



## Environmental Effects and Mitigation

*The subchapters of Chapter 5 discuss the effects of each growth distribution alternative in relation to a set of “elements of the environment” that correspond to State Environmental Policy Act requirements. Each sub-chapter reviews the affected environment, analyzes the potential impacts of the alternatives, describes cumulative effects, and discusses potential mitigation measures and potential significant unavoidable adverse impacts.*

### A. Analysis of a Non-Project Action Such as the VISION

The analysis of alternatives considers the likely environmental consequences that may occur directly, indirectly, or cumulatively following the adoption of an updated VISION. Given the long range nature and regional scale of the VISION, the environmental review is focused on potential impacts and mitigations, and therefore terms such as could, likely, or might are used interchangeably.

As a plan-level or non-project action, the adoption of an updated VISION would have relatively few **direct** impacts, and none of these would occur automatically through the adoption of the updated VISION alone. An updated VISION document itself would not directly lead to physical changes in the environment such as could occur through a project-level action such as a major redevelopment. However, the future demands posed by increased population and employment in the region are considered as direct impacts in this Final Environmental Impact Statement under all alternatives. These include the environmental results from more people traveling throughout the region; more people requiring energy and public services, including water, sewer, emergency services, and schools; more people requiring housing, places to work, and recreational resources; and more people potentially generating air pollution and waste.

**Indirect** effects include the actions that *others* may take as a likely consequence of an updated VISION. These actions would require their own environmental reviews and include the actions of the region’s counties, cities and governmental agencies to update their plans and infrastructure to accommodate future growth. They include the actions of local governments and state and regional transportation agencies that will likely develop plans and projects to meet future transportation needs. For instance, following the adoption of an updated VISION, the region’s metropolitan transportation plan, *Destination 2030*, will be extended to 2040 and amended to address the VISION’s preferred growth alternative in 2008. Finally, the analysis of indirect effects considers the wider range of consequences that would be expected with increased development and economic activities in the region, including actions that may be taken by both public and private parties, including developers, public and private utilities, businesses, and others.

**Cumulative** effects analysis is a required topic under the State Environmental Policy Act; however, the analysis also considers the more specific guidance provided under the National Environmental Policy Act, which is required for federal actions. Under the National Environmental Policy Act, cumulative effects are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably



foreseeable future actions regardless of what agency or person undertakes such other actions” (Code of Federal Regulations, 40 CFR S1508.7).

In many ways, the regional focus of this Final Environmental Impact Statement allows for analysis that is inherently cumulative - addressing future growth and how that builds upon existing conditions. The individual environmental topic descriptions of their affected environment reflects both past and present actions and includes the effects of historical actions (such as major changes in watersheds, land use patterns, and travel patterns), as well as more recent actions including the adoption of the original VISION 2020 for the region and related Growth Management Act actions by others. Where appropriate, discussions of cumulative effects also try to consider the likely increases in growth and activity outside of the scope of the VISION, including activities beyond the region. These include actions by other parties including military bases, tribal governments, and in adjacent communities such as could occur in Island, Skagit and Thurston counties. It could include trends within actions or Washington State, or at a broader national or international scale, such as changes in the economy, or in state or federal programs. In some topic areas, other cumulative environmental effects, including statewide, ecoregional, or even national and global conditions and trends, are generally discussed.

## **B. Geographic Units of Analysis**

The impacts in this chapter are identified and examined at different geographic scales, as appropriate to the topic under discussion.

### **REGION AND COUNTIES**

In general, the growth distribution alternatives are analyzed for each of the environmental topic areas at the regional and county levels. In some chapters, such as *Chapter 5.4 – Air Quality*, federally-recognized “maintenance areas” exist and so a subset of the region is analyzed. In other chapters, such as *Chapter 5.2 – Land Use*, designated lands (such as urban, rural and natural resource lands) span county boundaries and they are analyzed as broad sub-regional categories of the region’s land.

### **REGIONAL GEOGRAPHIES**

The five alternatives were defined by the manner in which the region’s forecast population and employment growth was distributed among seven separate geographic categories. These categories are regional and cross county boundaries. While four of the seven categories define separate classifications of the region’s incorporated cities and towns, analysis was not performed and data is not reported at the individual city level. In some cases, however, elements of the environment in this Final Environmental Impact Statement are discussed in terms of how the distribution of growth in the alternatives might impact these larger regional geographic categories.

### **GRID CELLS**

The computer modeling performed to analyze the alternatives was done at a much finer scale than regional geography, county or region. To create these inputs, PSRC employed a computer-based geographic information system tool to distribute forecast population and employment growth within a computer representation of approximately 750,000 150-square meter grid cells covering the entire central Puget Sound region. These cells were populated with 2000 base year demographic data, each alternative’s year 2040 demographic data, and other attribute data, such as land-use classifications derived from locally adopted comprehensive plans. These data were then used as inputs to the region’s Transportation Demand and Air Quality models, and the INDEX — Paint the Region analysis tool (see next section of this chapter and *FEIS Appendices - Appendix I-E*).

In some instances, the availability of population and employment data at this fine scale allowed for useful analyses of possible impacts that were distributional in nature. These include the proximity of people and jobs in the alternatives to otherwise static regional features, such as existing parks and open spaces, and existing and planned transit routes. Final Environmental Impact Statement sections that employ this finer-grained grid-cell unit of analysis are clearly identified.

## C. Representing Regional Growth Alternatives

The sub-chapters of *Chapter 5* and *Chapter 6* evaluate the conceptual regional growth alternatives defined in *Chapter 4*. Each alternative offers the potential to accommodate population and employment growth at the local level in a range of actual on-the-ground patterns depending on local development densities and the particular land parcels on which growth may occur. However, only one representation of each alternative could be included in this analysis.

In order to create these representations of the alternatives for modeling and analysis purposes, INDEX was used to distribute growth within regional geographies.<sup>1</sup> Within INDEX, some general rules were followed to simulate possible future development patterns at the local level.

For the Growth Targets Extended Alternative, the distribution of population and employment was accomplished through “building out” current local comprehensive plan land use designations. The local accommodation of growth was based on defined maximum carrying capacities of current land use designations, built up from known amounts of existing activity derived from county assessor records. It is important to note that in this exercise, the theoretical land capacity of current land use designations often exceeded the amount of population and employment growth that was distributed within regional geographies. Consequently, some areas reached maximum capacity, while others did not. With this approach, a variety of local land use patterns — all consistent with the general definition of the alternative — are possible, depending upon which areas receive growth, and which do not. By using current adopted local growth targets, and a general rule to distribute growth within local land use plan designations fairly uniformly, the land use pattern depicted for Growth Targets Extended in this Final Environmental Impact Statement represents a reasonable simulation of the implementation of local plan designations.

In the Metropolitan Cities, Preferred Growth, Larger Cities and Smaller Cities alternatives, in which the defining concepts are for growth to deviate from currently designated patterns and intensities, land use designations were sometimes altered or intensified to accommodate growth. Each of these alternatives offered choices within the regional geographies in which to accommodate growth, all consistent with the concept of the alternative. In the Metropolitan Cities, Preferred Growth, and Larger Cities alternatives, core central places such as regional and local growth centers often received larger shares of growth than other parts of the regional geographies. In the Smaller Cities alternative, local town centers and currently developed areas within unincorporated urban growth areas often received larger shares of growth than other parts of the regional geographies. Once again, differing representations of these alternatives based on on-the-ground development patterns are possible.

While this variability of possible land use distributions within the alternatives makes no difference at the regional, county or regional geography levels, it does have the potential to affect output data produced by analysis tools used in later subchapters of *Chapter 5* and in *Chapter 6*. In particular, the Regional Travel Demand Model used for transportation performance analysis is sensitive to small changes in the local distribution of population and employment. Also, while there significant differences between the growth distribution alternatives, they also share the same existing base of population and employment which does not change among the alternatives. Similarly, geographic information system tools used to consider indicators such as the physical proximity of people and jobs to landscape features are sensitive to local distribution of growth. This should be taken into account when interpreting these data.

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<sup>1</sup> See *FEIS Appendices - Appendix I-E* for a full description of the INDEX — *Paint the Region* analysis tool and the methodology used to construct representations of the five regional growth alternatives.



## **D. Areas of Uncertainty**

The long range population and employment forecasts the Regional Council has used to develop the alternatives are based on best available techniques, but there are inherent uncertainties about where and how growth will occur in the region. In addition, due to the size of the four-county region and the large variation of conditions among localized areas, the level of detail for the alternatives and the environmental analysis has been conducted at a broad programmatic scale. Localized impacts of growth could vary, but would depend on more specific actions that would be considered and approved through local or project-level processes.

The cumulative effects discussions for each environmental topic also identify other areas of uncertainty, including larger scale influences that could affect the region. This includes the effects of factors such as climate change and growth influences from nearby areas. Larger-scale geopolitical or economic change could also affect growth rates and environmental effects.

