total to City Mean	New Comm & Ind Permit Value 95-99	Ratio of City Total to City Mean	Sum of Ratios	% of City Hsng, Comm & Ind Growth
		Group 1									
			Everett	86730	29.6%	3368	4.4	135,530,758	5.2	9.5	23.8%
			Edmonds	38610	13.2%	576	0.7	7,197,881	0.3	1.0	2.5%
			Lynnwood	33140	11.3%	789	1.0	63,146,138	2.4	3.4	8.6%
		Group 2									
			Mountlake Terrace	20270	6.9%	162	0.2	21,932,182	0.8	1.0	2.6%
			Marysville	20680	7.1%	1799	2.3	38,176,502	1.5	3.8	9.5%
			Mukilteo	17180	5.9%	1161	1.5	21,280,469	0.8	2.3	5.8%
			Bothell	13310	4.5%	1143	1.5	125,487,069	4.8	6.3	15.7%
			Mill Creek	11110	3.8%	897	1.2	4,114,085	0.2	1.3	3.3%
			Monroe	11450	3.9%	1620	2.1	45,289,989	1.7	3.8	9.6%
			Snohomish	8250	2.8%	411	0.5	8,851,786	0.3	0.9	2.2%
			Arlington	7350	2.5%	1472	1.9	24,352,350	0.9	2.8	7.1%
		Group 3									
			Brier	6350	2.2%	135	0.2	0	0.0	0.2	0.4%
			Lake Stevens	6100	2.1%	530	0.7	455,454	0.0	0.7	1.8%
			Stanwood	3380	1.2%	534	0.7	23,092,716	0.9	1.6	3.9%
SNOHOMISH COUNTY	583300		Sultan	2955	1.0%	337	0.4	1,703,442	0.1	0.5	1.3%
Unincorporated	290240	Group 4									
Incorporated	293060		Granite Falls	2010	0.7%	264	0.3	1,247,058	0.0	0.4	1.0%
			Gold Bar	1810	0.6%	221	0.3	803,777	0.0	0.3	0.8%
			Darrington	1245	0.4%	34	0.0	1,393,899	0.1	0.1	0.2%
			Woodway	990	0.3%	14	0.0	0	0.0	0.0	0.0%
			Index	140	0.0%	1	0.0	0	0.0	0.0	0.0%
			TOTAL ALL CITIES	293060	100%	15468	20	524,055,555	20	40	100.0%
			TOTAL WITHOUT SMALL CITIES	288675						39	

Table D-3. Cost and Budget

Jurisdiction type	Staff Hours	Labor Cost	Direct Cost	Total Cost	% of Total Cost
Snohomish County	7,128	$210	$4	**$214**	61%
Consultants	0	$0	$0	**$0**	0%
Group-1 Cities (3)	1,486	$44	$2	**$46**	13%
Group-2 Cities (8)	1,932	$57	$3	**$60**	17%
Group-3 Cities (4)	506	$15	$1	**$16**	4%
Group-4 Cities (5)	448	$13	$1	**$14**	4%
Subtotal All Cities	4,372	$129	$7	**$136**	39%
Total County, Consultant, All Cities	**11,500**	**$339**	**$11**	**$350**	**100%**

Source: ECONorthwest, 2000

Table D-4. Costs and rates

Rates for Group-1 Cities

Position	Hourly Rate	Percent Effort
Planning Manager	$40	15%
Senior Planner	$35	20%
Associate Planner	$30	20%
Assistant Planner	$25	30%
Research Assistan	$20	10%
Clerical	$20	5%
		100%
Melded Public Rate/Hour:		**$29.50**

Rates for Group-2 Cities

Position	Hourly Rate	Percent Effort
Planning Manager	$40	15%
Senior Planner	$35	20%
Associate Planner	$30	20%
Assistant Planner	$25	30%
Research Assistan	$20	10%
Clerical	$20	5%
		100%
Melded Public Rate/Hour:		**$29.50**

Rates for Group-3 Cities

Position	Hourly Rate	Percent Effort
Planning Manager	$40	15%
Senior Planner	$35	20%
Associate Planner	$30	20%
Assistant Planner	$25	30%
Research Assistant	$20	10%
Clerical	$20	5%
		100%
Melded Public Rate/Hour:		**$29.50**

Rates for Group-4 Cities

Position	Hourly Rate	Percent Effort
Planning Manager	$40	15%
Senior Planner	$35	20%
Associate Planner	$30	20%
Assistant Planner	$25	30%
Research Assistan	$20	10%
Clerical	$20	5%
		100%
Melded Public Rate/Hour:		**$29.50**

Rates for Snohomish County

Position	Hourly Rate	Percent Effort
Planning Manager	$40	15%
Senior Planner	$35	20%
Associate Planner	$30	20%
Assistant Planner	$25	30%
Research Assistan	$20	10%
Clerical	$20	5%
		100%
Melded Public Rate/Hour:		**$29.50**

Rates for Consultants

Position	Hourly Rate	Percent Effort
Planning Manager	$130	30%
Senior Planner	$100	10%
Associate Planner	$85	30%
Assistant Planner	$60	40%
Research Assistant	$50	5%
Clerical	$40	5%
		120%
Melded Private Rate/Hour:		**$103.00**

This worksheet allows the estimation of a different **melded rate** for four city types, the County, and a (hypotheitical) consultant.

A melded rate is a weighted average cost per hour for labor. Hourly rates and the percent of effort by labor type, by jurisdcition, are set in this spreadsheet. The resulting melded rate is reference in the worksheet *EffortByTask* to estimate total labor costs by jurisdiction.

Public sector hourly rates include salary and burden (benefits + taxes). Benefits (vacation, sick, health, retirement, other) estimated at 20-25% of salary; employer payroll taxes estimated at 10% of salary.
Position titles may vary: The main idea is that each matrix shows up to five levels of technical analysts (planners, GIS specialists, etc.) plus clerical.

Highlighted cells are assumptions.
They are variables that may be adjusted by users.

Table D-5. COUNTY RESPONSIBILITIES

Phase I: Startup			
1.1	Assignment of County Project Manager		Lead role.
1.2	Project Organization		Lead role.
1.3	TAC Kick-Off Meeting		Lead role.
1.4	Consultant Selection		Lead role.
1.5	Final Agreements on Scope		Lead role.
Phase II: Data Analysis			
2.1	Standardized Comprehensive Plan Categories		Lead role – prepare draft for city review.
2.2	Buildable Lands Inventory		
	2.2.1	Land Evaluation	
	2.2.1.1	Generalized land classification system	Lead role – prepare draft for city review.
	2.2.1.2	Land-use classification	Lead role – prepare draft for city review.
	2.2.1.3	Inventory and map constraints and critical areas	Lead role – assemble existing data and convert to GIS format for unincorporated areas and incorporated areas where necessary.
	2.2.1.4	Comp plan designations and zoning	Lead role – assemble existing data and convert to GIS format for unincorporated areas and incorporated areas where necessary.
	2.2.1.5	Other tax lot attributes (sewer and water services, market availability assumptions)	Lead role – assemble existing data and convert to GIS format for unincorporated areas and incorporated areas where necessary.
	2.2.2	Preliminary inventory and mapping	Lead role – produce maps for city and county local review.
	2.2.3	Local review and proofing	Responsible for local review and proofing for unincorporated areas.
	2.2.4	Review and update GIS	Lead role – incorporate necessary changes from local review into GIS.
2.3	Growth And Development History		
	2.3.1	Population growth trends	Lead role – prepare draft for city review.
	2.3.2	Employment growth trends	Lead role – prepare draft for city review.
	2.3.3	Annexations/incorporations	Lead role – prepare draft for city review.
	2.3.4	Residential development trends	
		SFR – Recorded formal plats	Lead role – currently maintain countywide list for GMR back to 1995.
		Add comp plan designations	Prepared for unincorporated areas and for cities that provided this historic info for previous GMR efforts.
		Add zoning	Prepared for unincorporated areas and for cities that provided this historic info for previous GMR efforts.
		Add condos w/ segregated lots	To be conducted for unincorporated areas.
		SFR – Recorded short plats	Lead role – currently maintain countywide list for GMR back to 1995.
		Add comp plan designations	If needed, to be prepared for cities that provided this info for GMR.
		Add zoning	If needed, to be prepared for cities that provided this info for GMR.
		Add critical areas	
		Add road dedications	

		Add existing SFRs	If needed, to be prepared for cities that provided this info for GMR.
		MFR – Issued building permits	Lead role – currently maintain countywide building permit database.
		Add gross site area	To be prepared for unincorporated areas and for cities that have this info on their building permits.
		Add critical areas	To be prepared for unincorporated areas.
		Add comp plan designations	To be prepared for unincorporated areas.
		Add zoning	To be prepared for unincorporated areas and for cities that have this info on their building permits.
		Add road dedications	To be prepared for unincorporated areas.
	2.3.5	Housing market trends	Lead role – prepare draft for city review.
	2.3.6	Commercial and industrial development trends	
		Comm/Ind – Issued building permits	Lead role – currently maintain countywide building permit database.
		Add gross site area	To be prepared for unincorporated areas and for cities that have this info on their building permits.
		Add critical areas	To be prepared for unincorporated areas.
		Add gross floor area of improvements	To be prepared for unincorporated areas and for cities that have this info on their building permits.
		Add comp plan designations	To be prepared for unincorporated areas.
		Add zoning	To be prepared for unincorporated areas and for cities that have this info on their building permits.
		Add road dedications	To be prepared for unincorporated areas.
2.4	Development Pipeline		Provide annual subdivision and short subdivision data for unincorporated areas for GMR effort.
2.5	Estimate of Land Demand and Capacity		
	2.5.1	Population and employment forecasts	Lead role – prepare draft for city review.
	2.5.2	Land needed for residential uses	Lead role – prepare draft for city review.
	2.5.3	Land needed for employment uses	Lead role – prepare draft for city review.
	2.5.4	Land needed for other uses	Lead role – prepare draft for city review.
	2.5.5	Estimate of Land Capacity	Lead role – prepare draft for city review.
Phase III: Consolidation and Reporting			
3.1	Consolidation		
	3.1.1	Analysis of actual vs. target densities	Lead role – prepare draft for city review.
	3.1.2	Comparison of capacity (supply) and need (demand)	Lead role – prepare draft for city review.
3.2	Five-Year Growth Monitoring Report		
	3.2.1	Draft five-year growth monitoring report	Lead role – prepare draft for city review.
	3.2.2	Final five-year growth monitoring report	Lead role – prepare draft for city review.

Note:

GMR = Growth Monitoring Report

Table D-6. City responsibilities

Phase I: Startup			
1.1	Assignment of County Project Manager		Participation on TAC.
1.2	Project Organization		Participation on TAC.
1.3	TAC Kick-Off Meeting		Participation on TAC.
1.4	Consultant Selection		Participation on TAC.
1.5	Final Agreements on Scope		Participation on TAC.
Phase II: Data Analysis			
2.1	Standardized Comprehensive Plan Categories		Review assumptions and results.
2.2	Buildable Lands Inventory		
	2.2.1	Land Evaluation	Review assumptions and results.
	2.2.1.1	Generalized land classification system	Review assumptions and results.
	2.2.1.2	Land-use classification	Review assumptions and results.
	2.2.1.3	Inventory and map constraints and critical areas	Provide pertinent data to County for GIS conversion (optional, since the County will convert other existing data for cities if necessary)
	2.2.1.4	Comp plan designations and zoning	Provide pertinent data to County for GIS conversion.
	2.2.1.5	Other tax lot attributes (sewer and water services, market availability assumptions)	Provide pertinent data to County for GIS conversion.
	2.2.2	Preliminary inventory and mapping	To be performed by the County.
	2.2.3	Local review and proofing	Significant review and validation activities by city staff.
	2.2.4	Review and update GIS	To be performed by the County.
2.3	Growth And Development History		
	2.3.1	Population growth trends	Review assumptions and results.
	2.3.2	Employment growth trends	Review assumptions and results.
	2.3.3	Annexations/incorporations	Review assumptions and results.
	2.3.4	Residential development trends	
		SFR – Recorded formal plats	
		Add comp plan designations	Review master list from the County and fill-in missing values.
		Add zoning	Review master list from the County and fill-in missing values.
		Add condos w/ segregated lots	To be conducted by city staff, if applicable (e.g., Everett).
		SFR – Recorded short plats	Analysis by city staff if a significant percentage of total lots created in the city is through short platting (e.g., above 25% -- this would include Woodway, Edmonds, Everett, Brier, Darrington and Mountlake Terrace. See list below.).
		Add comp plan designations	If needed, review master list from the County and fill-in missing values.
		Add zoning	If needed, review master list from the County and fill-in missing values.
		Add critical areas	If needed, add to master list.

		Add road dedications	If needed, add to master list.
		Add existing SFRs	If needed, review master list from the County and fill-in missing values.
		MFR – Issued building permits	
		Add gross site area	Review master list from the County and fill-in missing values (currently, only Everett has this item coded on the County's master list, and it is only partially complete).
		Add critical areas	Add to master list.
		Add comp plan designations	Add to master list.
		Add zoning	Review master list from the County and fill-in missing values (based on info provided on building permits, zoning is partially available in the master list for the following cities: Everett, Granite Falls, Lake Stevens, Marysville, Stanwood and Woodway).
		Add road dedications	Add to master list.
	2.3.5	Housing market trends	Review assumptions and results.
	2.3.6	Commercial and industrial development trends	
		Comm/Ind – Issued building permits	
		Add gross site area	Review master list from the County and fill-in missing values (currently, only Everett has this item coded on the County's master list, and it is only partially complete).
		Add critical areas	Add to master list.
		Add gross floor area of improvements	Review master list from the County and fill-in missing values (this item is already mostly complete on the master list, using information obtained from each city's issued building permit).
		Add comp plan designations	Add to master list.
		Add zoning	Review master list from the County and fill-in missing values (based on info provided on building permits, zoning is partially available in the master list for the following cities: Everett, Granite Falls, Lake Stevens, Marysville, Stanwood and Woodway).
		Add road dedications	Add to master list.
2.4	Development Pipeline		Continue providing annual subdivision and short subdivision data for annual SCT growth monitoring.
2.5	Estimate of Land Demand and Capacity		
	2.5.1	Population and employment forecasts	Review assumptions and results
	2.5.2	Land needed for residential uses	Review assumptions and results
	2.5.3	Land needed for employment uses	Review assumptions and results
	2.5.4	Land needed for other uses	Provide pertinent data, review assumptions and results
	2.5.5	Estimate of Land Capacity	Review assumptions and results
Phase III: Consolidation and Reporting			
3.1	Consolidation		
	3.1.1	Analysis of actual vs. target densities	Review assumptions and results
	3.1.2	Comparison of capacity (supply) and need	Review assumptions and results

		(demand)	
3.2	Five-Year Growth Monitoring Report		
	3.2.1	Draft five-year growth monitoring report	Review draft report
	3.2.2	Final five-year growth monitoring report	Review final report

Table D-7. Percentage of total lots recorded 1995-99 through short platting by city

	1995 to 1999			
	FP Lots	SP Lots	Total Lots	% SP
Woodway	0	3	3	**100%**
Edmonds	56	197	253	**78%**
Everett	299	669	968	**69%**
Brier	74	59	133	**44%**
Darrington	12	6	18	**33%**
Mountlake Terrace	76	30	106	**28%**
Mukilteo	250	43	293	**15%**
Lynnwood	192	29	221	**13%**
Gold Bar	78	11	89	**12%**
Granite Falls	168	23	191	**12%**
Marysville	934	127	1061	**12%**
Sultan	349	47	396	**12%**
Stanwood	315	35	350	**10%**
Bothell	178	19	197	**10%**
Lake Stevens	455	48	503	**10%**
Monroe	1316	131	1447	**9%**
Uninc SW	4857	376	5233	**7%**
Arlington	1067	50	1117	**4%**
Snohomish	160	6	166	**4%**
Mill Creek	597	10	607	**2%**
Index	0	0	0	**0%**

Appendix E Proposed Data Structure

This appendix presents the proposed coding and data structure for the database systems needed to implement the work program. It includes the regional land use matrix, land use classification codes, and data structures for GIS data elements. It also includes sample calculations for the land needs and capacity analysis that are included in this report for illustrative purposes only.

The following tables are included in this appendix:

- Table E-1. Regional land use matrix – shows the detailed relationship between local zoning and regional classifications.
- Table E-2. Portland Metro generalized plan designation and zoning classifications – shows Metro's regional land classification categories.
- Table E-3. Snohomish County land use classification system – shows the recommended land use codes.
- Table E-4. Proposed GIS data layers – existing or new GIS data layers that are necessary to complete the buildable lands inventory.
- Table E-5. Proposed tax lot file structure – the data elements required to implement the methods described in chapter 5.
- Table E-6. Overview of land need simulator – a summary of the steps to calculate land need and capacity.
- Table E-7. Population and employment forecasts – the base data for the land need calculations.
- Table E-8. Land need assumptions – the base assumptions for the land need calculations.
- Table E-9. Results – the summary results for the land need calculations.
- Table E-10. Summary of residential land need – detailed results for residential lands.
- Table E-11. Summary of employment land need – detailed results for employment land need.
- Table E-12. Other land need – sample calculations for other land need.
- Table E-13. Employment and mixed use capacity – sample calculations for estimating capacity of land designated for employment and mixed land uses.

- Table E-14. Residential capacity – sample calculations for estimating capacity for land designated for residential uses.
- Table E-15. Sample land supply calculations – shows calculations for buildable land inventory data.

Table E-1. Snohomish County regional land classification matrix (SAMPLE)

CITY	Plan Des	Related Zoning Districts	Abbrv Title	Min Lot Size/ Density	Max Lot Size/Density[1]	Target Density	Common Countywide Plan Designation Category
Snohomish County	Urban Low Density Residential	Residential 7,200 SF	R-7,200	7,200 SF - 4 DU/Acre*	~ 6 DU/Acre		Urban Low Density Residential
	4-6 DU/Acre	Planned Residential Dev. 7,200 SF	PRD-7,200	4,500 SF - 4 DU/Acre*	~ 10 DU/Acre		
		Residential 8,400 SF	R-8,400	8,400 SF - 4 DU/Acre*	~ 5 DU/Acre		
		Planned Residential Dev. 8,400 SF	PRD-8,400	4,500 SF - 4 DU/Acre*	~ 10 DU/Acre		
		Residential 9,600 SF	R-9,600	9,600 SF - 4 DU/Acre*	~ 4.5 DU/Acre		
		Planned Residential Dev. 9,600 SF	PRD-9,600	4,500 SF - 4 DU/Acre*	~ 10 DU/Acre		
		Waterfront Beach	WFB	7,200 SF - 4 DU/Acre*	~ 6 DU/Acre		
	Urban Medium Density Residential	Low Density Multiple Residential	LDMR	7,200 SF - 4 DU/Acre*	~ 11 DU/Acre	(based on 4,000 SF/DU)	Urban Medium Density Residential
	6-12 DU/Acre	Planned Residential Dev. LDMR	PRD-LDMR	None - 4 DU/Acre*	~ 13 DU/Acre		
		Townhouse	T	SF/MH 7,200, Townhomes should avg. to 2,000 SF	9 DU/Acre		
		Residential 7,200 SF	R-7,200	7,200 SF - 4 DU/Acre*	~ 6 DU/Acre		
		Planned Residential Dev. 7,200 SF	PRD-7,200	4,500 SF - 4 DU/Acre*	~ 10 DU/Acre		
		Waterfront Beach	WFB	7,200 SF - 4 DU/Acre*	~ 6 DU/Acre		
	Urban High Density Residential	Multiple Residential	MR	7,200 SF - 4 DU/Acre*	~ 22 DU/Acre	(based on 2,000 SF/DU)	Urban High Density Residential
	12-24 DU/Acre	Planned Residential Dev. Multi Fam	PRD-MR	None - 4 DU/Acre*	~ 26 DU/Acre		

[1] Densities are generally expressed in net acres for single-family zones and gross acres for multiple family zones.

CITY	Plan Des	Related Zoning Districts	Abbrv Title	Min Lot Size/ Density	Max Lot Size/Density[1]	Target Density	Common Countywide Plan Designation Category
		Low Density Multiple Residential	LDMR	7,200 SF - 4 DU/Acre*	~ 11 DU/Acre (based on 4,000 SF/DU)		
		Planned Residential Dev. LDMR	PRD-LDMR	None - 4 DU/Acre*	~ 13 DU/Acre		
	Urban Commercial	Neighborhood Business	NB	None	25', 35% (Res=MR)		Urban Commercial
		Planned Community Business	PCB	5 Acres	40', None (Res=MR)		
		Community Business	CB	None	35', 50% (Res=MR)		
		General Commercial	GC	None	45', 50% (Res=MR)		
		Freeway Service	FS	None	35', None (Res=MR)		
		Business Park	BP	4 Acres	50', 35% (Res=MR)		
	Urban Industrial	Business Park	BP	4 Acres	50', 35% (Res=MR)		Urban Industrial
		Light Industrial	LI	None	50', None		
		Heavy Industrial	HI	None	65', None		
		Industrial Park	IP	None	65', 50%		
	*Minimum density of 4 DU/Acre is required in all UGAs except Darrington, Gold Bar and Index						
Everett	1.1	Suburban Residential	R-S	9,000 sf. - 3 DU/acre	5 DU/acre		Urban Low Density Residential
	1.2	Single Family Detached	R-1	6,000 sf. - 5 DU/acre	10 DU/acre		Urban Medium Density Residential
	1.2	Single Family-Medium Density	R-2	4,500 sf. - 5 DU/acre	10 DU/acre		
	1.3	same	R-2	4,500 sf. - 5 DU/acre	10 DU/acre		Urban Medium Density Residential
	1.3	Single Family Attached	R-1A	4,500 sf. - 5 DU/acre	10 DU/acre		
	1.4	Single Family Attached-Med Density	R-2A	4,500 sf. - 12 DU/acre	15 DU/acre		Urban High Density Residential

CITY	Plan Des	Related Zoning Districts	Abbrv Title	Min Lot Size/ Density	Max Lot Size/Density[1]	Target Density	Common Countywide Plan Designation Category
	1.5	Multi Family-Low Density	R-3L	5,000 sf. - 15 DU/acre	20 DU/acre		Urban High Density Residential
	1.6	Multi Family-Medium Density	R-3	5,000 sf. - 20 DU/acre	29 DU/acre		Urban High Density Residential
	1.7	Multi Family-High Density	R-4	5,000 sf. - 30 DU/acre	50 DU/acre		Urban High Density Residential
	1.8	Core Residential	R-5	5,000 sf.	50+ DU/acre		Urban High Density Residential
	3.1	Central Business District	B-3	5,000 sf.	no max		Mixed-use
	3.1	General Commercial	C-1	5,000 sf.	no max		Mixed-use
	3.1	Comm. Shopping	B-2	5,000 sf.	58 DU/acre		Mixed-use
	6.1	Agricultural	A-1	5 acres			
Edmonds	Single Family – Small Lot	Single Family	RS-6		1 unit / 6,000 sq.ft.	5-to-8 units/acre	Urban Medium Density Residential
	Single Family – Small Lot	Single Family	RS-8		1 unit / 8,000 sq.ft.		
	Single Family – Large Lot	Single Family	RS-12		1 unit / 12,000 sq.ft.	Less than 5/acre	Urban Low Density Residential
	Single Family – Large Lot	Single Family	RS-20		1 unit / 20,000 sq.ft.		
	Multi Family – High Density	Multi Family	RM-1.5		1 unit / 1,500 sq.ft. (lot)		Urban High Density Residential
	Multi Family – High Density		RM-2.4		1 unit / 2,400 sq.ft.		
	Multi Family – Medium Density	Multi Family	RM-2.4		1 unit / 2,400 sq.ft.		Urban High Density Residential
	Multi Family – Medium Density	Multi Family	RM-3		1 unit / 3,000 sq.ft.		
	Mixed Use	Community Business (or mix of zones)	BC		N/A – Limited by bulk & parking		Mixed Use
	Commercial Hi-Rise	General Commercial	CG, CG2		Unlimited		Urban Commercial
	Commercial	General Commercial	CG/CG2		35/45 foot height limit		Urban Commercial
	Commercial	Commercial	CW		30 foot height limit		

CITY	Plan Des	Related Zoning Districts	Abbrv Title	Min Lot Size/ Density	Max Lot Size/Density[1]	Target Density	Common Countywide Plan Designation Category
		Waterfront					
	Commercial	Planned Business	BP		FAR 3.0		
	Commercial	Neighborhood Business	BN		FAR 3.0		
	Hospital-Medical	Medical Use	MU		35 foot height limit, unless covered by Master Plan in Comp. Plan		Urban Commercial
Lynnwood	SF-1 Large Lot Single-Family	RS-12 Single-Family	RS-12	12,500 sq. ft.	NA	3-4 DU/acre	Urban Low Density Residential
	SF-1 Large Lot Single-Family	RS-9 Single-Family	RS-9	9,600 sq. ft.	NA	4 DU/acre	
	SF-1 Large Lot Single-Family	RS-8 Single-Family	RS-8	8,400 sq. ft.	NA	5 DU/acre	
	SF-2 Small Lot Single-Family	RS-7 Single-Family	RS-7	7,200 sq. ft.	NA	6 DU/acre	Urban Low Density Residential
	MF-1 Low Density Multiple-Family	Low Density Multiple-Family	RML	3,600 sq. ft.	NA	12 DU/acre	Urban Medium Density Residential
	MF-2 Medium Density Multiple-Family	Medium Density Multiple-Family	RMM	2,400 sq. ft.	NA	18 DU/acre	Urban High Density Residential
	*MF-3 High Density Multiple-Family	High Density Multiple	RMH	1,200 sq. ft.	NA	36 DU/acre	Urban High Density Residential
	*MF-3 High Density Multiple-Family	High Rise Multiple	RMHR	1,000 sq. ft.	NA	43 DU/acre	
	LC Local Commercial	Community Business	BC				Urban Commercial
	LC Local Commercial	Neighborhood Business	BN				
	RC Regional Commercial	General Commercial	CG				Urban Commercial
	RC Regional Commercial	Planned Regional Commercial	PRC				
	RC Regional Commercial	Planned Commercial Development	PCD				
	RC Regional Commercial	Restricted Business	B-4				

CITY	Plan Des	Related Zoning Districts	Abbrv Title	Min Lot Size/ Density	Max Lot Size/Density[1]	Target Density	Common Countywide Plan Designation Category
	RC Regional Commercial	Limited Business	B-2				
	OC Office Commercial	(No specific zone)					Urban Commercial
	BT Business Technical	Business/Tech Park	BTP				Urban Industrial
	LI Light Industrial	Light Industrial	LI				Urban Industrial
	PF Public Facilities	Public Use	P-1				
	PF Public Facilities	Highway Services	C-2				
	RO Reservation/Open Space	(No specific zone)					
	MU Mixed Use	Mixed Use	MU		24 DU/acre max.		Mixed Use
	* Currently being developed to add to Plan this year. RMH + RMHR zones already exist.						
Mountlake Terrace	Single Family Residential		SFR				Urban Low Density Residential
		Single Household Residential	RS 7200	7,200 sq. ft		5/acre	
		Single Household Residential	RS 8400	8,400 sq. ft.		6/acre	
	Low Density Multi-Family*		RML				Urban Medium Density Residential
		Low Density Multi Household	RML	5,400 sq. ft.		8/acre	
	Medium Density Multi-Family*		RMM				Urban High Density Residential
		Med Density Multi Household	RMM	2,700 sq. ft. with no lot smaller than 5,400 sq. ft.		16/acre	
	Mobile Home Park		MHP				Urban Medium Density Residential
		Mobile Home Park	MHP	2,400 sq. ft. with no MHP smaller than 5 acres		9/acre	
	Special Development District		SDD				
		Special Development District	SDD	.25 acres		12/acre	

CITY	Plan Des	Related Zoning Districts	Abbrv Title	Min Lot Size/ Density	Max Lot Size/Density[1]	Target Density	Common Countywide Plan Designation Category
	Park and Open Space		POS				
		Recreation & Park	REC	N/A	N/A	N/A	
	Community Business		BC				Mixed Use
		Community Business	BC	No minimum lot size requirement. M.F. permitted only in conjunction w/ comm.			
		Community Business Downtown	BC/D	Density is driven by bulk requirements & ability to meet parking req.			
	General Commercial		CG				Urban Commercial
		General Commercial	CG	N/A	N/A	N/A	
	Light Industrial/Office Park		LI/OP				Urban Industrial
		Light Industrial/Office Park	LI/OP	N/A	N/A	N/A	
	Public Facilities & Services		PFS				
		Public Facilities/Services	PFS	N/A	N/A	N/A	
	*Single household residential development is permitted in RM districts with min. land area of 4,800 sq. ft./lot w/ a density of 9/acre.						
Marysville	Single Family Med. Density	R-4.5	R-4.5	5,000 sq. ft., 4.5 DU/net acre	N/A	4-5 DU/net acre	Urban Low Density Residential
	Single Family High Density	R-6.5	R-6.5	5,000 sq. ft., 6.5 DU/net acre	N/A	5-7 DU/net acre	Urban Low Density Residential
	Single Family High Density Small Lot	R-8	R-8	8,000 sq. ft., 8 DU/net acre	N/A	8 DU/net acre	Urban Medium Density Residential
	Multi-Family Low Density	R-12	R-12	12 DU/net acre	N/A	6-12 DU/net acre	Urban Medium Density Residential
	Multi-Family Medium Density	R-18	R-18	18 DU/net acre	N/A	12-18 DU/net acre	Urban High Density Residential
	Multi-Family High Density	R-28	R-28	28 DU/net acre	N/A	18-28 DU/net acre	Urban High Density Residential
	Community Commercial*	Community Business	CB	12 DU/net acre	N/A	None	Urban Commercial

CITY	Plan Des	Related Zoning Districts	Abbrv Title	Min Lot Size/ Density	Max Lot Size/Density[1]	Target Density	Common Countywide Plan Designation Category
	General Commercial*	General Commercial	GC	12 DU/net acre	N/A	None	Urban Commercial
	Downtown Commercial*	Downtown Commercial	DC	12 DU/net acre	N/A	None	Urban Commercial
	Mixed Use	Mixed Use	MU	28 DU/net acre	N/A	None	Mixed Use
	*All units must be above street-level commercial.						
Mukilteo	SFR High Density	RD 7.2		7,200 sq. ft.			Urban Low Density Residential
		RD 7.5		7,500 sq. ft.			
		Waterfront Beach	WFB	7,200 sq. ft.			
	SFR Medium Density			8,400 sq. ft.			Urban Low Density Residential
				9,600 sq. ft.			
				9,600 sq. ft.			
	SFR Low Density			12,500 sq. ft.			Urban Low Density Residential
				12,500 sq. ft.			
	MFR-High Density	Multi-family Residential	MR	20,000 sq. ft. 2,000?			Urban High Density Residential
	MFR-Low Density	Multi-family Residential	MRD	3,350 sq. ft.			Urban High Density Residential
	Mixed Use	Planned Community Bus. South	PCB(S)	none			Urban Commercial
		MFR high density	MR	2,000 sq. ft./DU			
		Business Park	BP	none			
	Commercial	Downtown Business	DB	none			Urban Commercial
		Community Business	CB	none			
		Community Business South	CB (S)	none			
		Planned Community Business	PCB	1 acre			
		Planned	PCB(S)	none			

CITY	Plan Des	Related Zoning Districts	Abbrv Title	Min Lot Size/ Density	Max Lot Size/Density[1]	Target Density	Common Countywide Plan Designation Category
		Community Bus. South					
		Public-Semi Public	PSP	1 acre			
		Waterfront Mixed Use	WMU	none			
	Industrial	Business Park	BP	none			Urban Industrial
		Planned Industrial	PI	none			
		Industrial Park	IP	none			
		Light Industrial	LI	none			
		Heavy Industrial	HI	none			
	Open Space	Open Space	OS	none			
Bothell (part in Snoh. Co.)	R1	R1 (detached units)		1 DU/acre (43,560 s.f.)	none	none	Urban Low Density Residential
	R 2-5	R2 (detached units)		2 DU/acre (20,000 s.f.)	none	none	Urban Low Density Residential
		R3 (detached units)		3 DU/acre (12,500 s.f.)	none	none	
		R4 (detached units)		4 DU/acre (9,600 s.f.)	none	none	
		R5 (detached units)		5 DU/acre (8,400 s.f.)	none	none	
	R 6-10	R6 (detached units)		6 DU/acre (7,200 s.f.)	none	none	Urban Medium Density Residential
		R8d (detached units)		8 DU/acre (5,400 s.f.)	none	none	
		R8a (attached units ok)		8 DU/acre (5,400 s.f.)	none	none	
	R 11-15	R11 (detached units)		11 DU/acre (4,000 s.f.)	none	none	Urban High Density Residential
		R15 (detached units)		15 DU/acre (2,800 s.f.)	none	none	
	OP	Office Professional	OP		none	none	Urban Commercial
	NB	Neighborhood Business	NB		none	none	Urban Commercial
	CB	Commercial Business	CB		none	none	Urban Commercial

CITY	Plan Des	Related Zoning Districts	Abbrv Title	Min Lot Size/ Density	Max Lot Size/Density[1]	Target Density	Common Countywide Plan Designation Category
	GC	General Commercial	GC		none	none	Urban Commercial
	LI	Light Industrial	LI		none	none	Urban Industrial
	SSHO	Specialized Senior Housing Overlay	SSHO	No theoretical limit, but dimensional standards apply.	none	none	
	MHP	Mobile Home Park	MHP	Typically R11 or R15 (reflects existing development)	none	none	Urban Medium Density Residential
	*Attached pages describe each plan designation in detail.						
Mill Creek	Residential-Low Density	Low Density Residential	LDR	8,400 sq. ft.	N/A	up to 4 du/gross acre	Urban Low Density Residential
		PRD 7200	PRD 7200	5,000 sq. ft.	N/A	up to 4 du/gross acre	
	Residential-Medium Density	Medium Density Residential	MDR	N/A	N/A	5-12 du/gross acre	Urban Medium Density Residential
		PRD 7200	PRD 7200	5,000 sq. ft.	N/A	up to 12 du/gross acre	
	Residential-High Density	High Density Residential	HDR	N/A	N/A	16-24 du/gross acre	Urban High Density Residential
	Mixed Use/High Density Residential	Mixed Use/High Density Residential	MU/HDR	N/A	N/A	7-24 du/gross acre [up to 30 du/gross acre with incentives]	Mixed Use
	Community Business	Community Business	CB	7,200 sq. ft.	N/A	16 du/acre max	Urban Commercial
	Neighborhood Business	Neighborhood Business	NB	N/A	N/A	30 du/acre max	Urban Commercial
	Office Park	Office Park	OP	N/A	N/A	N/A	Urban Commercial
	Town Center	Planned Community Business	PCB	N/A	N/A	24 du/acre max	Urban Commercial
	Business Park	Business Park	BP	N/A	N/A	(permits retirement housing permitted through CUP-no	Urban Commercial

CITY	Plan Des	Related Zoning Districts	Abbrv Title	Min Lot Size/ Density	Max Lot Size/Density[1]	Target Density	Common Countywide Plan Designation Category
						max density)	
	Public-Quasi Public	None				This category used primarily to show where facilities are located. Not where future facilities are going to be located.	
Monroe							
Snohomish							
Arlington	Medium Density Residential	Residential Moderate Density	MDR	7,200 sf	4-6 du/acre	6 du/acre	Urban Low Density Residential
	Medium-High Density Residential	Residential-Low/Moderate Density	MHDR	7,200 sf	4-6 du/acre	6 du/acre	Urban Low Density Residential
	High Density Residential	Residential High Density	HDR	4,585 sf	12-24 du/acre	24 du/acre	Urban High Density Residential
	Old Town	Old Town	OT	4,356 sf	6-12 du/acre	8 du/acre	Urban Medium Density Residential
	Neighborhood Commercial	Neighborhood Commercial	NC	6,000 sf			Urban Commercial
	General Commercial	General Commercial	GC	10,000 sf– 2 ac			Urban Commercial
	Central Business District	Central Business District	CBD	5,000 sf – 0.5 ac			Urban Commercial
	Highway Commercial	Highway Commercial	HC	10,000 sf – 2 ac			Urban Commercial
	Airport Industrial	Airport Industrial	AI	10,000 sf – 2 ac			Urban Industrial
	Industrial	Industrial	I	10,000 sf – 50 ac			Urban Industrial
	Business Park	Business Park	BP	None			Urban Commercial
	Airport Restricted	(none)	AR	N/A			
	Existing Parks/Open Space	(none)	(none)	N/A			
	Existing Public Use Land	(none)	(none)	N/A			
Brier	Single Family Residential		RS	12,500 sq. ft.	NA	NA	Urban Low Density Residential
	Single Family Residential		RS	20,000 sq. ft.	NA	NA	
	Commercial	Neighborhood Business	BN		Max Bldg = 4,000 sq. ft.	NA	Urban Commercial

CITY	Plan Des	Related Zoning Districts	Abbrv Title	Min Lot Size/ Density	Max Lot Size/Density[1]	Target Density	Common Countywide Plan Designation Category
	Public Use		P		NA	NA	
	Cemetery Use		UC		NA	NA	
	Permanent Open Space		OS		NA	NA	
Lake Stevens	Low Density Residential		LDR		NA	> 4 DU/acre	Urban Low Density Residential
		Estate Residential	ER	12,500	NA	> 4 DU/acre	
		Neighborhood Commercial	NC	3,000	NA	> 4 DU/acre	
		Commercial Recreation	CR	0	NA	> 4 DU/acre	
		Public/Semi Public	P/SP	0	NA	> 4 DU/acre	
	Medium Density Residential		MDR	NA	NA	4-12 DU/acre	Urban Medium Density Res.
		Suburban Residential	SR	9,600	NA	4-12 DU/acre	
		Waterfront Residential	WR	9,600	NA	4-12 DU/acre	
		Urban Residential	UR	7,500	NA	4-12 DU/acre	
		High Urban Residential	HUR	3,600	NA	4-12 DU/acre	
		Neighborhood Commercial	NC	3	NA	NA	
		Commercial Recreation	CR	0	NA	NA	
		Public/Semi Public	P/SP	0	NA	NA	
	High Density Residential		HDR	NA	NA	> 12 DU/acre	Urban High Density Residential
		Multi-Family Residential	MFR	3,000	No max density	> 12 DU/acre	
		Neighborhood Commercial	NC	3,000	NA	NA	
		Commercial Recreation	CR	0	NA	NA	
		Public/Semi Public	P/SP	0	NA	NA	
	Waterfront Residential		WR	NA	NA	> 4 DU/acre	Urban Low Density Residential

CITY	Plan Des	Related Zoning Districts	Abbrv Title	Min Lot Size/ Density	Max Lot Size/Density[1]	Target Density	Common Countywide Plan Designation Category
		Waterfront Residential	WR	9,600	NA	> 4 DU/acre	
		Commercial Recreation	CR	0		NA	
		Public/Semi Public	P/SP	0		NA	
	Downtown/Local Commercial		D/LC	NA		NA	Urban Commercial
		Local Business	LB	3,000		NA	
		Central Business	CBD	3,000	No max density	NA	
		Commercial Recreation	CR	0		NA	
		Public/Semi Public	P/SP	0		NA	
	Sub-Regional Commercial		SRC	NA		NA	Urban Commercial
		Sub-Regional Commercial	SRC	0		NA	
		Commercial Recreation	CR	0		NA	
		Public/Semi Public	P/SP	0		NA	
	Mixed Use		MU	NA		NA	Urban Commercial
		Mixed Use	MU	3,000	No max density	NA	
		Commercial Recreation	CR	0		NA	
		Public/Semi Public	P/SP	0		NA	
	Planned Business District		PBD	NA		NA	Urban Commercial
		Planned Business District	PBD	0	No max density	NA	
		Commercial Recreation	LR	0		NA	
		Public/Semi Public	P/SP	0		NA	
	Light Industrial		LI	NA		NA	Urban Industrial
		Commercial Recreation	CR	0		NA	
		Light Industrial	LI	0		NA	
		Public/Semi Public	P/SP	0		NA	
	General Industrial		GI	NA	NA	NA	Urban Industrial
		General Industrial	GI	0	NA	NA	
		Light Industrial	LI	0	NA	NA	

CITY	Plan Des	Related Zoning Districts	Abbrv Title	Min Lot Size/ Density	Max Lot Size/Density[1]	Target Density	Common Countywide Plan Designation Category
		Commercial Recreation	CR		0 NA	NA	
		Public/Semi Public	P/SP		0 NA	NA	
	Public/Semi Public		P/SP	NA	NA	NA	
		Commercial Recreation	CR		0 NA	NA	
		Public/Semi Public	P/SP		0 NA	NA	
	Suburban Agriculture		SA	NA	NA	1 DU/5 acres	
		Public/Semi Public	P/SP		0 NA	NA	
		Suburban Agriculture	SA	5 acres	NA	NA	
Stanwood	Max 3.5 DU/acre		SR-12.4	12,400 sq. ft.	3.5 DU/acre		Urban Low Density Residential
	Max 4 DU/acre		SR-9.6	9,600 sq. ft.	4 DU/acre		Urban Low Density Residential
	Max 6 DU/acre		SR-7.0	7,000 sq. ft.	6 DU/acre		Urban Low Density Residential
	Max 10 DU/acre		SR-5.0	5,000 sq. ft.	10 DU/acre		Urban Medium Density Residential
	Neighborhood Business	Neighborhood Business	NB	6,000 sq. ft.			Urban Commercial
	Mainstreet Business I	Mainstreet Business I	MB I	2,500 sq. ft.			Urban Commercial
	Mainstreet Business II	Mainstreet Business II	MB II	2,500 sq. ft.			Urban Commercial
	General Commercial	General Commercial	GC	10,000 sq. ft.			Urban Commercial
	Light Industrial	Light Industrial	LI	8,000 sq. ft.			Urban Industrial
	General Industrial	General Industrial	GI	10,000 sq. ft.			Urban Industrial
	Public Facility						
	Max 20 DU/acre	Multi-Family Residential	MR	4,500 sq. ft. /1 acre MR	20 DU/acre		Urban High Density Residential
Sultan	Residential Low Density	Low/Moderate Density	LMD	10,890 sq. ft.	7 units/acre		Urban Low Density Residential
	Residential Medium Density	Moderate Density	MD	7,200 sq. ft.	10 units/acre		Urban Medium Density Residential

CITY	Plan Des	Related Zoning Districts	Abbrv Title	Min Lot Size/ Density	Max Lot Size/Density[1]	Target Density	Common Countywide Plan Designation Category
	Residential High Density	High Density	HD	2,178 sq. ft. / DU	20 units/acre		Urban High Density Residential
	Commercial	Highway Oriented Development + Urban Center	HOD+UC	10,000 sq. ft.	24 units/acre		Urban Commercial
	Office/Industrial	Economic Development	ED	10,000 sq. ft.	N/A		Urban Commercial/Urban Industrial
		Highway Oriented Development + Urban Center	HOD+UC				
	Institutional	N/A					
	Parks	N/A					
Granite Falls							
Gold Bar							
Darrington	Single Family Residential		R-SF	10,000 sq. ft.	NA	4 DU/acre	Urban Low Density Residential
	Multiple Family Residential		R-MD	7,200 sq. ft.	NA	10 DU/acre	Urban Medium Density Residential
	Commercial		CD	none	none		Urban Commercial
	Light Industrial		LI/M	none	none		Urban Industrial
Woodway	Conservation	Conservation	C	N/A	N/A	N/A	
	Forested Residential Park	Residential	R-87	2 acres	N/A	N/A	Urban Low Density Residential
	Forested Residential Park	Residential	R-43	1 acre	N/A	N/A	
	Suburban Residential	Residential	R-14.5	1/3 acre	N/A	N/A	Urban Low Density Residential
	Urban Residential	Residential	UR	1/4 acre	N/A	N/A	Urban Low Density Residential
Index	Did not respond						

Table E-2. Portland Metro regional plan designation and zoning categories

Description	Plan Class	Zone Class
Central Commercial	CC	CC
General Commercial	CG	CG
Neighborhood Commercial	CN	CN
Office Commercial	CO	CO
Agriculture or Forestry - lot sizes of 30 acres or more	FF	FF
Industrial Area	IA	IA
Heavy Industrial	IH	IH
Light Industrial	IL	IL
Mixed Use Industrial	IMU	IMU
Multi Family - 2 to 25 units per acre	MFR1	MFR1
Multi Family - 25 to 50 units per acre	MFR2	MFR2
Multi Family - 50 to 100 units per acre	MFR3	MFR3
Multi Family - over 100 units per acre	MFR4	MFR4
Mixed Use - town centers, main streets, corridors	MUC1	MUC1
Mixed Use - light rail stations, regional centers	MUC2	MUC2
Mixed Use - central city	MUC3	MUC3
Public Facilities	PF	PF
Parks & Open Space	POS	POS
Rural or Future Urban - lots sizes of one acre or more	RRFU	RRFU
Single Family - lot sizes of 20000 sq. ft. and greater	SFR1	SFR1
Single Family - lot sizes of 12000 to 20000 sq. ft.	SFR2	SFR2
Single Family - lot sizes of 8500 to 12000 sq. ft.	SFR3	SFR3
Single Family - lot sizes of 6500 to 8500 sq. ft.	SFR4	SFR4
Single Family - lot sizes of 5500 to 6500 sq. ft.	SFR5	SFR5
Single Family - lot sizes of 4000 to 5500 sq. ft.	SFR6	SFR6
Single Family - lot sizes of 0 to 4000 sq. ft.	SFR7	SFR7

Source: Metro, 2000

Table E-3. Snohomish county existing land use inventory categories (SAMPLE)

Residential

(SF) 1-2 Family

- Single Family Residence
- Mobile Home
- Duplex
- Manufactured Home

(MF) Multi-Family

- Apartment
- Townhouse
- Multiple
- Condominium

(MHP) Mobile Home Park

- Mobile Home Park

(GP) Group Quarters

- Rooming house
- Membership lodging
- Dormitory
- Retirement home
- Orphanage
- Religious residences
- Other group quarters

(GE) Government/Education

- Fire Station
- Government Building
- School
- Government services
- Education Services
- Cultural activities
- Other cultural activities and nature exhibitions

(QPI) Quasi-Public/lnstitutional

- Church
- Cemetery
- Religious activities
- Welfare and charitable services
- Other miscellaneous services
- Sports assembly
- Public assembly, miscellaneous purposes

Commercial

(EC) Extensive Commercial

- Warehouse Mini
- Lumber and Other Building Materials
- Motor Vehicles-Retail

Farm and Garden Supplies-Retail
Fuel and Ice-Retail
Equipment Rental and Leasing Services
Automobile and truck Rental Services
Contract Service (general contractors, roofing and sheetmetal services, electrical services)
Wrecking Yards
Towing Co.

(RC) Retail Commercial

Market
Mini-lube Garage
Service Stations
Convenience Stare
Fast Food Restaurant
Motel
Restaurants
Discount Stores
Banks
Non-Res Condominium
Hotel/Motel
Heating and Plumbing Equipment-retail
Paint Glass and Wallpaper-retail
Electrical Supplies-retail
Hardware and Farm Equipment
Retail-General Merchandise (department stores, mail order houses)
Retail-Food (grocery stores, meat markets, bakeries)
Tires, batteries, and accessories-retail
Gasoline Service Stations
Other retail trade
Retail-apparel (clothing. shoes)
Retail-furniture (furniture, china, draperies)
Retail-eating (restaurants, drinking places)
Drug and propriety-retail
Liquor-retail
Antiques and Second Hand Merchandise
Book and Stationery
Sporting Goods and Bicycles-Retail
Jewelry-Retail
Other Retail Trade
Finance Service (banks, title, brokerages)
Personal Services (barbers, laundry, funeral homes), except cemeteries
Advertising Services
Consumer and Mercantile Credit Reporting Services; Adjust and Collect Services
Duplication-Mailing and Stenographic Services
Dwelling and Other Building Services

News Syndicate Services
Employment Services
Detective and Protective Services
Photofinishing Services
Trading Stamp Services
Motion Picture distribution and Services
Other business Services
Repair Services

(OC) Office Commercial

Medical Office
Veterinary Hospital
Research development, and Testing Services
Business and Management consulting Services
Professional Services (physician services, dental services, legal services, planning services)

Industrial

(WH) Warehouse

Warehouse Distributing
Warehousing and Storage Services
Wholesale Trade (autos-wholesale, groceries-wholesale)

(MFG) Manufacturing

Food Products Manufacturing
Textiles
Apparel
Wood Products Manufacture
Furniture
Paper
Printing
Chemicals
Petroleum
Rubber
Stone/Clay
Metal
Prefab Metal
Instrument Manufacture
Other

(UTC) Utility/Transportation/Communication

Railroad transportation
Motor vehicle transportation
Aircraft transportation
Marine transportation
Auto parking
Communication transportation
Utilities transportation

Other transportation

(ROW) ROW

Highway ROW

(RP) Resource Processing and Production

Agricultural farms
Agricultural processing
Animal services
Other agricultural services
Fishing
Mining
Other resources
Greenhouse

(REC) Private Parks/Recreation Facilities

Theater
Bowling Alley
Nature exhibitions
Entertainment assembly
Other public assembly
Amusement park
Recreation activities
Resort/camp activities
Other cultural activities

Parks

Parks

Water

Water

Undeveloped Land

Table E-4. Proposed GIS data coverages (SAMPLE)

Assessor Tax Lot (base) coverage
National Wetlands Inventory
Local Wetlands Inventory (where available)
Soil Classification
Groundwater Recharge Areas
Wildlife Conservation Areas
FEMA FIRM coverage
Contours (use DEM to calculate % slope)
Areas Prone to Landslide
Plan Designation/Zoning (could be tax lot attribute)

Table E-5. Proposed tax lot file structure (SAMPLE)

Note: fields in italics are new data elements, fields in bold are derived fields, underlined fields are new fields that need to be populated with data merged from other databases

Tax account number
Land classification (developed, vacant, redevelopable, etc)
Land use code
Generalized land use classification
Building/structure uses (including detail on multiple uses per parcel when applicable)
Assessment (land)
Assessment (structure)
Ratio (Assessment [structure]/Assessment[land])
Parcel size (acres)
Parcel size class (<1, 1-5, 5-9, 10-19, 20-29, 50+)
Owner name
Business/tenant name
Site address (number, street, city, zip code)
Township
Range
Section
Quarter section
Levy code
Deed type
Tax exempt status
Plat/development name
Street access
Sewer
Water source
Serviceability classification (1, serviced; 2, planned service; 3, not serviced)
View quality
Waterfront type
Tidelands
Topography
Number of bedrooms
Building grade

Building condition

Square footage (building)

Floor Area Ratio (Square footage [building]/Parcel size [sq ft])

Square footage (first floor)

Square footage (for each use in a mixed use

Number of stories

Number of residential units

Number of non-residential units

Sales price

Sales date

Year built

Zoning

Regional land designation

Special zones (flood hazard, FAA)

National wetlands inventory

Local wetlands inventories (where they exist)

Soils (from County soil survey)

Wetlands acres (may be derived based on ratio of hydric soils to wetlands)

Actual or derived acres flag

Area (sq ft or acres) in groundwater recharge areas

Wellhead on site flag

Present or future aquifer recharge area

Type of conservation area (fish/wildlife, other?)

Area (sq ft or acres) in conservation areas

Area in conservation buffer (derived from area in conservation and buffer assumption)

FEMA FIRM District(s)

Area (sq ft or acres) in floodway

Area (sq ft or acres) in floodplain

Area in slopes over 25%

Area with unstable soils or landslide potential

Table E-6. Overview of Snohomish Land Need and Built Space Simulator

The simulator consists of five worksheets in addition to this one:

1. Forecast: contains the population and employment forecasts for the city and potential annexation areas.
2. Assmptn: contains highlighted cells for all of the variables that can be changed in the simulation.
3. Results: contains the output of the simulation.
4. Res Land: contains the calculations and detailed results for the residential lands component of the simulator.
5. Emp Land: contains the calcuations and detailed results for the employment land and built space needs component of the simulator.
6. Other Land: containts the calculations and results for the other land needs component of the simulator.
7. Capacity: calculates capacity for non-residential and mixed-use zones.

For standard runs of this simulator, ONLY THE ASSUMPTIONS NEED TO BE CHANGED (Tab: Assmptn). Everything else is automatic. Changes to other Worksheets my cause the model to operate incorrectly.

(SAMPLE)

Table E-7. Summary of revised population and employment forecasts for city limit, Potential Annexation Area (PAA), and combined city limits and PAA, 2000-2020

Year	Population			Employment		
	City limits	PAA	City limits + PAA	City limits	PAA	City limits + PAA
2000	81,150	28,247	109,397	29,055	2,291	31,346
2010	93,431	29,924	123,355	33,867	2,466	36,333
2020	101,150	31,579	132,729	37,232	2,839	40,071
Change 2000-2020	20,000	3,332	23,332	8,177	548	8,725
Percent Change 2000-2020	25%	12%	21%	28%	24%	28%
AAGR 2000-2020	1.11%	0.56%	0.97%	1.25%	1.08%	1.24%

(SAMPLE)

Table E-8. Assumptions for Forecasts for Sample UGA

This worksheet contains inputs for all of the variables that can be changed for the Federal Way forecast. The cells highlighted in gray are the key assumptions that can be changed in the simulator.

Population and employment (aggregate forecast)

City Limits

	2000	2020	Change 2000-2020
Population	81,150	101,150	20,000
Covered Employment	29,055	37,232	8,177
Percent of employment not covered:			0%
Total emp	29,055	37,232	8,177

Population forecast from jurisdiction; employment forecast--includes only covered employment

Estimate of percent of total employment not covered

Total employment = covered emp/(1-percent not covered)

Potential Annexation Areas

	2000	2020	Change 2000-2020
Population	28,247	31,579	3,332
Covered Employment	2,291	2,839	548
Percent of employment not covered:			0%
Total emp	2,291	2,839	548

Employment distribution from PSRC forecast;

Employee per acre ratios are consistent with those used in the 2020 forecast; square feet of floor area per employee from Kent Study

Employment by sector (details)

Sector	Percent of new emp (2000 2020)	% of total emp that requires no non-res built space /land	Percent of emp on existing developed land	Adjust for vacancy rate	Emp/Acre	Sq. ft. floor area/emp	Implied FAR
Retail	15%	1%	5%	7%	25.0	700	0.40
FIRES	70%	2%	10%	7%	35.0	350	0.28
Manufacturing	3%	1%	10%	5%	12.0	650	0.18
WTCU	5%	1%	10%	5%	15.0	600	0.21
Education	5%	0%	15%	0%	10.0	400	0.09
Government	2%	0%	15%	0%	35.0	400	0.32
Total	100%	5%					

Residential assumptions (details)

Variable	Assumption
New persons in group quarters (2000-2020)	200
Average household size	2.35
Vacancy rate	5%
New DU for decreased HH size of 2000 pop	0

Persons in group quarters assumption requires analysis; average HH size from PSRC forecast; New DU, see calc at right

New DU needed for decreased HH size	Value
Housing units in 2000	31,729
Average HH size 2000	2.50
Average HH size 2020	2.50
New DU needed for decreased HH size	0

The calculations above estimate the number of new DU needed to accommodate existing population because overall household sizes are decreasing.

Type	Valid Range	Percent of DU	Density (DU/Net Res Acre)	Net-to-gross factor	Density (DU/Gross Res Acre)
Single-family by lot size					
<5000	8.7	5%	10.0	18%	8.2
5000-9999	4.4-8.7	32%	6.0	16%	5.0
10000-19999	2.2-4.4	9%	3.5	14%	3.0
20,000+	<2.2	2%	1.7	10%	1.5
Total/Average Single Family		48%	5.0		4.3
Multiple family					
Duplex		3%	9.0	18%	7.4
Row House		2%	13.5	14%	11.6
Garden Apt		37%	19.6	10%	17.6
Mid-rise		10%	26.0	5%	24.7
Total/Average Multiple Family		52%	17.2		15.7
TOTAL/AVERAGE ALL TYPES		**100%**	**8.4**		**7.3**

The housing type mix assumes a 55/45 split between single-family and multiple family dwellings.

The allocation of single-family units by lot size is based on analysis of the distribution of lot sizes in other cities, and then adjusted for jurisdiction.

The allocation of multiple family units is based on Census data and then adjusted to reflect a probable distribution of units in jurisdiction.

Redevelopment

[Densities are net after replacement of DU or emp displaced]

Residential (DU/Gross residential acre)	12.0
Commercial (Emp/Gross commercial acre)	11.0
Percent of new DU on redeveloped land	10%
Percent of employment on redeveloped land	0%

Simulation assumes that all residential redevelopment will result in garden apartment densities (18 DU/gross acre); population accommodated will be 2/3 that amount, assuming that on average, 6 DU per acre are demolished as part of redevelopment. Commercial redevelopment will increase accommodate new employment at 1/2 the new commercial development assumption (22 emp/gross acre).

(SAMPLE)

Table E-9. Projected land use and built space needs, 2000-2020

Forecasts	2000	2005	2010	2015	2020
Population	81,150	86,150	91,150	96,150	101,150
Employment					
Total Employment	29,055	31,099	33,144	35,188	37,232
Emp Requiring Built Space	0	2,044	4,089	6,133	8,177

Results

Type	City Limits	PAA	Total (city limits + PAA)	Percent of all land need 2000-2020
Residential (DU)				
Single-family by lot size				
<5000	399	67	466	5%
5000-9999	2,554	430	2,984	29%
10000-19999	718	121	839	8%
20,000+	160	27	187	2%
Total Single Family	3,831	645	4,476	43%
Multiple family				
Duplex	239	40	280	3%
Row House	160	27	187	2%
Garden Apt	3,840	646	4,487	43%
Mid-Rise	798	134	933	9%
Total Multiple Family	5,038	848	5,885	57%
Total Residential	**8,869**	**1,492**	**10,361**	**100%**
Employment (Acres)				
Retail	na	na	47	17%
FIRES	na	na	154	57%
Manufacturing	na	na	15	5%
WTCU	na	na	18	7%
Education	na	na	34	13%
Government	na	na	4	2%
Total Employment	na	na	**272**	**100%**

Built Space Need

Type	City Limit	PAA	Total
Retail	761,279	51,019	812,298
FIRES	1,754,089	117,554	1,871,643
Manufacturing	110,022	7,373	117,395
WTCU	154,545	10,357	164,903
Education	136,229	9,130	145,359
Government	61,164	4,099	65,263
Total Built Space	2,779,935	186,304	2,966,238

(SAMPLE)

Table E-10. Sample Residential Land Worksheet

This worksheet estimates residential land needs. Residential land needs are a function of population, persons in group quarters, vacancy rates, household sizes, housing mix, and housing density.

Base data

Population	Persons	Change from 2000
City limit		
2000 Population	81,150	-
2010 (extrapolated)	91,150	10,000
2020	101,150	20,000
TAZ study area		
2000 Population	28,247	-
2010 (extrapolated)	29,913	1,666
2020	31,579	3,332

General Assumptions	
New persons in group quarters	200
Average household size	2.35
Vacancy rate	5.0%
New units on redeveloped land	10.0%
New DU needed for decreased HH size	0

Housing Need, New DU, 2000-2020	City Limit	PAA	Total
Change in persons	20,000	3,332	23,332
-Change in persons in group quarters	200	-	200
=Persons in households	19,800	3,332	23,132
+Persons per occupied DU	2.35	2.35	2.35
=Occupied dwelling units	8,426	1,418	9,843
/ (1-vacancy rate)	95%	95%	95%
=DU needed for new pop	8,869	1,492	10,361
+DU needed for decreased HH size	-	-	-
=TOTAL NEW DU needed	**8,869**	**1,492**	**10,361**
New DU on redeveloped land	887	149	1,036
New DU on vacant land	7,982	1,343	9,325
Density of redeveloped DU (DU/Gross ac)	12.0	12.0	12.0

Density Assumptions for development on vacant land (does not include redevelopment)	Percent of new housing	DU/Net Acre	Net to Gross factor	DU/ Gross Acre
Single-family by lot size				
<5000	5%	10.0	18%	8.2
5000-9999	32%	6.0	16%	5.0
10000-19999	9%	3.5	14%	3.0
20,000+	2%	1.7	10%	1.5
Total/Average Single Family	48%	5.0	15%	4.3
Multiple family				
Duplex	3%	9.0	18%	7.4
Row House	2%	13.5	14%	11.6
Garden Apt	37%	19.6	10%	17.6
Mid-rise	10%	26.0	5%	24.7
Total/Average Multiple Family	52%	17.2	8%	15.7
TOTAL/AVERAGE ALL TYPES	**100%**	**8.4**	**13%**	**7.3**

Housing and Land Need, New DU and Acres by Type

	City Limit			Potential Annexation Areas			Combined				
Housing type	New DU needed	Land Need (Net Acres)	Land Need (Gross Acres)	New DU needed	Land Need (Net Acres)	Land Need (Gross Acres)	New DU needed	Land Need (Net Acres)	Land Need (Gross Acres)		
Single-family by lot size											
<5000	399	40	49	67	7	8	466	47	57	5%	
5000-9999	2,554	426	507	430	72	85	2,984	497	592	29%	
10000-19999	718	205	239	121	35	40	839	240	279	8%	
20,000+	160	94	104	27	16	18	187	110	122	2%	
Total/Average Single Family	3,831	765	898	645	129	151	4,476	893	1,050	43%	
Multiple family							-	-	-		
Duplex	239	27	32	40	4	5	280	31	38	3%	
Row House	160	12	14	27	2	2	187	14	16	2%	
Garden Apt	3,840	225	241	646	97	105	4,487	322	346	43%	
Mid-rise	798	31	32	134	5	5	933	36	38	9%	
Total/Average Multiple Family	5,038	294	320	848	109	118	5,885	403	438	57%	
TOTAL/AVERAGE ALL TYPES	**8,869**	**1,059**	**1,218**	**1,492**	**238**	**269**	**10,361**	**1,296**	**1,487**	**100%**	

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(SAMPLE)

Table E-11. Sample Employment Land Need Worksheet

This worksheet estimates land and built space needed for employment. Land need is a function of employment, the distribution of employment by sector, and the density of employment (expressed on employees per acre). Floor area is a function of the same variables, but requires assumptions about square feet of built space required for employees. Some employment does not require additional built space because it has not permanent location or is associated with a residence.

General Assumptions

Percent of total employment that requires little or no built space	5%
Percent of comm/ind emp on redeveloped land	0%

Base Employment Data

Year	Covered Emp	Total Emp	Change
City limits			
2000	29,055	29,055	
2020	37,232	37,232	8,177
PAA			
2000	2,291	2,291	
2020	2,839	2,839	548

Assumptions by sector, City Limits

Sector	Distribution of Emp 2000	Distribution of Emp 2000-2020	New Emp 2000-2020	% of total emp that requires no non-res built space /land	emp that requires non-res built space /land	Percent of emp on existing developed land	Emp allocated to developed land	Emp requiring new land	Adjust for vacancy rate
Retail	30%	15%	1,227	1%	1,145	5%	57	1,088	7%
FIRES	38%	70%	5,732	2%	5,569	10%	557	5,012	7%
Manufacturing	12%	3%	270	1%	188	10%	19	169	5%
WTCU	5%	5%	368	1%	286	10%	29	258	5%
Education	10%	5%	401	0%	401	15%	60	341	0%
Government	5%	2%	180	0%	180	15%	27	153	0%
Total	100%	100%	8,177	5%	7,768		749	7,020	

Distribution of Employment	Retail	FIRES	Manufact.	WTCU	Education	Gov.	Total
By Jobs							
2000	8,642	10,911	3,620	1,541	2,917	1,425	29,055
2010	9,185	13,417	3,704	1,670	3,087	1,501	32,565
2020	9,729	15,922	3,789	1,799	3,258	1,578	36,075
Change (2000-2020)	**1,088**	**5,012**	**169**	**258**	**341**	**153**	**7,020**
Employees per Gross Acre (EPA)	25.0	35.0	12.0	15.0	10.0	35.0	1.3
Floor Area per employee (sq ft)	700	350	650	600	400	400	
Emp on Redeveloped Land (1997-2050)	0	0	0	0	0	0	0

Results

Sector	New land needed for emp City limits	New land needed for emp Study area	New floor area needed for e City limits	New floor area needed for e AZ study Are	Total
Retail	47	27%	761,279	51,019	812,298
FIRES	154	63%	1,754,089	117,554	1,871,643
Manufacturing	15	4%	110,022	7,373	117,395
WTCU	18	6%	154,545	10,357	164,903
Education	34	5%	136,229	9,130	145,359
Government	4	2%	61,164	4,099	65,263
Total	**272**	100%	**2,779,935**	**186,304**	**2,966,238**

(SAMPLE)

Table E-12. Sample Other Land Need Worksheet

This worksheet calculations other land needs. Other land needs includes parks/open space, schools, churahes and fraternal organizations golf courses, and other public facilities (substations, utility easements, etc.). All other land needs are a function of population and are expressed as acres needed per 1000 persons.

Year	Population	Change from 2000
2000	81,150	
2010 (extrapolated)	89,829	8,679
2020	101,150	20,000
Total City Acres	12,000	

		Parks/ open space	Schools	Muni- cipal Offices	Rights-of- way	Police/ Fire facilities	Storm- water drainage /detention	Water storage	Waste- water treatment and pump stations	Landfills or transfer stations	Fraternal Organizat ions	Golf Courses
Existing Conditions	Acres	700	400	35	2000	50	150	12	15	10	40	150
	% of all City acres	6%	3%	0%	17%	0%	1%	0%	0%	0%	0%	1%
	Acres/1000 people	8.6	4.9	0.4	24.6	0.6	1.8	0.1	0.2	0.1	0.5	1.8
LOS	Acres/1000 people	14.0	8.0	2.0	20.0	3.0	2.0	0.5	0.5	0.5	1.5	2.5
Estimated Need	Total Acres	280.0	160.0	40.0	400.0	60.0	40.0	10.0	10.0	10.0	30.0	50.0
	Acres in large parcels											

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(SAMPLE)

Table E-13. Employment and mixed-use zone capacity

Based on Modified Federal Way Capacity Analysis Methodology

I. VACANT

ZONING	+ LOT NET SQ. FT.	* R.O.W. FACTOR	* PUBLIC PURPOSE FACTOR	* MARKET FACTOR (10%*)	* FLOOR AREA RATIO	= TOTAL BUILDABLE SQ FT
BC	4,464,276	0.95	0.98	0.90	0.35	1,309,216
BN	1,166,926	0.95	0.98	0.90	0.35	342,219
BP	5,759,269	0.95	0.98	0.90	0.35	1,688,992
CC	355,045	0.85	1.00	0.90	0.60	162,966
CF	325,575	0.85	1.00	0.90	0.50	124,532
CP-1	4,081,827	0.95	0.98	0.10	0.35	133,006
OP	3,472,513	0.95	0.98	0.90	0.35	1,018,366
OP-1	3,588,298	0.95	0.98	0.90	0.35	1,052,322
OP-2	0	0.95	0.98	0.90	0.35	0
OP-3	241,977	0.95	0.98	0.90	0.35	70,963
OP-4	216,413	0.95	0.98	0.90	0.35	63,466
PO	499,622	0.95	0.98	0.90	0.35	146,522
TOTAL:	24,171,741					6,112,571

II. REDEVELOPABLE

ZONING	+ LOT NET SQ. FT.	* R.O.W. FACTOR	* PUBLIC PURPOSE FACTOR	* MARKET FACTOR (17%*)	* FLOOR AREA RATIO	= SUB-TOTAL OF BUILDABLE SQ. FEET	- EXISTING BUILDING SQ FT	= NET BUILDABLE SQ FT
BC	4,337,392	0.95	0.98	0.83	0.35	1,173,072	302,317	870,755
BN	509,196	0.95	0.98	0.83	0.35	137,715	21,355	116,360
BP	1,984,407	0.95	0.98	0.83	0.35	536,694	65,066	471,628
CC	1,111,749	0.85	1.00	0.83	0.60	470,603	198,517	272,086
CF	577,795	0.85	1.00	0.83	0.50	203,817	88,226	115,591
CP-1	2,637,725	0.95	0.98	0.10	0.35	85,950	16,114	69,836
OP	578,845	0.95	0.98	0.83	0.35	156,552	14,760	141,792
OP-1	0	0.95	0.98	0.83	0.35	0	0	0
OP-2	0	0.95	0.98	0.83	0.35	0	0	0
OP-3	0	0.95	0.98	0.83	0.35	0	0	0
OP-4	0	0.95	0.98	0.83	0.35	0	0	0
PO	51,819	0.95	0.98	0.83	0.35	14,015	3,476	10,539
TOTAL:	11,788,927					2,778,417	709,831	2,068,586

III. SUMMARY

(Break-down between residential uses and non-residential uses for mixed-use zones)

ZONING	+ BUILDING TOTAL SQ. FT.	* % OF RESIDENTIAL	= BUILDING RESIDENTIAL SQ. FT.	/ SIZE OF UNITS SQ. FT.	= # OF M.F. DWELLING UNITS	= FINAL BUILDABLE SQ. FT.
BC	2,179,970	0.33	719,390	1,000	719	1,460,580
BN	458,578	0.00	0		0	458,578
BP	2,160,620	0.00	0		0	2,160,620
CC	435,052	0.50	217,526	700	311	217,526
CF	240,124	0.50	120,062	700	172	120,062
CP-1	202,843	0.00	0		0	202,843
OP	1,160,158	0.10	116,016	500	232	1,044,142
OP-1	1,052,322	0.00	0		0	1,052,322
OP-2	0	0.00	0		0	0
OP-3	70,963	0.00	0		0	70,963
OP-4	63,466	0.00	0		0	63,466
PO	157,060	0.00	0		0	157,060
TOTAL:	8,181,157				1,434	7,008,163

CAPACITY STUDY SUMMARY	
POSSIBLE NEW HOUSING UNITS:	
RESIDENTIAL ZONES:	4,839 UNITS
NON-RESIDENTIAL ZONE	1,434 UNITS
TOTAL:	**6,273** UNITS
POSSIBLE NEW COMM./INDUST. SF:	
TOTAL:	**7,008,163** SQ. FT.
POSSIBLE NEW EMPLOYEES:	
TOTAL:	**17,746**

(SAMPLE)

Table E-13. Employment and mixed use capacity (Continued)

IV. EMPLOYMENT SUMMARY

(Summary of how many employees can be accomodated per zone)

ZONING	FINAL BUILDING SQ. FT.	+ RETAIL SF	/ EMPLOYEES (500 SF)	+ OFFICE SF	/ EMPLOYEES (250 SF)	+ MANUFACT. SF	/ EMPLOYE (800 SF)	= TOTAL NUMBER EMPLOYEES
BC	1,460,580	1,460,580	2,921					2,921
BN	458,578	458,578	917					917
BP	2,160,620					2,160,620	2,701	2,701
CC*	217,526	163,144	326	54,381	218			544
CF*	120,062	90,046	180	30,015	120			300
CP-1	202,843			202,843	811			811
OP	1,044,142			1,044,142	4,177			4,177
OP-1	1,052,322			1,052,322	4,209			4,209
OP-2	0			0	0			0
OP-3	70,963			70,963	284			284
OP-4	63,466			63,466	254			254
PO	157,060			157,060	628			628
TOTAL:	7,008,163	2,172,349	4,345	2,675,194	10,701	2,160,620	2,701	17,746

* Break-down between Retail and Office Uses: 75% Retail, 25% Office

(SAMPLE)

Table E-14. Residential zone capacity

Based on Modified Federal Way Capacity Analysis Methodology

I. VACANT

(Parcels with an improvement value of $0)

ZONING	MINIMUM LOT SIZE	BUILDABLE SQ. FEET	+ LOTS	* R.O.W. FACTOR	* PUBLIC PURPOSE FACTOR	* MARKET FACTOR (10%)	= TOTAL OF BUILDABLE LOTS
RM1800	1800	350,622	195	0.90	1.00	0.90	158
RM2400	2400	465,926	194	0.90	1.00	0.90	157
RM3600	3600	1,618,001	449	0.90	1.00	0.90	364
RS15.0	15000	5,647,806	377	0.85	0.90	0.90	259
RS35.0	35000	1,590,141	45	0.85	0.90	0.90	31
RS5.0	5000	981,782	196	0.85	0.90	0.90	135
RS7.2	7200	9,381,989	1,303	0.85	0.90	0.90	897
RS9.6	9600	6,971,064	726	0.85	0.90	0.90	500
SE	217800	706,178	3	0.85	0.90	0.90	2
TOTAL:			3,489				**2,504**

REDEVELOPABLE

(Single Family: Parcel can be divided 2.5 times +, Multi-Family: Current use is single family or duplex)

ZONING	MINIMUM LOT SIZE	BUILDABLE SQ. FEET	+ LOTS	* R.O.W. FACTOR	* PUBLIC PURPOSE FACTOR	* MARKET FACTOR (17%)	= SUB-TOTAL OF BUILDABLE LOTS	- SUB-TOTAL OF EXISING UNITS	= TOTAL OF BUILDABLE LOTS
RM1800	1800	316,216	176	0.90	1.00	0.83	131	42	89
RM2400	2400	217,168	90	0.90	1.00	0.83	68	12	56
RM3600	3600	2,260,764	628	0.90	1.00	0.83	469	380	89
RS15.0	15000	11,783,235	786	0.85	0.90	0.83	499	144	355
RS35.0	35000	2,696,218	77	0.85	0.90	0.83	49	22	27
RS5.0	5000	445,367	89	0.85	0.90	0.83	57	5	52
RS7.2	7200	12,045,524	1,673	0.85	0.90	0.83	1,062	309	753
RS9.6	9600	4,780,667	498	0.85	0.90	0.83	316	124	192
SE	217800	1,474,908	7	0.85	0.90	0.83	4	3	1
TOTAL:			4,024				**2,655**	**1041**	**1,614**

II. PARCELS NOT SUBDIVIDABLE - NOT SUBJECT TO MOST DISCOUNTS - VACANT

(Un-subdividable Parcels)

ZONING	+ # OF LOTS	R.O.W. FACTOR	PUBLIC PURPOSE FACTOR	* MARKET FACTOR (10%)	= TOTAL OF BUILDABLE LOTS
RM1800	0	N/A	N/A	0.90	0
RM2400	0	N/A	N/A	0.90	0
RM3600	0	N/A	N/A	0.90	0
RS15.0	233	N/A	N/A	0.90	210
RS35.0	24	N/A	N/A	0.90	22
RS5.0	0	N/A	N/A	0.90	0
RS7.2	161	N/A	N/A	0.90	145
RS9.6	179	N/A	N/A	0.90	161
SE	0	N/A	N/A	0.90	0
TOTAL:	**597**				**537**

III. VACANT, NOT SUBJECT TO DISCOUNTS*

(Recently Subdivided or) subject to a development agreement)

ZONING	+ # OF LOTS	R.O.W. FACTOR	PUBLIC PURPOSE FACTOR	MARKET FACTOR (10%)	= TOTAL OF BUILDABLE LOTS
RM1800	0	N/A	N/A	N/A	0
RM2400	0	N/A	N/A	N/A	0
RM3600	82	N/A	N/A	N/A	82
RS15.0	1	N/A	N/A	N/A	1
RS35.0	0	N/A	N/A	N/A	0
RS5.0	1	N/A	N/A	N/A	1
RS7.2	83	N/A	N/A	N/A	83
RS9.6	17	N/A	N/A	N/A	17
SE	0	N/A	N/A	N/A	0

RESIDENTIAL SUMMARY	
ZONING	# OF LOTS
RM1800	247
RM2400	213
RM3600	535
RS15.0	825
RS35.0	80
RS5.0	188
RS7.2	1,878
RS9.6	870
SE	4
NON-RES ZONES	7,329

(SAMPLE)

Table E-15. Sample Land Supply Analysis

Total net buildable acreage from this sheet should be compared with row 49 of the 'Res Land' Sheet and row 54 of the 'Emp Land' sheet to compare overall supply of residential and employment land with demand. Cities may wish to perform additional analysis that relates land demand to plan designation or zoning districts.

Tax Lot#	Total Acreage	*Minus* Developed acreage	*Equals* Gross vacant acreage	*Minus* Constrained acres	*Equals* Gross buildable vacant acres	*Minus* Acres for public facilities	*Minus* Acres unservicable during the planning period	*Equals* Net buildable vacant acres	*Plus* Redevelop-able acres	*Equals* Total net buildable acres
Single-Family (Low Density Residential)										
1202	10.0	0.0	10.0	1.1	8.9	2.2	0.0	6.7	-	6.7
1400	5.0	1.0	4.0	0.0	4.0	1.0	0.0	3.0	-	3.0
1506	8.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	4.0
Subtotals	9.7	4.0	13.7							
Multi-Family Residential (High Density Residential)										
2000	20.0	0.0	20.0	2.0	18.0	4.5	1.0	12.5	-	12.5
4500	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0
Subtotals								**12.5**	**3.0**	**15.5**
Net Buildable Acres								**22.2**	**7.0**	**29.2**
Minus Market Factor Deduction			10%					2.2	0.7	2.9
Total Net Buildable Acres								**20.0**	**6.3**	**26.3**

Evaluation of Constraints:

Evaluation of constraints requires an overlay analysis using GIS. The following data layers should be intersected to develop one combined constraint coverage to make the constraint deductions:

Wetlands
Critical aquifer recharge areas
Fish and wildlife conservation areas
Frequently flooded areas
Geologically hazardous areas

Evaluation of Acres for public facilities:

This includes standard public facilities such as roads, parks and open space, civic structures, and schools. It should also include utility easements, areas planned for major roads, water and sewer facilities, electrical substations, and other public facilities.

(SAMPLE)

Outline for Buildable Lands Report, May 2002

Appendix F

This appendix presents a proposed outline for the five-year buildable lands monitoring report. The outline is framed similar to the annual reports prepared by Snohomish County, with new chapters that address the additional GMA requirements for the five-year report. Specifically, the new chapters address buildable lands and land capacity, estimated land demand, and a comparison of capacity and demand.

SUMMARY

The summary should not be chronological (We did this, then this, then…, and finally came to these conclusions); it should be conclusionary (The key findings of this study are: 1…2…3…).

CHAPTER I. INTRODUCTION

Standard organization: Background and Purpose (why the report is being done; what work and events led to it); Methods (how the analysis was undertaken: the July 2000 Work Program should cover this); and Organization of the Report (so readers have a guide).

CHAPTER II. POPULATION AND EMPLOYMENT GROWTH TRENDS

Even though this study will not re-do population forecasts, it must address previous forecasts (from 1995) and how well those forecasts match actual development over the last five years. In some cases the match will be adequate, but the County staff already know from their growth monitoring reports that in other cases the estimated actual growth will be far from the forecasted expectations in 1995. This section should address those issues, and explain (as Chapter 2 of this report does briefly) how the forecasts will be updated as part of the 10-year update that will begin in 2002/2003.

CHAPTER III. ANNEXATIONS/INCORPORATIONS

The *1999 Growth Monitoring Report* presents a detailed analysis of annexations and incorporations. This section will examine annexations within Snohomish County since February 28, 1993 (the date at which city boundaries were "frozen" for the development of 20-year population and employment growth targets). This section should document the characteristics of annexations certified by the Office of Financial Management (OFM). The specific characteristics that need to be addressed include acres, population, housing units, and employment annexed by city. The main purpose of this analysis is to make sure that consistent boundaries

are being used when measuring the change in a jurisdiction's land supply, population, and employment.

CHAPTER IV. RESIDENTIAL DEVELOPMENT TRENDS

The analysis of residential development trends will largely follow the organization in the *1999 Growth Monitoring Report*. It presents data on residential lot creation, residential densities in recorded single-family formal plat subdivisions, and recorded single-family short plat subdivisions. It also provides a detailed summary of residential building permit activity by city and UGA.

A new element that needs to be incorporated into this section is an analysis of net densities of multiple-family residential development.

CHAPTER V. COMMERCIAL AND INDUSTRIAL DEVELOPMENT TRENDS

This is a new monitoring element that was not included in previous reports. The analysis reviews historical trends in built space by use and plan designation for each city and UGA. This section also includes an evaluation of net densities (FARs) of commercial and industrial development.

CHAPTER VI. BUILDABLE LANDS INVENTORY AND CAPACITY ANALYSIS

The buildable lands inventory and capacity analysis are new elements. The inventory should report data by city/UGA and plan designation. The chapter will be organized in two broad sections: (1) buildable lands inventory, and (2) capacity analysis. The capacity analysis relies on data from the inventory as well as data from Chapters IV and V.

The buildable lands inventory should summarize land by classification, constraints, buildable lands (vacant, partially-vacant, under-utilized), and redevelopment potential for each city and UGA.

The capacity analysis should make estimates of the amount of development capacity that exists given the buildable lands base for each city and UGA. The capacity analysis should be based on the evaluation of recent development densities that is presented in chapters IV and V.

CHAPTER VII. LAND DEMAND ANALYSIS

The land demand analysis will include two subsections: (1) residential, and (2) employment. The analysis will use the forecasts described in Chapter II as its basis.

The output of the residential land demand analysis is an estimate of needed dwelling units by type, and an estimate of land needed for those units.

The output of the employment land demand analysis is built square feet by employment type, and acres needed by plan designation.

CHAPTER VIII. COMPARISON OF SUPPLY AND DEMAND

This section compares land capacity (supply) and land need (demand) for all cities and unincorporated UGAs. This analysis will identify whether there are inconsistencies between adopted growth targets and available land.