CHAPTER 11. VIEWS AND VISUAL RESOURCES

11.1 HOW WERE VIEWPOINTS AND VISUAL RESOURCES IN THE COMBINED STUDY AREA EVALUATED?

This chapter describes the *visual resources*, *views*, and *viewpoints* within the combined study area (Figure 1-4 in Chapter 1).

The importance of visual resources is subjective, based on the viewer's perspective, but study area communities have identified and characterized visual resources in their planning documents and regulations. For this EIS, viewpoints and visual resources were characterized by reviewing comprehensive plans, shoreline master plans (SMPs), and regulatory codes of study area communities (see Appendix G). For this programmatic EIS, subarea plans were not reviewed. A list of key viewpoints and visual resources can be found in Section 11.3.

The EIS Consultant Team also considered comments received during the scoping process for the EIS. Comments received during scoping expressed concern that a 230 kV transmission line would negatively impact views from individual houses, including territorial and neighborhood views. For this reason, in addition to public places with views, the analysis focused on potential effects on views from residential areas with single-family homes. Scoping comments also noted that new transmission lines could negatively affect the look of Eastside neighborhoods and cities (City of Bellevue, 2015c). For this programmatic EIS, regional-scale visual resources were evaluated; individual or specific neighborhoods and backyards were not evaluated due to their site-specific nature. Specific potentially affected neighborhoods will be evaluated as part of the Phase 2 EIS.

Views and Visual Resources Key Findings

Alternatives 1 and 3 could cause significant impacts to views and visual resources due to vegetation removal and obstruction of scenic views. Overhead transmission lines have the greatest potential to affect residential views. Of all overhead options, 230 kV lines in a new corridor would have the greatest visual impact (Alternative 1, Option A), while using the existing Seattle City Light 230 kV corridor would have a lower impact (Alternative 1, Option B).

Undergrounding the transmission line or placing it underwater (Alternative 1, Options C and D) would reduce impacts. If new overland corridors are required, significant impacts may result due to loss of vegetation.

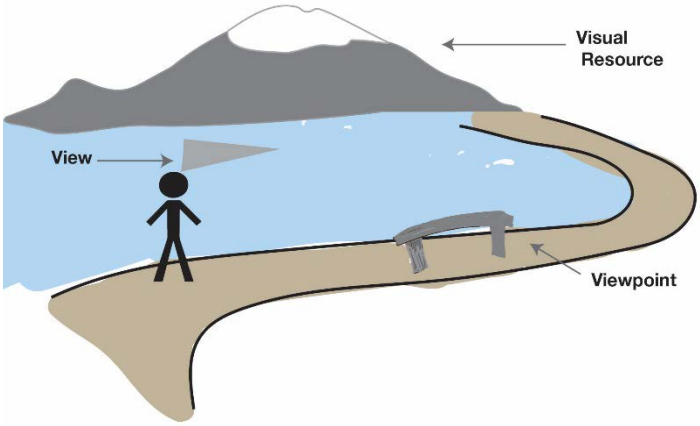
Using existing corridors for the 230 kV lines (Alternative 1) could affect fewer residential properties than using 115 kV lines (Alternative 3). However, the taller poles used in Alternative 1 would have a greater contrast with the existing visual setting.

Energy storage facilities (Alternative 2) could result in significant impacts. Other components, such as peak generation plants or distributed generation facilities, could have moderate impacts depending on size and location.

11.1.1 Visual Resources, Views, and Viewpoints Defined

Visual resources are generally defined as natural and constructed features of a landscape that are viewed by the public and contribute to the overall visual quality and character of an area. Such features often include distinctive landforms, water bodies, vegetation, or components of the built environment that provide a sense of place, such as city skylines.

Figure 11-1. Views, Viewpoints, and Visual Resources



Views are defined as the observation of a visual resource from a particular location, such as a private residence or a public park.

Viewpoints are places from which views can be seen. They are typically associated with residential properties or publicly accessible recreation areas, such as parks, trails, and open spaces or along scenic roadways or in civic centers (Figure 11-1).

11.1.2 Property Values, Views and Visual Resources

During the scoping process, commenters voiced concern over the potential for property values to decrease due to visual impacts associated with the project. The EIS Consultant Team mapped properties that the King County Assessor has identified as having a view that, in the Assessor's judgment, affects the value of those properties to varying degrees. While this dataset does not provide an exhaustive assessment of properties with views, or a precise method of scoring views, it is useful to describe general patterns of view properties in the combined study area. Assessor's information also identifies properties with a view of a power line that, in the judgment of the Assessor, lowers the property valuations. These data were also mapped and reviewed. Differences in actual assessed values were not useful for this evaluation because the data were inconclusive as to whether the reason parcels were valued differently was because of use restrictions within a power line easement, because of visual impacts, or for some other reason.

11.2 WHAT ARE THE RELEVANT PLANS, POLICIES, AND REGULATIONS?

Many of the study area communities highlight the importance of visual resources, and their planning documents include policies that emphasize the benefits of visual resources. There is, however, little specific guidance in adopted comprehensive plans regarding the placement of new utilities and reduction of impacts to views and visual resources. Most of the plans emphasize the visual benefits provided by large parks and natural areas, wooded neighborhoods, water bodies, mountain views, and city skylines. In general, local plans

support the preservation of existing public viewpoints and views that are enjoyed by a "significant number" of residential properties. In many of the smaller suburban communities (such as Clyde Hill), diverse views are considered to provide a positive impact on property values (City of Clyde Hill, 2015a).

Most of the study area communities have adopted plans that prioritize protection of views of shorelines, as well as views from the shoreline, and consider the impact of utility location in shoreline areas. These policies are outlined in adopted SMPs. In most of the applicable SMPs, utility development on shoreline areas is discouraged but allowed if no other alternative is available. In such instances, it is usually suggested that the utility lines should be buried underground or placed within existing utility corridors to reduce visual impacts. A detailed summary of the applicable plan goals and policies from study area communities is provided in Appendix G.

The municipal codes of King County, the City of Newcastle, the City of Sammamish, and the Town of Beaux Arts Village do not include regulations that specifically guide development of new utilities in order to reduce impacts to views or visual resources. The Cities of Issaquah, Redmond, and Renton have regulations that place a general emphasis on screening utility infrastructure by using aesthetically pleasing fences, materials, or landscaping. The City of Bellevue provides specific guidance on how new electrical infrastructure should be screened. A more detailed summary of the applicable codes is provided in Appendix G.

A general overview of each community's plans, policies, and regulations that are applicable to the visual environment is provided below. All of the communities have recently updated or are in the process of updating their comprehensive plans. The EIS Consultant Team reviewed both draft comprehensive plan chapters and current, adopted versions for each community. A summary of the primary visual resources and viewpoints identified through that review is provided in Section 11.3.

11.2.1 King County

The 2013 King County Comprehensive Plan (King County, 2013), and the incorporated SMP policies, emphasize the value of visual resources, particularly those related to shorelines, open space, and rural areas. These plans do not include specific guidance regarding the placement of new utilities and reduction of impacts to views and visual resources. The King County Code (Title 21A, updated April 15, 2015) does not include regulations that guide development of new utilities to reduce impacts to views or visual resources (King County, 2015c).

11.2.2 Beaux Arts Village

Neither the Beaux Arts Comprehensive Plan nor the Beaux Arts Village Municipal Code (last updated April 9, 2013) explicitly discusses visual resources in regard to utility infrastructure (Town of Beaux Arts Village, 2013, 2014a). The Beaux Arts Village SMP does prohibit new utilities in the Urban Conservancy, Shoreline Residential, and Aquatic Shoreline areas. The SMP states that all development on navigable water should consider impacts to public views (Town of Beaux Arts Village, 2014b).

11.2.3 Bellevue

In its comprehensive plan, Bellevue characterizes itself as being a "City in a Park" as a result of its "breathtaking vistas, viewpoints, and recreation areas" (City of Bellevue, 2015a). Inherent to its character are "tree-lined streets, public art, vast parks, natural areas, wooded neighborhoods, two large lakes, and mountain views." The Bellevue Comprehensive Plan states that views from public places of water, mountains, skylines, or other unique landmarks should be identified and preserved as valuable civic assets (City of Bellevue, 2015a).

The City of Bellevue seeks to provide utility service in a manner that balances adequate, reliable utility service and the aesthetic impacts of the infrastructure associated with such service (City of Bellevue, 2015a). The Bellevue Comprehensive Plan states that utilities should be developed and maintained to the appropriate levels of service to accommodate future growth. It also states that utility service should be provided in a way that considers the aesthetic compatibility with surrounding uses (City of Bellevue, 2015a).

The Bellevue City Code (current through August 3, 2015) regulates how electrical utility facilities are developed, setting design standards to reduce visual impacts. It also requires that visual and aesthetic impacts associated with an essential public facility (EPF) are "mitigated to the greatest extent technically feasible" (City of Bellevue, 2015b).

An **Essential Public Facility** (EPF) is a concept established by state law (RCW 36.70A.200 and WAC 365-196-550), intended to ensure that necessary facilities that are typically difficult to site can, in fact, be placed appropriately.

The City of Bellevue is updating its SMP; the draft SMP under consideration was not reviewed for this Phase 1 Draft EIS.

11.2.4 Clyde Hill

The comprehensive plan for Clyde Hill notes the City's views of Lake Washington, the Seattle skyline, Meydenbauer Bay, Kirkland, and downtown Bellevue (City of Clyde Hill, 2015a). The Clyde Hill Municipal Code (current through June 9, 2015) states that views contribute to the economic vitality of the City, particularly because the community is mostly residential and relies upon property taxes. The primary focus of the City's regulations regarding views is to resolve neighborhood disputes concerning landscaping (trees) and their effects on surrounding properties' exposure to views and sunlight (City of Clyde Hill, 2015b). Clyde Hill does not have an SMP.

11.2.5 Hunts Point

The 2014 Draft Comprehensive Plan Update for the Town of Hunts Point does not identify specific views or visual resources of importance. However, it does state that its tree code regulates the removal and replacement of significant trees to "soften the visual impacts of development" and protect the town's wooded character (Town of Hunts Point, 2014).

The Hunts Point Municipal Code (current through April 13, 2015) does not include any policies or regulations that guide development of new electrical utilities to reduce impacts to views or visual resources. However, development in general is restricted to avoid or minimize impacts to view corridors of wetlands (Town of Hunts Point, 2015). The Hunts

Point SMP does not provide explicit guidance with regard to transmission lines and their impacts on views and visual resources (Town of Hunts Point, 2012).

11.2.6 Issaquah

The 2014 City of Issaquah Comprehensive Plan states that, as long as the safety of the facility and emergency access are not compromised, utilities should be reasonably screened or designed so that new aboveground facilities are architecturally compatible with the surrounding area. In addition, the plan states that proposals for major utility installations, such as transmission lines and substations, must be reviewed to ensure impacts to aesthetic values and land use conflicts are minimized and mitigated (City of Issaquah, 2015a).

The Issaquah Municipal Code (current through April 20, 2015) guides how utility infrastructure should be implemented, providing height requirements and material suggestions for fences and walls depending on the location of the facility (City of Issaquah, 2015b).

The City's SMP does not provide explicit guidance with regard to transmission lines and their impacts on views and visual resources (City of Issaquah, 2013).

11.2.7 Kirkland

The City of Kirkland 2015 Comprehensive Plan Update (Kirkland 2035) includes design principles and development regulations that are used, in part, to protect public views (City of Kirkland, 2015a). The plan states that public views of the city, surrounding hillsides, Lake Washington, Seattle, the Cascades, and the Olympics should be protected. Public streets and spaces and view corridors along the Lake Washington shoreline are identified as viewpoints that should be preserved as development occurs.

Under Kirkland 2035, private views are protected only where such views are specifically mentioned in the neighborhood plan chapters of the comprehensive plan and in the City's development regulations. However, the plan establishes a policy that states the siting analysis for new and expanded electrical transmission and substation facilities should address land use and sensitive areas, as well as provide mitigation to minimize visual and environmental impacts. It also states that new or expanded aerial transmission lines should be sited and designed to minimize impacts to critical areas, preserve trees, and reduce visual impacts, especially where views of Lake Washington, the Olympic Mountains, and view corridors are affected (City of Kirkland, 2015a).

The City of Kirkland Municipal Code (updated June 16, 2015), which includes the City's SMP regulations, states that whenever feasible, utility facilities must be located outside the shoreline jurisdiction. Should there be no alternative location; the code requires utilities to be placed so that they do not obstruct scenic views (City of Kirkland, 2015b).

11.2.8 Medina

The Draft 2015 City of Medina Comprehensive Plan describes Medina as a community set in a semi-wooded and heavily landscaped environment. Many residences are located in open settings with territorial views and views of Lake Washington.

The Medina Comprehensive Plan states that utilities should be placed outside of the shoreline. If this is not possible, the plan includes policies supporting the location of utilities in a manner that protects scenic views (City of Medina, 2015a).

According to the Medina Municipal Code (current through July 13, 2015), all electrical utilities should be enclosed in buildings or structures (City of Medina, 2015b). Specifications regarding the types of materials that can be used, heights of walls and fences, and setbacks are discussed in further detail in Appendix G.

Medina Municipal Code states that regional utility facilities involved in production, processing, and transmission must be located outside of the shoreline jurisdiction "unless no other feasible option exists." If no other reasonable location is found, utilities must be placed so that they do not obstruct views of a "significant number" of nearby residential properties. The code supports combining utility corridors and placing utility infrastructure underground whenever feasible.

The City's SMP states that substations, and similar primary utility facilities, are not permitted within the shoreline environment (City of Medina, 2014).

11.2.9 Newcastle

The Draft 2015 City of Newcastle Comprehensive Plan states that the city is "a small town situated in a lush green setting" (City of Newcastle, 2015a). The draft plan also states that utilities, including electricity, should be provided to serve the projected population growth within the planning area in a manner that is aesthetically acceptable to the community (City of Newcastle, 2015a). Specifically, the plan states that utility lines should be placed in shared utility corridors, and that utility providers should minimize visual impacts of overhead transmission lines on adjacent land uses (City of Newcastle, 2015a). The City of Newcastle Municipal Code (current through May 5, 2015) does not include any regulations that guide development of new utilities to reduce impacts to views or visual resources (City of Newcastle, 2015b). Newcastle does not have an SMP.

11.2.10 Redmond

The City of Redmond has views of Mount Rainier, Mount Baker, the Cascade Mountains, Lake Sammamish, the Sammamish River, Bear and Evans Creeks, and the open and pastoral vistas in the northern Sammamish River valley (City of Redmond, 2015a). City policies recognize the aesthetic benefits derived from views of natural landscapes, wildlife, water bodies, and shorelines, and also note that unique public views can set apart one community from another and define the unique character of a place. As such, the Redmond Comprehensive Plan identifies specific view corridors that should be preserved, some of which are located in the combined study area (see Appendix G). In general, the plan highlights ways to reduce visual impacts to shorelines, open space, and residential views.

The City's SMP is embodied in the City's comprehensive plan (City of Redmond, 2015a). It states that transmission lines and cables should be placed underground in shoreline zones. If private utility owners place utility corridors on public property within the shoreline, they must integrate them with trails and other open space connections to the shoreline, whenever it

is possible. However, utilities cannot encroach on shoreline views unless "no feasible alternative exists." The SMP requires utilities to incorporate screening and landscaping to maintain the aesthetic quality of the shoreline (City of Redmond, 2015b).

The Redmond Zoning Code promotes placement of utilities underground to improve the appearance and aesthetics of public ways, but this does not apply to electrical lines over 50 kV unless it is economically feasible (City of Redmond, 2015b).

11.2.11 Renton

The City of Renton's 2015 Comprehensive Plan seeks to preserve the natural setting as an important component of residents' quality of life, including trees and clear mountain views (City of Renton, 2015a). The comprehensive plan states that public scenic views and public view corridors should be protected, including Renton's "physical, visual, and perceptual linkages to Lake Washington and Cedar River." The plan also states that natural forms, vegetation, distinctive stands of trees, natural slopes, and scenic areas that "contribute to the City's identity, preserve property values, and visually define the community neighborhoods" should be preserved (City of Renton, 2015a).

The City of Renton's SMP also promotes preservation of scenic and aesthetic qualities derived from natural features of the shoreline, such as vegetative cover and shore forms. This includes reducing the visual prominence of structures, including associated light and glare. In addition to these requirements, the SMP also prohibits utilities in the Shoreline Natural shoreline environment designation (City of Renton, 2011).

The Renton Municipal Code (current through May 18, 2015) states that local utility services that are permitted within the shoreline are "subject to standards for ecological protection and visual compatibility." It also states that a structure or other facility enclosing an electrical substation, or other aboveground public utility built in the shoreline, should be housed in a building that conforms with the architecture of surrounding buildings (current or planned), as well as the applicable design standards of the zoning district in which it is located (City of Renton, 2015b). Details regarding the height and materials of the surrounding walls/fence and screening methods are provided in Appendix G. The municipal code states that new electrical distribution lines should be placed underground if they are located within the shoreline. However, in the event underground placement is not feasible, visual impacts must be "minimized to the extent feasible" (City of Renton, 2015b).

11.2.12 Sammamish

The City of Sammamish has adopted policies to protect views, particularly those of shorelines and water bodies. The Draft 2015 City of Sammamish Comprehensive Plan states that "residents identify streams, lakes, forested areas and other natural features as defining features of the City, and they believe the preservation of these natural features should be an important priority" (City of Sammamish, 2015a). City policies also recognize the positive aesthetic benefits associated with Sammamish parks and recreation facilities, and suggest that they should be maintained to "ensure the longevity of their benefits" (City of Sammamish, 2015a).

The Draft Comprehensive Plan also supports identifying and protecting, where appropriate, scenic areas such as designated view corridors, with an emphasis on providing visual public access to public shorelines, such as Lake Sammamish, Pine Lake, Beaver Lake, and all tributary waters and wetlands in the city. The plan includes policies that utilities should be placed underground if it is "physically and financially feasible" (City of Sammamish, 2015a). If undergrounding utilities is not possible, aboveground utility facilities should be aesthetically compatible with the surrounding area. The plan includes policies that visual impacts associated with towers should be minimized in the community.

The City of Sammamish Municipal Code (current through March 17, 2015) does not include regulations that guide development of new utilities to reduce impacts to views or visual resources. There are, as of yet, no designated view corridors in Sammamish (City of Sammamish, 2015b). However, the Sammamish SMP protects visual access to the shorelines (City of Sammamish, 2011).

11.2.13 Yarrow Point

The 2014 Town of Yarrow Point Comprehensive Plan states that the Town's long-term vision for electrical utility infrastructure is to have it placed underground (Town of Yarrow Point, 2015). This is reflected in the Yarrow Point Municipal Code (current through June 10, 2014), which states that existing overhead electrical facilities should be converted to underground facilities prior to any system modification, and any new electrical facilities should be installed underground (Town of Yarrow Point, 2014). This preference for undergrounding utilities is also discussed in the SMP, which states that new utilities should be located outside of the shoreline jurisdiction whenever feasible. Utilities that must be located in the shoreline must be placed in existing rights-of-way (Town of Yarrow Point, 2012).

11.3 WHAT ARE THE VISUAL RESOURCES, VIEWPOINTS, AND VIEWS IN THE COMBINED STUDY AREA?

11.3.1 Visual Character on the Eastside

The Eastside is a landscape bounded on the east and west by large lakes, centered in the Puget Sound region where the horizons are defined by the Cascade Mountains to the east and Olympic Mountains to the west. Except for the southeast portion of the Eastside, the topography consists of low, rolling hills rising from approximately 20 feet above sea level near Lake Washington, to hilltops 400 to 500 feet above sea level. The highest points in the Eastside are in the southeast portion, where topography rises to approximately 1,200 feet in Newcastle and 1,400 feet in Bellevue. Cougar Mountain, a natural area in unincorporated King County, rises to 1,614 feet.

The higher elevation areas and areas directly adjacent to the lake shorelines generally afford the widest views. Oftentimes, the clearing associated with residential development can result in the creation of new view corridors. However, due to the extensive tree cover and rolling topography common throughout the Eastside, views are often limited despite the presence of

residential development (Figure 11-2). Developed shoreline and hilltop areas are the exception; these areas tend to have less tree cover and more extensive views.

Figure 11-2. Wooded Neighborhood in Bellevue

From the more open shorelines and hilltops, portions of Lake Washington, Lake Sammamish, the Cascades, and the Olympics are generally visible. The skylines of downtown Seattle and downtown Bellevue are also visible from many of these same areas. There are also areas throughout the Eastside where closer territorial views are available. Because of the tree cover generally found throughout the Eastside, these territorial views are often views of wooded hillsides with a few houses or other structures visible among the trees. A few areas are dominated by more urban views, including freeways and commercial development.

Several existing overhead electrical transmission corridors cross the Eastside. These are typically areas cleared of trees that abut single-family and multifamily residential development over much of their length, but they also cross commercial and industrial areas.

While several neighborhoods on the Eastside have underground electrical distribution lines, most neighborhoods have overhead distribution lines. Distribution lines are typically on shorter poles than transmission lines, and they do not require as large a clear zone around the lines as transmission lines. There are also numerous other structures that are tall enough to protrude into views, including buildings and cell phone towers.

In residential areas, single-family homes and low-scale multifamily buildings mostly range from 15 to 35 feet in height. In commercial areas, building heights are mostly less than 60 feet, but in some areas mid-rise and high-rise development extends much higher.

11.3.2 Visual Resources

Many visual resources are documented in local plans and regulations as being important to Eastside communities (Appendix G). Comprehensive plans note the visual benefits provided by natural features, such as parks and open spaces, as well as built features that provide character and identity to the area, such as the Seattle skyline. For this programmatic EIS, visual resources are defined as areas that are viewed from a particular location (a viewpoint). Therefore, although plans and scoping comments discuss the visual benefits of parks (such as Bridle Trails State Park), for this analysis these are listed as viewpoints rather than visual resources because viewers generally would be located within the park to enjoy the views of the park (see Section 11.3.3).

The following features are considered to be major visual resources because they are regional in nature, and they are identified as visual resources by the study area communities:

- Cascade Mountain Range;
- Mount Rainier;
- Olympic Mountain Range;
- Lake Washington;
- Seattle skyline;
- Issaquah Alps (Cougar Mountain, Tiger Mountain, and Squak Mountain);
- Lake Sammamish;
- Sammamish valley;
- Beaver Lake;
- Pine Lake; and
- Cedar River.

These visual resources are discussed below and mapped on Figure 11-3. Several of these are also identified as important for property value assessment by the King County Assessor (King County, 2012).

The **Cascade Mountain Range** extends from British Columbia to southern Oregon. Most of the peaks are around 6,000 feet tall, although some such as Mount Rainier are much higher. Because the mountains are located 8 to 10 miles east of the easternmost study area boundary, they are visible from various private and public locations throughout the combined study area.

Mount Rainier, the tallest peak in the Cascade Mountain Range, provides a visual landmark for the greater Seattle area (Figures 11-4, 11-6). At 14,410 feet tall, Mount Rainier "visually dominates the skyline" from numerous locations throughout the combined study area, and up to 100 miles away (The National Geographic Society, 2015).

The **Olympic Mountain Range** is on the Olympic Peninsula, west of Puget Sound. The highest peak, Mount Olympus, is 7,980 feet tall. The Olympic Mountain Range can generally be seen in the background anywhere there are views of the Seattle skyline (Figure 11-7).

Lake Washington, at 34 square miles, is the largest lake in King County. It separates the city of Seattle from the Eastside, with Kirkland, Bellevue, Beaux Arts, Hunts Point, Yarrow Point, and Renton sharing its shoreline in the combined study area (WDFW, 2015). In addition to views from residences abutting the lake shoreline, Lake Washington is visible from many properties on the hillsides above the shoreline, from taller hills within the combined study area, and from several public parks. Most views of Lake Washington from the Eastside also include Seattle and the Olympic Mountain Range in the background (Figure 11-7).

The **Seattle skyline** includes Seattle's tallest buildings, such as the Space Needle, the Columbia Center, and Two Union Square. Located west of Lake Washington, the skyline is visible from most locations in the combined study area that have views of the lake. Residents on the highest hills on the Eastside, such as in Newcastle and on Cougar Mountain, also have a view of the Seattle skyline (Figure 11-7).

Cougar, Tiger, and Squak Mountains are part of the Issaquah Alps and are prominent features in the southern portion of the combined study area. These large natural areas include King County's Cougar Mountain Regional Wildland Park, Tiger Mountain State Forest, and Squak Mountain State Park. Ranging from approximately 1,600 to 3,000 feet in elevation, these peaks are visible from many residential locations in the southwest portion of the combined study area.

Lake Sammamish is visible from shoreline residences, many other properties on the hillsides above the shoreline, and from several public parks (Figures 11-8, 11-9).

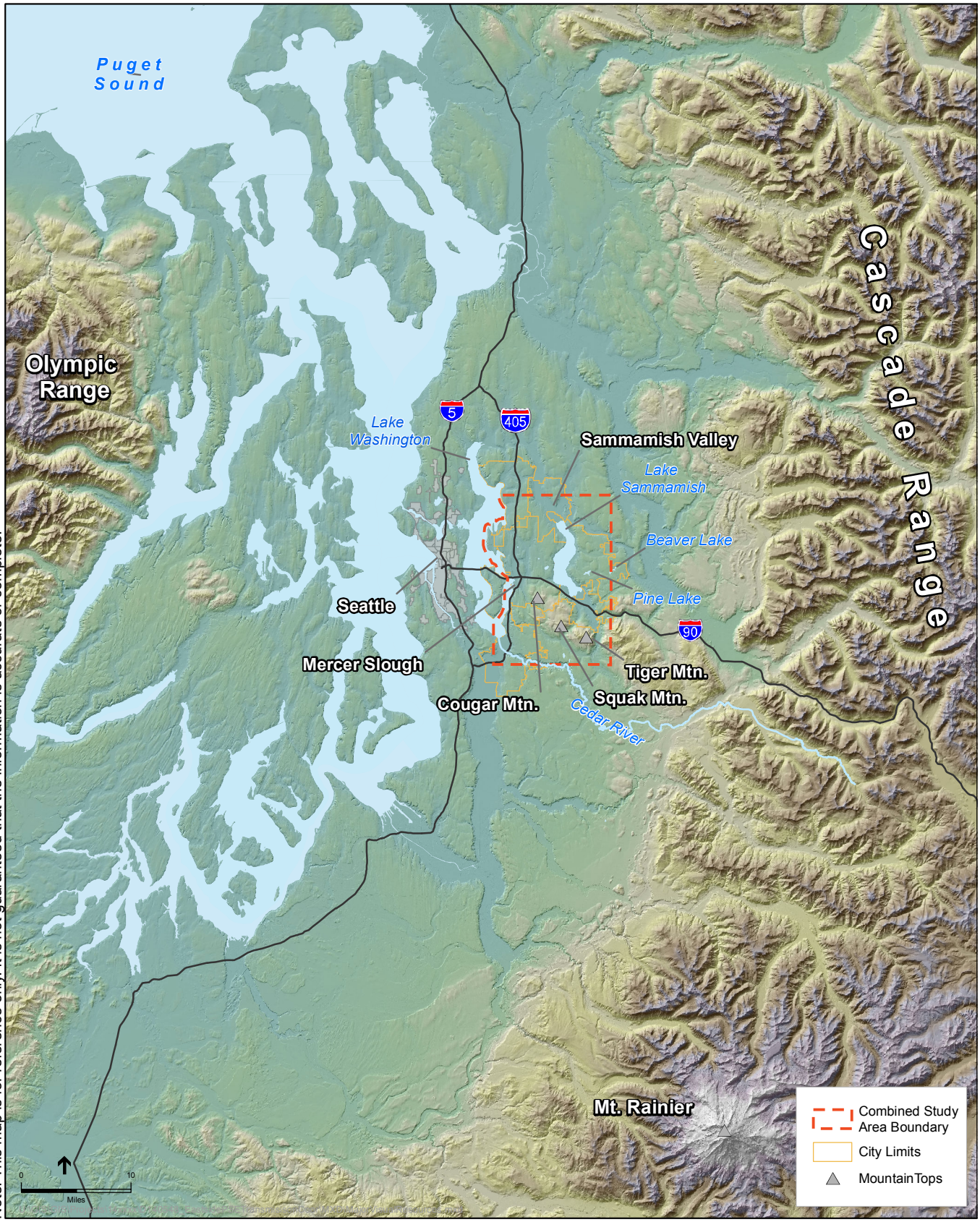
The **Sammamish valley** is in Redmond, north of Lake Sammamish beginning at Marymoor Park. The northern portion of the valley is composed of recreational and agricultural lands.

Beaver Lake is a 79-acre lake in Sammamish, east of Lake Sammamish. It is surrounded by residential development and Beaver Lake Park (King County, 2015a).

Pine Lake is an 88-acre lake in Sammamish, surrounded by residential development and Pine Lake Park (King County, 2015b).

The **Cedar River** is a 45-mile-long river that originates in the Cascade Mountain Range and flows through Renton, emptying into the southern portion of Lake Washington. Its primary viewpoint is from the Cedar River Trail and Park.

Other, smaller features that are considered to be visual resources include small water bodies, parks, and natural areas. Natural areas and parks are described in Chapters 5 and 12, and listed in Appendix G.



Note: This map is for reference only. It is not guaranteed that the information is accurate or complete.

SOURCE: King County 2015; ESA 2015; WA Ecology 2014.

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Figure 11-3

Major Visual Resources

Figure 11-4. Mount Rainier View from a Neighborhood in Northwest Bellevue

Figure 11-5. View of the Bellevue Skyline

Figure 11-6. View of Mount Rainier from Renton

Figure 11-7. View of Lake Washington, Seattle Skyline, and the Olympic Mountain Range from a Neighborhood in Renton

Figure 11-8. View of Lake Sammamish and the Cascades from Neighborhood in Northeast Bellevue

Figure 11-9. Lake Sammamish

11.3.3 Public Viewpoints

According to the comprehensive plans described in Section 11.2, most public viewpoints in the combined study area are provided at parks, trails, and public open spaces. However, they may also be located in less obvious areas, such as along roadway corridors or municipal buildings. Viewpoints and important visual or aesthetic resources that have been identified as such by local communities through their comprehensive plans or other policies are described in greater detail in Appendix G. The EIS Consultant Team used City websites and GIS data to identify parks, trails, and open spaces that provide views, both of visual resources or of the parks themselves. These identified public viewpoints are summarized in Table 11-1. Figure 11-10 shows the larger parks, trails, and public open spaces. Smaller parks are not shown on the figure, but will be considered in the project-level analysis if potentially affected by any of the Alternatives evaluated in Phase 2 of this EIS.

Table 11-1. Public Viewpoints

Jurisdiction	Major Parks, Trails, and Open Spaces
Washington State Parks	Bridle Trails State Park, Issaquah to High Point Trail Site, Lake Sammamish State Park, Squak Mountain State Park, West Tiger Mountain Natural Resources Conservation Area
King County	Bridle Crest Trail Site, Cavanaugh Pond Natural Area, Cedar Grove Natural Area, Cedar River to Lake Sammamish Trail Site, Cougar Mountain Regional Wildland Park, Cougar/Squak/Tiger Corridor, East Lake Sammamish Trail Site, Eastside Rail Corridor, Evans Creek Preserve, Evans Creek Natural Area, Grand Ridge Park, Issaquah Creek Natural Area, Marymoor Park, May Valley 164th Natural Area, Sammamish River Trail Site, Soaring Eagle Regional Park, Soos Creek Trail
Beaux Arts	Western Academy of Beaux Arts (WABA) Lake Washington waterfront beach
Bellevue	Bellevue Downtown Park, Burrows Landing, Chesterfield Beach Park, Coal Creek Natural Area, Goddard Mini Park, Kelsey Creek Park, Lake Hills Greenbelt Park, Lake Washington Trail, Lewis Creek Park, McCormick Park, Mercer Slough Nature Park, Phantom Lake/ Larson Lake Wetland Complex, Pikes Peak Greenbelt, Robinsglen Nature Park, Weowna Beach Park, YMCA Trail
Clyde Hill	Clyde Hill City Park, Clyde Hill Viewpoint Park
Hunts Point	Wetherill Nature Preserve
Issaquah	The City's Central Park, Emily Darst Park, Tibbetts Valley Park, Squak Valley Park, Talus Open Space, Timberlake Park, The Tradition Plateau Natural Resource Conservation Area
Kirkland	David E. Brink Park, Heritage Park, Houghton Beach Park, Houghton Neighborhood Park, Lake Washington Trail, Marina Park, Marsh Park, Rose Hill Meadows, Street End Park, Watershed Park, Waverly Beach
Medina	Lake Washington Trail, Medina Beach Park, Viewpoint Park

Jurisdiction	Major Parks, Trails, and Open Spaces
Newcastle	Clubhouse Trail, East Cross Town Trail, Golf Course Trail, Hazelwood Park, Highland Trail, Lake Boren Esplanade, Lake Boren Park, Lake Washington Trail, May Creek Park, May Creek Trail, May Creek Open Space, Meadowview Trail, Mid Cross Town Trail, Olympus Trail, Terrace Trail, West Cross Town Trail, Windtree Park
Redmond	Bridle Crest Trail Site, Dudley Carter Park, Idylwood Beach Park, Luke McRedmond Landing, Redmond Central Connector, Reservoir Park
Renton	Cedar River Trail and Park, Gene Coulon Memorial Beach Park, Honey Creek Open Space, Jones Park, Kennydale Beach Park, Lake Washington Trail, Maplewood Golf Course, Phillip Arnold Park, Riverview Park, Ron Regis Park
Sammamish	Beaver Lake Park, Ebright Creek Park, Evans Creek Preserve, Pine Lake Park, Sammamish Landing
Yarrow Point	Yarrow Bay Wetlands Trail

Note: This map is for reference only. It is not guaranteed that the information is accurate or complete.

SOURCE: King County 2015; ESA 2015; WA Ecology 2014; Issaquah 2015; Newcastle 2015; Bellevue 2015; Sammamish 2015; Renton 2015; Kirland 2015; Redmond 2015.

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Figure 11-10

Public Views

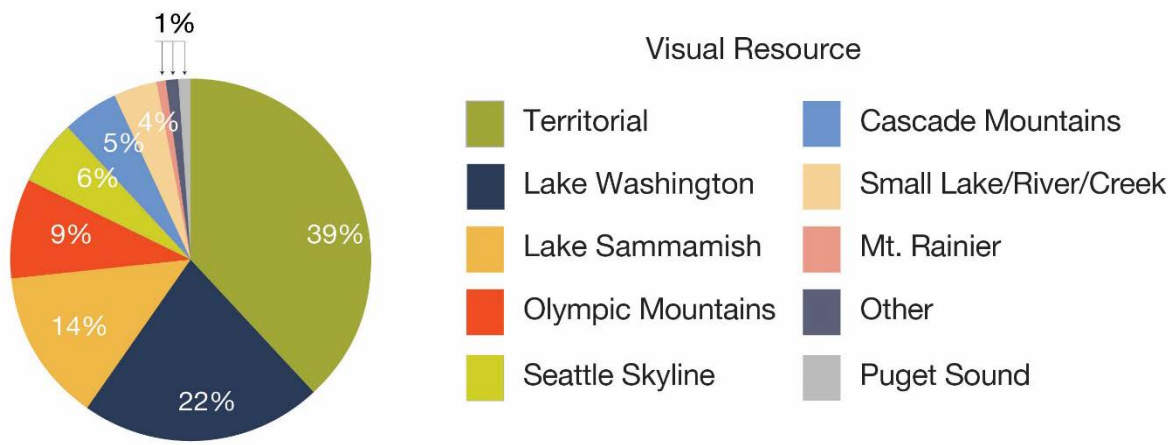
11.3.4 Private Viewpoints

King County Assessor data were used to identify views associated with study area properties and examine correlations between views and property values. Many of the visual resources identified earlier in the chapter are used by the King County Assessor to evaluate property values. These include views of Puget Sound, Lake Washington, Lake Sammamish, the Olympic Mountains, the Cascade Mountains, Mount Rainier, territorial views, and views of small lakes, rivers, or creeks.

Highly valued views are available from many properties in the combined study area. King County Assessor tax assessment data were used to estimate how many properties have views that are valued sufficiently to affect property values. The Assessor's office identifies properties with views, and rates those views with a view score. Because the Assessor typically makes these observations without entering the structures on the properties, this analysis likely does not identify all properties with views, but it provides a broad sense of the most likely locations where views are available (King County, 2012).

Of the 114,000 parcels within the combined study area, the King County Assessor identified 16,000 parcels (15 percent) as having a view. Figure 11-11 shows the views most commonly noted in the King County Assessor data. Many properties have more than one view (visual resource) listed, such as a territorial view and a view of mountains or an urban skyline in the background. The most common views noted within the combined study area were territorial views.

Figure 11-11. Percentage of View Types in the Combined Study Area



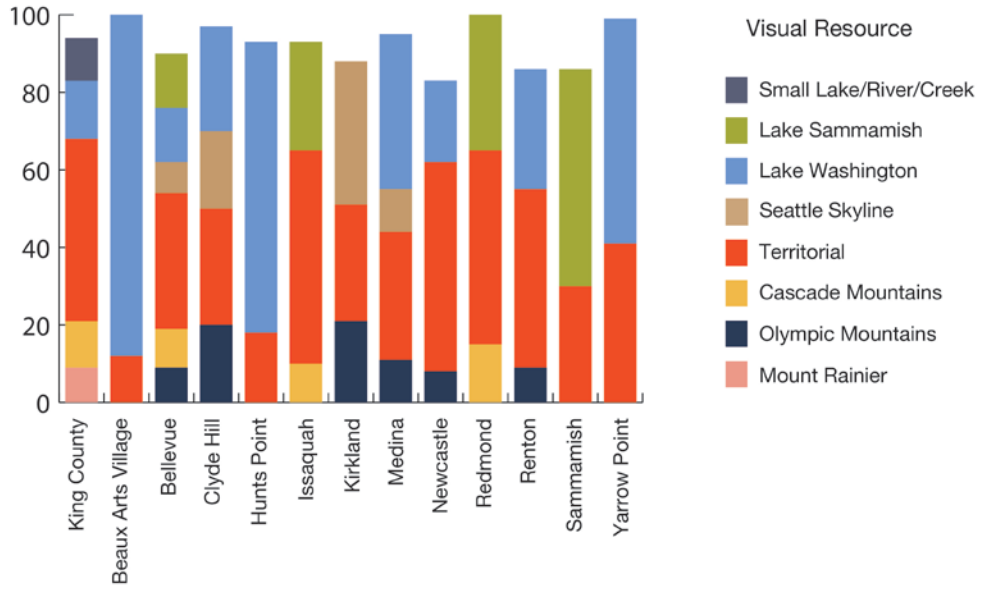
Source: King County, 2012

The King County Assessor's office assigns each property a view score, with higher values being assigned to better quality views as judged by the assigned property Assessor. Each Assessor takes into account the extent of view, obstructions, and other factors based on their external site observations. Recognizing that the data collected by the Assessors were intended for property tax assessment purposes and do not constitute an exhaustive inventory of properties with views, these observations provide a broad overview of where view properties are clustered within the combined study area. Properties with the highest view scores are

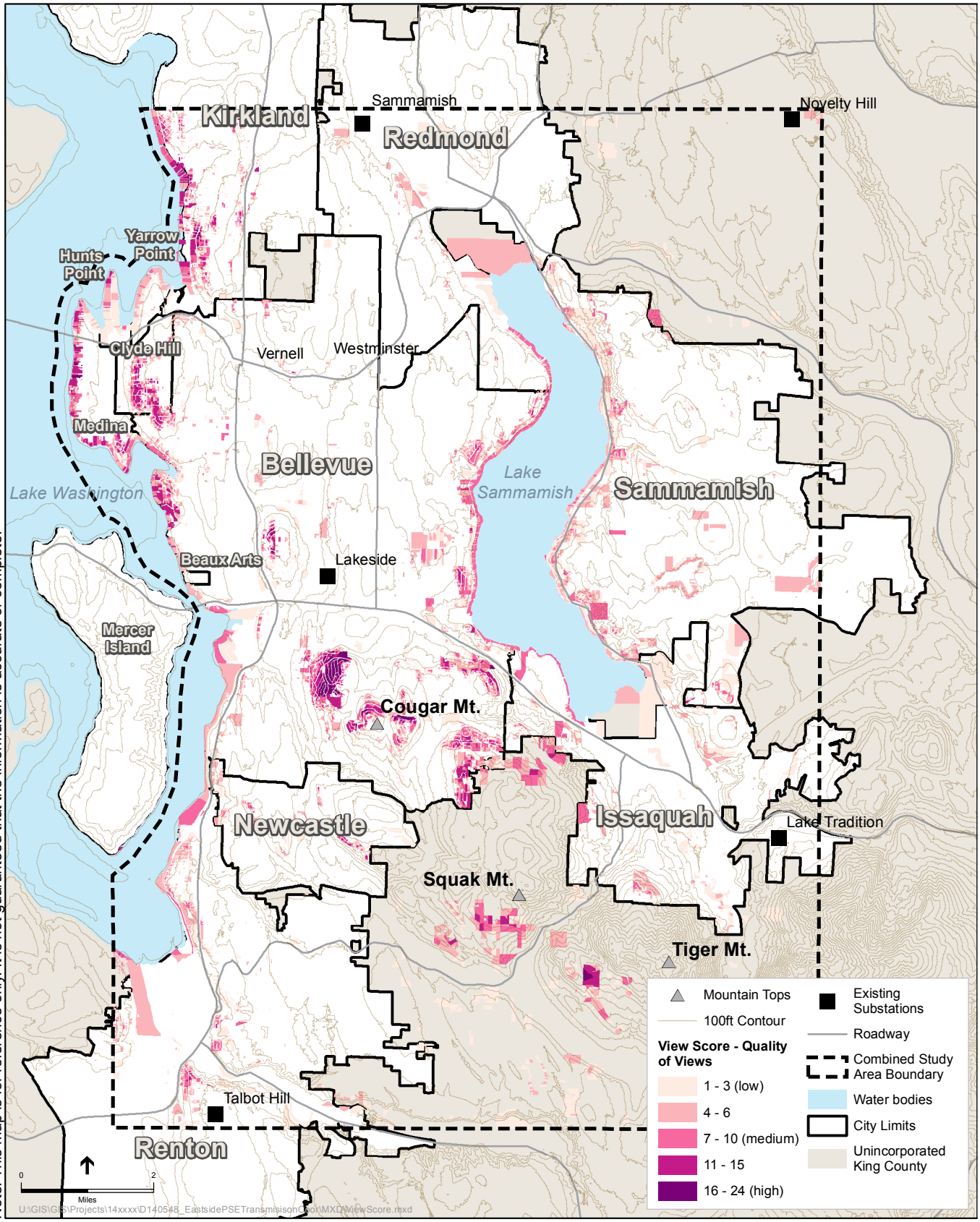
along the Lake Washington shoreline, particularly in Bellevue, Medina, and Hunts Point; in Clyde Hill at 300 to 400 feet above sea level; along the flanks and top of Cougar Mountain, and to a lesser degree on the flanks of Squak Mountain and Tiger Mountain; and along the shoreline of Lake Sammamish in Bellevue, Issaquah, Redmond, and Sammamish (Figure 11-13).

As stated above, territorial views are the most commonly noted views. Many properties have more than one visual resource noted by the Assessor; therefore, the number of views is greater than the total number of parcels. Overall, Bellevue has the highest number of view properties (6,299) in the combined study area, followed by Sammamish which has 2,205 view properties. Smaller cities, such as Beaux Arts Village, have the fewest view properties. This skew toward the larger cities is partially because larger cities have more properties overall. Figure 11-12 summarizes the percentage of common views noted in the Assessor's data in each study area community.

Figure 11-12. Percent of Private Viewpoints Identified by King County Assessor in Study Area Communities



Source: King County, 2012



Note: This map is for reference only. It is not guaranteed that the information is accurate or complete.

SOURCE: King County 2015; ESA 2015; WA Ecology 2014.
For more info visit www.energizeeastsideeis.org/map-propertyviews

Energize Eastside EIS 140548

Figure 11-13

Property View Scores

11.3.5 Existing Light and Glare

The combined study area is mostly urbanized with residential, commercial, and industrial land uses. Daytime glare is mostly associated with reflected sunlight from building doors and windows and vehicles. Current sources of nighttime light and glare include pole-mounted streetlights, lighting from vehicle headlights and traffic, illuminated buildings and residences, and exterior lighting associated with buildings and residences (parking lots, building signs, entryways for single-family homes, etc.). Ambient nighttime light and glare levels typically depend on surrounding land uses. Commercial areas and roadways usually have the most light and glare, while agricultural lands and open space often have the lowest levels. Ambient nighttime light levels are expected to be lowest in the rural areas at the foothills of the Issaquah Alps, varied from low to moderate in single-family residential areas, and highest in commercial areas such as downtown Bellevue (Figure 10-5).

11.3.6 Existing Electrical Facilities

Within the combined study area, electrical infrastructure is already present including 12.5 kV lines, 115 kV lines, 230 kV lines, and transmission and distribution substations (Figures 11-14, 11-15, and 11-16).

The 12.5 kV lines distribute electricity directly to consumers. These lines are commonly constructed of wood poles up to approximately 60 feet tall; the shorter poles make the lines less visible from a distance (Antunes et al., 2006). As stated in the comprehensive plans noted in Section 11.2 most study area communities are working to underground these smaller distribution lines as new development occurs.

Typically, 115 kV lines are suspended on single wood poles and are generally 70 to 90 feet above ground (Corbin, 2007), but within the Eastside some are as short as 49 feet (Strauch, personal communication, 2015). Depending on the terrain, the poles are typically spaced 300 to 400 feet apart (Corbin, 2007).

Figure 11-14. 115 kV Transmission Line at the Intersection of NE 8th and 136th Ave NE in Bellevue

Figure 11-15. 230 kV Transmission Line Crossing SE May Creek Park Road in Newcastle

Figure 11-16. Lakeside Substation

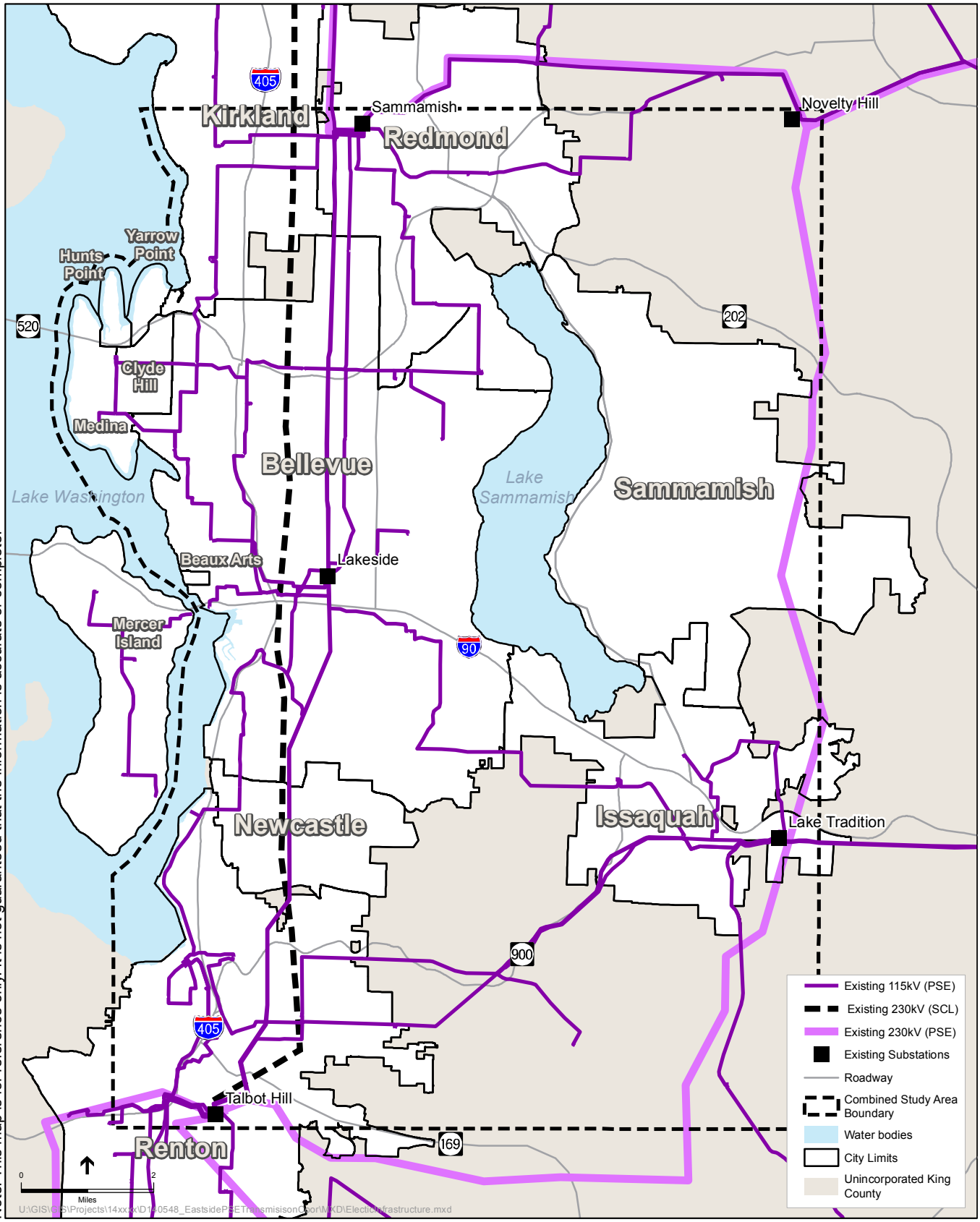
The 230 kV lines are typically suspended on steel poles that are 100 to 135 feet tall and 200 to 1,000 feet apart (Corbin, 2007).

Substations are fenced areas that contain a building and a yard with electrical equipment. On the Eastside, overhead wires typically feed the substation and the surrounding electrical distribution system.

Figures 11-14, 11-15 and 11-16 show an example of existing electrical infrastructure, including substations, 115 kV lines, and 230 kV lines located within the combined study area.

The main 115 kV PSE line enters the combined study area from the north through Redmond and heads south through the Westminster substation and the Lakeside substation, terminating at the Talbot Hill substation in Renton, with minor offshoot lines diverging from the mainline along the way (Figure 11-17).

The existing large substations (e.g., Sammamish, Lakeside, Talbot Hill, and Lake Tradition) are typically located in industrial, commercial, or vacant areas where topography and vegetation can shield the substation. Smaller substations, which are lower in height and easier to conceal, can be found adjacent to most land uses, including residential properties, but vegetation and fences are often used so that they are less noticeable. The 115 kV lines, which are more prominent, are most common along commercial rights-of-way, while 230 kV lines, with their large easements, are located in residential areas but are often buffered by vegetation.



Note: This map is for reference only. It is not guaranteed that the information is accurate or complete.

SOURCE: King County 2015; ESA 2015; WA Ecology 2014; Puget Sound Energy 2015.

Energize Eastside EIS 140548

Figure 11-17

PSEs Eastside Electrical Transmission Infrastructure

11.4 HOW WERE POTENTIAL VISUAL IMPACTS ASSESSED?

Due to the programmatic nature of this EIS, a general overview of potential impacts is provided. In order to conduct a detailed visual impact assessment, the exact location, size, and configuration of the proposed project would need to be known. A more site-specific analysis will be provided in Phase 2 of this EIS process, when a specific project is proposed.

Because the value of visual resources is subjective based on the viewer, it is difficult to quantify or estimate visual impacts, particularly at a programmatic level. Available methods focus on project-level evaluations. For this programmatic evaluation, potential visual impacts were evaluated using an adaptation of the Federal Highway Administration *Guidelines for Visual Impact Assessment* (FHWA, 2015). This method, although developed for project-level review, takes into account visual compatibility (e.g., scale, form, materials); viewer sensitivity (e.g., proximity, extent, awareness, focus, protected views); and degree of impact (adverse, neutral, or beneficial). The general methods and impact assessment criteria are applicable to this evaluation. This EIS analysis used the four impact assessment criteria from the FHWA guidelines shown in Table 11-2.

Who are the potential viewers?

A viewer is anyone who observes project-related changes to the visual environment. For instance, viewers of new transmission lines in a transportation corridor would include drivers and pedestrians. Viewers of expanded substations in single-family residential areas would likely be residents. Knowing the type of viewer helps determine the viewer's sensitivity to the impact because it determines the context and how long they experience the view. To learn more about the types of viewers present in the combined study area, see Figure 10-4 which shows existing land uses.

Table 11-2. Impact Assessment Criteria

Criterion	Description
Degree of contrast	The extent to which a viewer can distinguish between an object and its background.
Duration of impact	How long the visual impact would last.
Number of viewers	How many viewers would notice the change in the visual environment.
Sensitivity of the viewer	The proximity of viewers and their level of awareness.

In most cases, viewers who are closer to new electrical infrastructure would be subject to greater visual impacts than those located farther away from the project. However, factors such as topography and vegetation are considered because they could substantially affect project visibility and perceived visual contrast levels.

For this analysis, the magnitude of project-related impacts is classified as being minor, moderate, or significant as follows.

Minor - If they would be noticeable but infrequent or limited in extent. The duration of the impact would be temporary, the degree of contrast would be minimal, few viewers would be impacted, or the viewers who would be impacted have a low sensitivity to the change to the visual environment.

Who are Sensitive Viewers? Viewers are considered sensitive if they have traveled to a viewpoint to enjoy the view, and/or they are residents who enjoy a view over the long term.

Moderate - If they would be long term or permanent, but limited in scope or effect. The degree of contrast could be high with few, less sensitive viewers, or the degree of contrast could be low but with more viewers with higher sensitivity to the change in the visual environment.

Significant - If the duration of impact would be permanent, the degree of contrast would be high, and there would be a medium to high number of viewers with medium to high sensitivity to the change in the visual environment.

A summary of how the four assessment criteria are used to assign impact classifications is provided in Table 11-3.

Table 11-3. Applying Assessment Criteria to Assign Impact Classification

Impact	Degree of Contrast	Number of Viewers	Duration of Impact	Sensitivity of the Viewer
Minor	Low to Medium	Low to Medium	Short-Term to Long-Term	Low to Medium
Moderate	Medium to High	Medium to High	Short-Term to Long-Term	Medium to High
Significant	High	Medium to High	Permanent	Medium to High

11.5 WHAT ARE THE LIKELY CONSTRUCTION IMPACTS TO VIEWS AND VISUAL RESOURCES?

11.5.1 Construction Impacts Considered

This section describes the types of project-related construction impacts that could affect the visual environment of the study areas. Common construction-related impacts to *views* and *visual resources* include clearing and grading or general construction activities (presence of construction workers, vehicles, or equipment).

Clearing and grading can result in a visual impact because areas that were once vegetated would be cleared, and natural undulations in the topography would be graded. Clearing and grading has the potential to permanently change the character of the area, particularly if a substantial amount of taller vegetation (such as trees) is removed or if grading noticeably alters any existing landforms. Therefore, clearing and grading is less likely to be noticeable in

areas that are already mostly flat and have limited vegetation. However, clearing in heavily forested areas, or areas with varied terrain such as hills or mountain ranges, would potentially impact foreground views, especially where extremely linear forms contrast against curved landscapes. The effects of permanent clear zones for transmission lines are discussed under operational impacts.

Construction activities often require introduction of large equipment into the visual environment. Construction vehicles and equipment often produce visible dust while clearing the right-of-way and traveling on unpaved access roadways. Increases in local traffic during construction could also result in temporary visual impacts, particularly if a given location requires numerous workers and on-site parking.

Construction-related impacts to views and visual resources from the project would be temporary and vary depending upon the component, ranging from approximately 2 to 36 months (see Table 2-3 in Section 2.3.5 for anticipated construction durations for each alternative). Impacts resulting from the project would vary throughout the combined study area, depending on the duration of the construction activities and the visibility and proximity of the construction to viewers. In general, construction impacts to visual resources and views are not considered significant because they would be temporary.

All of the alternatives would likely require some degree of construction, and therefore would produce temporary construction impacts. Impacts would likely result from creation of access roads, clearing for *transmission line* rights-of-way, or increased presence of construction vehicles, equipment, materials, and personnel, as well as the potential for increased light and glare associated with construction site lighting. Alternatives 1 and 3 present the greatest potential for visual impacts during construction, while Alternative 2 presents the least potential for visual impacts, due to the decentralized and small-scale nature of most of the components.

Vegetation clearing during construction can be either temporary or permanent. Temporary vegetation removal that can be restored after construction is discussed in Section 11.5. Adopted plans and policies for visual impacts and view protection focus on the permanent structures that remain following construction. Long-term impacts associated with permanent facilities are discussed in Section 11.6.

11.5.2 No Action Alternative

Under the No Action Alternative, PSE would not engage in any construction activities beyond the occasional conductor or pole replacement that is necessary for regular maintenance. Individual property owners may choose to construct solar panels, wind turbines, or rooftop generators as a means of reducing energy consumption, but the level of such activity is not expected to change. Impacts to visual resources or views are expected to be negligible.

11.5.3 Alternative 1: New Substation and 230 kV Transmission Lines

Impacts are described according to the major components associated with Alternative 1. The substation impacts are described first, followed by transmission line options.

Construction or expansion of a substation would be required for any of the options under Alternative 1. Substation construction would require equipment and activities that would contrast with the visual character of residential areas since it would be larger scale construction than is common in such areas. The duration of construction would also be longer than in any other location in the transmission corridor. The visual impacts from substation construction activities at the Westminster and Lakeside substation sites would be minor to moderate, depending on design and location. The Westminster substation site is surrounded by residential uses, and therefore has higher viewer sensitivity, while the Lakeside substation is surrounded by commercial, industrial, and institutional land uses and has lower viewer sensitivity. Impacts at the Vernell site (which is just south of SR 520 and surrounded by industrial and commercial uses) would be minor, due to lower contrast with the character of the areas and lower viewer sensitivity.

Under the options proposed for Alternative 1, clearing would be required for construction of the transmission line, access roads, substation expansion, and placement of accessory infrastructure (vaults, etc.) Depending on where the alignment is placed, construction could affect many viewers (such as along a major highway) or few viewers (for example, in a heavily wooded area where there is less development). The sensitivity of viewers could also vary depending on whether the alignment is placed in a highly developed area (such as along a freeway where viewers are accustomed to views of large construction projects) or within a lower density residential neighborhood (where viewers may be accustomed to other residential development but not large-scale construction equipment). The duration of impact for construction would vary depending on the amount of vegetation that needs to be cleared and other construction requirements, but could range up to 8 weeks in any given location.

11.5.3.1 Option A: New Overhead Transmission Lines

Clearing, grading, and construction activities described above would be required for construction of Alternative 1, Option A. Most construction vehicles and equipment would be visible only in the immediate vicinity. Cranes would be visible from a distance. In any given location, construction activity would be visible for a few weeks. Due to the short construction period in any location, construction activities for Option A are generally expected to have minor impacts on visual resources and viewers if the work is conducted within an existing corridor or right-of-way. If a new corridor were selected, the duration would likely be longer due to the need for more extensive clearing. The longer duration and likelihood of stockpiled construction debris in or near residential areas and parks, where more sensitive viewers reside, could have a moderate impact on viewers.

11.5.3.2 Option B: Existing Seattle City Light 230 kV Transmission Corridor

Alternative 1, Option B would have the same clearing, grading, and construction activities as described for Option A because the existing transmission line would need to be replaced, and the new transmission line and substation equipment would be the same or similar to Option A. Option B would require modifications to and expansion of several substations in order to make the interconnections with the existing transmission line. Minor impacts are anticipated.

11.5.3.3 Option C: Underground Transmission Lines

Clearing, grading, and construction activities described above would be required for construction of Alternative 1, Option C. Undergrounding transmission lines generally requires more extensive construction effort to cut trenches and place concrete duct banks, conduits, and vaults that carry the conductors, resulting in a longer construction period. This longer construction period could result in greater short-term impacts than for Option A or B, but they would still be considered minor because of the temporary nature of construction.

11.5.3.4 Option D: Underwater Transmission Lines

Alternative1, Option D would require clearing, grading, and construction activities described above. This option would require underground transmission line installation near the shoreline and underwater construction in Lake Washington. The lake is considered to be a visual resource by most nearby communities. Although submerged lines are not visible after they are constructed, barges and other construction vessels would be present on the lake for a period of time. The presence of unusual vessels would not necessarily be considered an adverse visual impact for a short duration. Due to the short construction period, Option D could have minor impacts on visual resources.

11.5.4 Alternative 2: Integrated Resource Approach

In general, Alternative 2 would result in fewer construction-related impacts than Alternative 1 because the components are smaller in scale and distributed over a larger area, resulting in less noticeable contrast. Viewer sensitivity is also expected to be less because construction would be small-scale and similar in nature to other construction projects in the area.

Potential construction-related activities associated with the different components (energy efficiency, demand response, distributed generation, energy storage, and peak generation plant) would result in minor impacts to visual resources. The construction impacts associated with the energy storage component would be of longer duration but would still be considered minor.

11.5.5 Alternative 3: New 115 kV Lines and Transformers

Under Alternative 3, clearing and grading would likely be required for widening of easements for 115 kV lines and expansion of the Talbot Hill, Sammamish, Lakeside, Clyde Hill, and Hazelwood substations. Construction equipment and personnel would be necessary at the substation sites and the 115 kV alignments.

The new 115 kV alignments would primarily be along roads, crossing through all types of neighborhoods and potentially near visual resources such as parks. Viewer sensitivity would range from low for viewers in cars (for whom power pole installation activities are relatively common) to high near natural areas and in new corridors that may need to be developed, especially near residential areas.

The visual contrast present during construction is anticipated to be less than Alternative 1, Option A or B (which involve overhead lines) because the scale of poles would be smaller, and smaller construction equipment would be needed. However, compared to Alternative 1,

the longer corridor of Alternative 3 would result in more dispersed construction impacts that are more likely to be seen by a higher number of viewers.

In general, construction activities for Alternative 3 would have a short duration and result in minor to moderate impacts on the visual environment, depending on viewer sensitivity.

11.6 WHAT ARE THE LIKELY OPERATIONAL IMPACTS TO VIEWS AND VISUAL RESOURCES?

11.6.1 Operation Impacts Considered

All operation impacts are considered to be permanent. Common operation-related impacts include the following:

- Changes to visual character;
- Changes to views, viewpoints, and visual resources; and
- Light, glare, and exhaust.

These impacts were assessed using the impact criteria listed in Section 11.4, to assign impact classifications (minor, moderate, significant). Impacts resulting from views of existing power lines on assessed property values were also examined. While it is common for properties abutting or within a transmission line corridor to have lower assessed property values than similar properties that are not abutting or within the corridor, a direct correlation between views of high-voltage transmission lines and changes to assessed property values could not be made, because much of the effect is likely due to restrictions on property use in the easement, rather than the view of the property line. For this reason, impacts on property values were not classified as minor, moderate or significant.

11.6.1.1 Changes to Visual Character

The visual character of the Eastside is described in Section 11.3.1. Changes to visual character can occur through introduction of new infrastructure that creates contrast against the natural or built environment due to its height or geometric form. Changes to visual character can also occur as a result of introducing a clearing or opening in an area that was previously forested.

11.6.1.2 Changes to Views, Viewpoints, and Visual Resources

Changes to views could occur through obstruction of the view. For example, taller infrastructure can obscure or block views. Changes to visual resources would most likely occur if infrastructure were placed on a visual resource or viewpoint.

11.6.1.3 Light, Glare, and Exhaust

Light, glare, and exhaust could occur if new lighting fixtures were required, previously unlighted areas were lit, new infrastructure was composed of reflective materials, or new infrastructure produces visible exhaust. The degree of the impact would depend on the contrast created by the new lighting source and the proximity to viewers. The amount of

impact produced through glare would depend on the amount of reflective materials used and how much is already present in the surrounding environment. Impacts associated with exhaust, such as from a peak generation plant, would depend on how visible it is from a distance, and whether it changes the character of the visual environment into which it is placed. Visibility from a distance depends on the density of visible emissions and climatic conditions (such as clear cold air or fog) and frequency of operation.

11.6.1.4 Impacts to Property Values

As described in Chapter 10, there have been a wide range of findings regarding the relationship between property values and views of power lines. As previously discussed, for this evaluation, potential impacts to property values are discussed in terms of assessed valuations, in order to use recent published data with a broad base that can be used for comparison.

Property owners have expressed concern about market value. Because market value is based on a variety of factors in addition to visual resources (for example, amenities of the house, proximity to schools, transit, local services, etc.) it is difficult to obtain data for comparison. Therefore, this analysis describes property values in terms of assessed value, not market value.

Several studies have found that areas adjacent to major transmission lines have lower property values than comparable properties where there is no view of a transmission line. The studies indicate a range of 1 to 20 percent reduction in property value, with most of the reductions in value around 6 percent (Cowger et al., 1996; Rosiers, 2002; Chalmers, 2012). However, in a review of studies investigating the relationship between transmission lines and property values, the Electric Power Research Institute (EPRI) determined that neither the proximity of transmission lines nor the voltage and size of transmission lines and easements were determining factors regarding changes in property values (EPRI, 2003).

Despite the varying conclusions on whether or not views of transmission lines translate into reduced property values, the King County Assessor's Office noted that factors such as construction of a view-obstructing transmission line could result in a negative influence on property values (FCS Group, 2016). The Assessor's Office noted that when a property value appears to be affected by the presence of a power line, the Assessor of the property adjusts the assessed value downward (Prins, personal communication, 2015).

Numerous transmission lines are located in the combined study area. It is beyond the scope of this analysis to prepare a complete cost comparison of all properties having views of transmission lines with comparable properties that do not have views. To conduct a programmatic-level evaluation, the EIS Consultant Team examined Assessor's data to identify a potential correlation between a view of a power line and lower property valuations. The EIS Consultant Team found that the data were inconclusive about the reasons for different valuations set by the Assessor. For example, adjustments are sometimes made to reflect views of power lines, but they may also reflect other factors such as restrictions on use of property in a power line easement. The EIS Consultant Team could not determine the degree to which these various factors negatively impacted the property assessment.

In conclusion, because of the number of factors and interrelationships affecting property values, it is not possible to determine from Assessor's data how much of the effect on property values is due specifically to views. It is reasonable to assume that some existing properties would have lower property values following construction of an overhead transmission line. Refer to Chapter 10 for additional discussion of the effect of overhead transmission lines and property values.

11.6.1.5 Consistency with Plans and Policies

At a programmatic level, it is assumed that PSE would follow policies associated with design of the project relating to visual aspects of projects, such as use of fencing around substations. If design policies are followed, Alternative 2 would likely be consistent with the plans and policies of study area communities.

Alternative 1, Option C would also likely be consistent with plans and policies because it would place the transmission line underground and would avoid the shoreline and major visual resources.

Additional evaluation of Alternative 1, Option D would be required to determine if the use of the shoreline to connect underwater portions of the line with overhead lines would be consistent with comprehensive plan and SMP guidance (see Appendix G).

The study area policies provided in Appendix G and described in Section 11.2 will be considered in greater detail in the Phase 2 EIS.

11.6.2 No Action Alternative

Under the No Action Alternative, no substantial new infrastructure would be introduced into the visual environment, and therefore no substantial changes to the visual character of the Eastside would occur. The primary changes to the visual environment under the No Action Alternative would be those associated with PSE's conservation efforts. These include dispersed and minor changes to buildings, such as weatherproofing and addition of solar collectors. Because conservation improvements would be integrated into an urban framework, no visual resources would be impacted. Public places such as parks, trails, or open spaces and associated viewpoints would also not be impacted.

Due to the dispersed nature of the No Action Alternative, there would be numerous viewers, but viewer sensitivity would be low because improvements would not differ substantially from current conservation efforts in the area. Window replacements and similar weatherproofing would have negligible visual impacts. However, the dispersed presence of solar collectors and similar small infrastructure could result in minor impacts for some viewers because they would create slightly more contrast.

The most visible elements that are expected under the No Action Alternative would be wind turbines and solar panels that may be installed by PSE or its customers as a means of reducing energy consumption. Solar panels can introduce a strong, regular geometry into the landscape and can produce glare from their highly reflective surfaces. However, impacts are reduced when the panels are placed in urban settings, as would occur under this alternative. If

wind turbines are used, they would likely be small-scale turbines serving individual houses or small buildings. Such turbines are typically 6 to 24 meters in height and have rotors with a diameter of 2 to 7 meters (Fortis Wind Energy, 2015). A flickering effect could be produced as sunlight passes through the moving blades of a wind turbine; however, visual impacts are typically minimal. Reflections from the blades of house-scale turbines are unlikely due to the new coatings that are used (Fortis Wind Energy, 2015). As noted in Chapter 2, in the past there have been few solar energy systems installed and even fewer wind turbines on the Eastside. As long as these types of infrastructure continue to be scarce and dispersed throughout urbanized areas of the Eastside, impacts from solar and wind installation produced under the No Action Alternative would be minor.

11.6.3 Alternative 1: New Substation and 230 kV Transmission Lines

Under all options proposed for Alternative 1, permanent clear zones would be required for transmission lines, access roads, substation expansion, and accessory infrastructure (vaults, etc.). All options would include visual changes at substations. Overhead options would also produce impacts associated with new power poles and wires, and there is the potential for minor light and glare impacts. These types of impacts are discussed generally below and then in greater detail under the heading for each option.

11.6.3.1 Permanent Clear Zones

To ensure safe and reliable operation of overhead or underground transmission lines, the National Electric Safety Code (NESC) specifies minimum horizontal and vertical clearance requirements for overhead lines, where trees and overhanging branches are removed. These clear zone requirements typically determine transmission right-of-way (or easement) widths. The amount of right-of-way necessary depends on many factors, including whether or not it is adjacent to an existing transmission corridor or along a roadway. Typical right-of-way widths for 115 kV and 230 kV lines are between 70 and 150 feet depending on voltage and location (AEP-Ohio, 2014). Chapter 2 describes clearing requirements for each alternative. Specific easement agreements may require more clearance.

For this Phase 1 Draft EIS, where a range of widths is possible the analysis assumes the worst case for impact assessment. In practice, PSE may be able to reduce the required clear zone, in which case impacts would be less than assumed for this phase of the EIS. Also, in some cases, such as along street rights-of-way, small trees can remain below the wires. Clearing in a right-of-way is not restricted to vegetation. Easements allow PSE to remove anything located within the right-of-way (such as lawn furniture and other landscaping).

In areas where trees would be removed, the transmission lines and poles would be visible to nearby viewers. Clear zones can result in impacts by changing the visual character of the area (removal of trees, landscaping, and structures) and by opening up views of transmission lines and/or other features of the landscape that were previously obscured by vegetation, such as a highway or an industrial site.

The degree of contrast produced by clear zones would vary depending on where the alignment is placed and which option is implemented. For instance, the clear zone for an overhead transmission line in a new corridor in a wooded area would produce a higher degree

of contrast than one placed along a major highway. The clear zone for an overhead transmission line would have a higher degree of contrast with the surrounding environment than an underground line. Cleared areas would be less noticeable in areas that are currently flat and devoid of vegetation. However, foreground views where the transmission line traverses heavily forested areas, or areas with varied terrain such as hills or mountain ranges, would potentially be impacted due to the contrast between the straight linear form of the transmission line rights-of-way and the curved landscape. Therefore, maintaining the clear zone could result in permanent impacts to residents located along the transmission easement in that the visual character of their backyards could be significantly altered.

The extent of the required clear zone would be less if the transmission line is placed along a typical roadway or within an existing right-of-way. However, utilities paralleling existing corridors can cumulatively create wide, long areas of visual disturbance. In general, the study area communities, through their comprehensive plans, have identified roadways themselves as not being aesthetically pleasing and have policies to include landscaping to soften the visual impact. Locating utility lines along roadways concentrates the visual impact and allows the opportunity for landscaping to soften the impact.

The sensitivity of viewers would generally be higher in residential areas than in commercial and industrial areas or along a major arterial or highway, because the contrast created by a new transmission line would be greater in a residential area. However, the number of viewers who would see the alignment would be substantially greater along a major arterial or highway. Because the Eastside is predominantly single-family residential, there is a high likelihood that any overhead transmission corridor would affect sensitive viewers.

11.6.3.2 Visual Changes at Substations

All of the options associated with Alternative 1 require installation of a new transformer at, or adjacent to, either the Lakeside substation or the possible substation sites referred to as Westminster and Vernell.

Substations can have footprints that range from less than an acre (e.g., Eastgate substation) to 8 acres (e.g., Talbot Hill substation). Equipment in substations typically ranges between 20 and 45 feet tall depending on the type of equipment present. Smaller distribution substations can be screened from view using berms, fencing, or landscaping. Conversely, larger substations often have an institutional or industrial appearance that is harder to conceal.

For this project, existing substation footprints may need to be expanded by up to 4 acres. Substations that already have a 115 kV setup, such as the Lakeside substation, would need less acreage, while additions to Westminster and Vernell substations would need up to the full 4 acres to install the necessary equipment.

The Westminster and Lakeside substation sites are adjacent to parks and open space and residential uses, respectively (Figure 10-5); therefore, changes to these locations would be viewed by more sensitive viewers than the Vernell site, which is adjacent only to commercial development and a highway. The impact on the visual character of the area would depend on the design of the expansion and where it is located relative to sensitive viewers. Because the

Lakeside site already has a substation and associated overhead lines, the substation expansion for the new transformer would not substantially contrast with the existing environment.

The Westminster site has no existing substation but has overhead lines. A substation at this location would alter the character of that area, which includes Viewpoint Park. (Viewpoint Park, despite its name, does not provide significant views and is not listed in Table 11-1 as a public viewpoint.) Therefore, visual impacts associated with development of a substation at either the Westminster or Lakeside substation sites would likely be moderate. At the Vernell site, there are no sensitive viewers nearby and the visual character is dominated by commercial development and a major highway, so impacts from a substation would be minor.

11.6.3.3 Increase in Overhead Poles and Lines

Poles and wires for overhead lines have the potential to impact views by introducing structures that may be of a different scale than existing structures in the area. They may also impact the enjoyment of visual resources by partially obstructing views.

11.6.3.4 Light and Glare

The Federal Aviation Administration (FAA) has standards and guidelines that determine when structures need to be marked and lighted for aircraft safety. It is not anticipated that aviation warning lights would be required for this project because the proposed electrical infrastructure, including transmission poles, would be less than 200 feet in height and would not exceed the obstruction standards contained in 14 CFR Part 77 (FAA, 2007).

Substations include security lighting that operates all night to discourage vandalism and trespassing. When work at the substation is required at night (e.g., to fix a power outage), lighting intensity is increased for the duration of the work. In residential areas, substation lighting is generally required to be kept at the lowest possible levels and shielded to reduce light spillage impacts. In some areas, landscape screening is also required.

11.6.3.5 Option A: New Overhead Transmission Lines

Long-term visual impacts associated with Alternative 1, Option A include changes to visual character through introduction of new electrical infrastructure, partially obstructing views of visual resources, and maintenance of clear zones. Some viewers would likely perceive a significant impact.

11.6.3.5.1 Permanent Clear Zones

Permanent clear zones would be required under Alternative 1, Option A. The combined study area is highly varied in visual character, and many areas of the Eastside are already cleared and developed or have limited tree cover; in such areas clear zones would not contrast strongly. However, if located adjacent to forested parks or natural areas such as Cougar Mountain Natural Area, clear zones would produce a pronounced contrast.

It is anticipated that Option A would require a clear zone between 120 and 150 feet wide, requiring clearance of up to 327 acres of vegetation. Existing transmission corridors in the combined study area vary in width. If an overhead transmission line were placed in an

existing transmission right-of-way, the existing right-of-way would need to be extended to meet clear zone requirements. In the combined study area, many existing 115 kV transmission lines have clear zones that are close to the required width for a 230 kV line. Replacing the existing line with a 230 kV line would involve a more limited amount of clearing than a new corridor, but could still require removal of up to 109 acres of vegetation. If a 230 kV transmission line was placed along a typical roadway, a cleared corridor outside of the road right-of-way could be required in order to provide the required horizontal clearance.

Because the clear zone would create views of the transmission line, placing a new transmission line in a residential area where one does not currently exist would have a significant impact on the visual character of the area adjacent to it, and could have moderate to significant effects on territorial views or views of visual resources from surrounding properties within approximately 750 feet (depending on topography and vegetation). Visual impacts from replacing an existing transmission line could range from minor (in commercial or industrial areas) to significant (in residential areas or public viewpoints with unique views).

11.6.3.5.2 Visual Changes at Substations

Visual changes at substations would be as described in Section 11.6.3.2 for all options under Alternative 1.

11.6.3.5.3 Increase in Overhead Poles and Lines

The presence of transmission lines often results in a sharp contrast with the surrounding landscapes. The size of transmission line poles and the material they are made of can influence the amount of impact they create. It is anticipated that 85- to 100-foot-tall steel or wood poles would be used for the 230 kV lines. Depending on topography the pole height may vary, with the tallest height being approximately 135 feet if a highway is crossed (Corbin, 2007).

Placement of poles can also determine the degree of impact. When placed in relatively unobstructed skylines, transmission lines can become the dominant structure on the horizon, create contrast against the sky, and result in a more noticeable visual impact. Conversely, transmission lines placed in areas where they would be surrounded by other tall structures or trees can result in a less noticeable visual impact. Topography can also play a role in the visibility of the poles, with poles that are atop hills, ridges, or slopes being more visible than those that are located below the tree line.

Depending on where the poles are placed, views of visual resources could also be impacted. Although it is not anticipated that the new transmission corridor would be routed through known viewpoints, the presence of the line, depending on where it is being viewed, could obscure views. For instance, if the transmission line were placed along a roadway, it is likely that the impacts to visual character would be less than significant because the line would not be a prominent aspect of the viewshed. However, if the transmission line were placed along a scenic roadway, the lines could obscure views because the roadway itself would be considered a viewpoint (see Section 11.3).

Because of their height and geometric form, transmission lines are often visible above the horizon, contrasting against the sky and skyline (Figure 11-18). An overhead transmission line would cross or abut approximately 100 lots per mile in a typical single-family subdivision with 4 lots per acre. In total, overhead transmission lines would need to extend at least 18 miles to reach from Talbot Hill substation to Sammamish substation, with greater length required depending on how many turns the line makes between these two substations. In industrial, commercial, and lower density residential areas, fewer properties would be affected. In multifamily areas, and in some commercial areas, the number of viewers could be greater than in typical single-family subdivisions, even though the number of parcels might be less.

Views are likely to be impacted where the transmission line is located in the foreground distance zone (up to approximately 0.5 miles away from the project). However, impacts on views could also be substantial at greater distances depending on the angle at which the project is viewed and whether or not it is within the viewer's direct line of sight. In addition to affecting the visual character of the area adjacent to it, overhead transmission lines can impact views of visual resources from surrounding properties. Researchers from the Argonne National Laboratory analyzed the visibility of transmission lines in their 2013 paper, *Electrical Transmission Visibility and Visual Contrast Threshold Distances in Western Landscapes.* This analysis showed that high-voltage H-frame towers were noticeable to casual observers at distances of up to 3.5 miles and were thought to "strongly attract visual attention at distances of up to 1.5 miles" (Sullivan, 2013). However, topography and other conditions of the setting and viewers can limit the level of visual contrast created by transmission facilities. Smaller structures like those proposed for this project are not as noticeable, and other characteristics of the Eastside landscape affect the distance at which these structures would significantly affect views.

On the Eastside, topography and vegetation limit visibility in many locations. Figure 11-18 shows an example of an existing transmission line in Bellevue that is estimated to be less than 65 feet above the ground, seen from an uphill location approximately 500 feet horizontally from the line, where the view of Lake Washington and the Seattle skyline is affected by the overhead line. The proposed overhead lines would be smaller than the H-frame facilities in the Argonne National Laboratory study, but they would be at least 20 feet taller than those shown in Figure 11-19. For Alternative 1, Option A, viewers within approximately 750 feet (depending on topography and vegetation) would likely notice a high degree of contrast created by the transmission line poles and conductors. Given the approximately 18-mile length of the corridor and the predominance of residential land uses, a high number of viewers with high sensitivity would likely be impacted.

Figure 11-18. 115 kV Existing Overhead Lines in a Residential Area of Bellevue

Figure 11-19. 115 kV Existing Overhead Lines in Bellevue Affecting Views of Lake Washington and the Seattle Skyline, from a Distance of 500 feet.

Several factors would affect the visibility of the transmission line and therefore would be studied in detail in phase 2 of this EIS process. For viewpoints where the viewer's eye elevation is higher than the poles, the poles would appear below the horizon line and would not contrast as much as in places where the poles penetrate the horizon line. For transmission lines viewed from a distance greater than 1,000 feet, the lines and poles would likely be a small part of the view and the contrast they produce would be minimal to moderate. In addition, views from the east looking west toward downtown Bellevue would be less likely to be impacted because the infrastructure would share the horizon with the tall buildings located behind it. Except for locations immediately adjacent to the power line easement, new overhead transmission lines are also less likely to be visible from a distance in heavily vegetated areas, such as some forested areas of Newcastle and Bellevue. In these areas the poles would share the horizon with trees, which would also obstruct views from neighboring properties.

Replacing an existing 115 kV transmission line with a taller set of poles could affect a similar number of parcels as a new corridor, but the change in contrast between the transmission lines and the surrounding environment would be less noticeable than from a new line because the existing lines already affect some views. Typically, properties within approximately 500 feet of and either uphill from or at the same elevation as existing transmission lines have

views that are already affected. Replacement with new taller transmission lines could increase the effect on those properties as well expand the area impact by approximately 250 feet because of the increased height. However, the greater the distance, the greater the likelihood of intervening features such as vegetation, other structures, and changes in topography that would obstruct views of the power lines. For immediately adjacent properties with small structures such as single-family homes, duplexes, and triplexes, taller poles would appear out of scale. For some adjacent properties where poles are not in sight but the wires are, the higher placement of wires could mean that the transmission line is less noticeable than at present, but generally, taller poles would make the lines more visually prominent.

11.6.3.5.4 Light and Glare

Steel poles, when coupled with the reflectivity of their conductors, are more likely to create a stronger visual contrast than wood poles. They are also more likely to result in glare impacts. If steel poles are used, a non-reflective coating would be used.

11.6.3.6 Option B: Existing Seattle City Light 230 kV Transmission Corridor

Long-term visual impacts associated with Alternative 1, Option B include changes to visual character through introduction of new electrical infrastructure and maintenance of clear zones, transecting a viewpoint (Bridle Trails State Park), and having the potential to partially obstruct views of visual resources.

11.6.3.6.1 Permanent Clear Zones and Increase in Overhead Poles and Lines

Alternative 1, Option B would use an existing corridor for most of the north-south distance but would require several miles of new corridor to connect to the existing PSE system. Option B would utilize the portion of the Seattle City Light (SCL) corridor that transects the Bridle Trails State Park. The SCL corridor already contains a 230 kV transmission line, so the clear zone would generally not need to expand, except in limited areas where the new line cannot be constructed in the center of the right-of-way due to the existing line that must remain in service while the new one is constructed. Although new poles and conductors would be required, the scale would be similar to that of existing structures and visual impacts would be minor within the existing corridor. However, the need for a new corridor to interconnect with the SCL line under Option B would likely involve moderate to significant impacts on residential neighborhoods as a result of establishing and maintaining a clear zone and installing new poles and wires to reach the selected substation site.

11.6.3.6.2 Visual Changes at Substations

Visual changes at substations would be described in Section 11.6.3.2 for all options under Alternative 1.

11.6.3.6.3 Light and Glare

Light and glare impacts would be the same as described under Alternative 1, Option A.

11.6.3.7 Option C: Underground Transmission Lines

11.6.3.7.1 Permanent Clear Zones

Long-term visual impacts associated with Alternative 1, Option C include changes to visual character through maintenance of clear zones. Underground lines could be placed in roadways or in off-street corridors. Off-street corridors would require clear zones (creating more contrast), while in street settings, the street serves as a portion of the clear zone (creating less contrast). Since many streets have limited underground areas where a transmission line could be installed, it is likely that underground lines would need to be constructed off-street. Off-street corridors would likely result in a greater contrast than Alternative 1, Options A and B associated with removal of street trees and existing landscaping, because no vegetation would be allowed to grow within the clear zone due to maintenance access needs. Up to 66 acres of vegetation could be impacted PSE often allows the presence of shorter, pruned vegetation within the clear zones of overhead lines, which could help to reduce the visual contrast following construction.

11.6.3.7.2 Visual Changes at Substations

Visual changes at substations would be as described in Section 11.6.3.2 for all options under Alternative 1.

11.6.3.7.3 Increase in Aboveground Structures

Although underground lines themselves would not be visible, vaults would still be required at the surface or above ground. Vaults are large underground concrete boxes (8 feet by 26 feet) that are buried at regular intervals, typically every 1,500 to 2,500 feet depending on topography and the type of cable used. Vaults are equipped with hatches at the surface to allow worker access for installing conductors and for maintenance and repair activities. Vaults are generally not conspicuous except that they would be noticeable in a vegetated landscape to a viewer walking close to them. It is anticipated that few viewers would be impacted by Alternative 1, Option C, and impacts would be minor.

11.6.3.7.4 Light and Glare

No light, glare, or exhaust impacts are expected because the lines would be underground and would not require any surface lighting.

11.6.3.8 Option D: Underwater Transmission Lines

Long-term visual impacts associated with Alternative 1, Option D include changes to visual character where overhead lines are required, and potential impacts to views of Lake Washington and viewpoints located along the shoreline.

11.6.3.8.1 Permanent Clear Zones and Increase in Overhead Poles and Lines

Impacts associated with the overland portions would be similar to those described for Alternative 1, Options A and C. However, Option D could require overhead lines close to the shoreline, where they could impact views from surrounding areas. Option D would require an overhead 230 kV transmission between the shoreline and the Sammamish substation. This east-west line could cross portions of Kirkland, Clyde Hill, Medina, Yarrow Point, or Hunt's

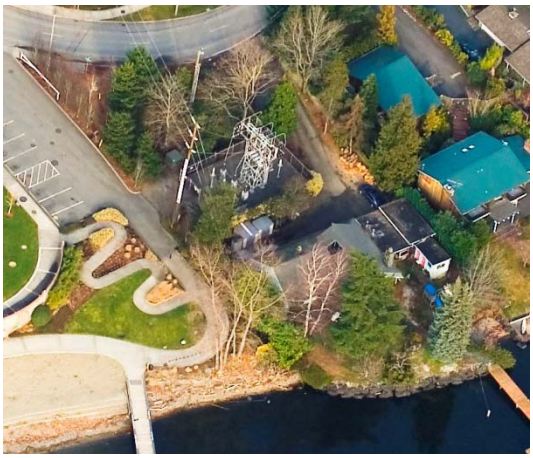
Point. There are no existing east-west power line corridors in any of these locations that could be used, so a new corridor would be necessary, resulting in visual impacts due to the contrast created and the sensitivity of the viewers impacted. This section of the alternative is also expected to impact the most viewers because the overhead line would traverse urbanized areas, resulting in potentially significant visual impacts.

Once installed, the submerged portion of the line would not be visible. It is unknown at this time whether or not buoys or other in-water markers would be needed for operation of the submerged lines.

Installation of submerged transmission cables would require permanent right-of-way clearing at the shoreline for access roads and vaults. For a submerged transmission line that runs from Renton to Kirkland, splice vaults would be needed at a minimum of three shoreline locations and it could be necessary to have one or more additional splice vaults on land. At each vault location, a clear zone would be maintained from the vault to the water. Shoreline regulations may require vegetative or other screening of utilities depending on the jurisdiction. Any such screening would have to occur outside of the clear zone. Visual impacts associated with vaults and access roads would likely be restricted to the immediate vicinity of the vaults, and therefore would only impact a few viewers.

Visual impacts associated with a submerged line, other than those associated with any overhead lines connecting to the submerged line, would be minor because once constructed they would not be visible. Land-based facilities including the transition stations and power lines connecting the submerged lines to substations in the Eastside would be visible. Figure 11-20 shows an existing PSE transition station on Lake Washington at Enatai Beach Park in Bellevue. Depending on siting, and other factors as described for Option A, overhead lines, if used, could have minor impacts if placed in existing utility corridors. Significant impacts could occur if overhead lines are placed near the shoreline of Lake Washington or where utility corridors do not presently exist.

Figure 11-20. PSE Transition for Underwater Cable Station at Enatai (Ecology, 2014).



11.6.3.8.2 Visual Changes at Substations

Visual changes at substations would be as described in Section 11.6.3.2 for all options under Alternative 1.

11.6.3.8.3 Light and Glare

No light, glare, or exhaust impacts are expected because most of the lines would be underwater. Overhead portions would have impacts as described in Alternative 1, Option A.

11.6.4 Alternative 2: Integrated Resource Approach

In general, Alternative 2 is anticipated to result in few visual impacts because the infrastructure would be small and distributed over a large expanse, resulting in a low degree of contrast. Despite the wide geographic reach of the alternative, few viewers are expected given the small scale of individual projects and the placement of projects in already developed locations.

11.6.4.1 Energy Efficiency Component

Energy efficiency includes measures such as weatherization, efficient lighting and appliances, and similar measures. These improvements are not anticipated to result in permanent impacts to the visual environment. Most changes would be to features inside buildings where they would not be visible to the general public. Changes to windows and exterior lighting would occur, but they would not substantially change the appearance of buildings or sites in a manner that would cause light or glare impacts or would adversely affect viewers through contrast or hindrance of views. If placed in a historic neighborhood, the equipment may not match the character of the area and would result in a more noticeable contrast. These impacts are evaluated in Chapter 13. Overall, negligible impacts are anticipated.

11.6.4.2 Demand Response Component

The demand response system hinges primarily on changes in consumer energy consumption. Demand response meters are the only exterior fixtures required. They are small and not substantially different in appearance from other electric meters, and would not result in light, glare, or exhaust impacts. Therefore, negligible impacts to the visual environment are anticipated from this component of Alternative 2.

11.6.4.3 Distributed Generation Component

The types of generators likely to be installed include small reciprocating engines, gas turbines, microturbines, anaerobic digesters, and fuel cells. Typically, these would be placed atop commercial or larger multifamily buildings and would not be visible to more than a few, less sensitive, viewers. In this context, small generation equipment would be similar in appearance to heating, ventilation, and air conditioning (HVAC) systems and other similar equipment on the top of such buildings. These types of generation equipment would have exhaust systems, and viewers may observe steam plumes and other gas emissions, in addition to emissions that are common from other rooftop equipment

If numerous generators were placed on buildings in close proximity, it could create a more cluttered appearance. None of these changes would contrast with the general appearance of similar sized buildings, and for buildings over a few stories in height, few viewers would notice their presence. The number of generation facilities needed is not known and would depend on the scale of the facilities that are developed. In order to make a contribution toward meeting the transmission capacity deficiency, it would likely require hundreds of small facilities to be installed and interconnected with the grid. Given the total number of buildings in the Eastside area, this would represent a small impact and would not likely change the overall visual character of the Eastside. Distributed generation would have minor

to moderate visual impacts, depending on whether components are concentrated, the scale of individual facilities, and the design and location of the facilities.

11.6.4.4 Energy Storage Component

An energy storage component would be a new permanent feature in the Eastside environment occupying approximately 6 acres. The setting for a battery facility would be similar to the setting for substations discussed in Alternative 1, with most suitable sites being commercial or industrial, impacting less sensitive viewers, but in some cases adjacent to more sensitive residential areas. The battery containers can be stacked, but for technical reasons, it is anticipated that they would not be stacked more than two high, so they would not be prominent visual features. Security lighting would be installed. A 6-acre energy storage facility in a residential area could create a significant visual impact, but a smaller facility in an industrial area would be a minor impact.

11.6.4.5 Peak Generation Plant Component

The peak generation plants would be permanently located within or adjacent to existing substations, and therefore would impact fewer and less sensitive viewers. It is anticipated that inclusion of the additional generator would require less than 1 acre of expansion at each substation.

The design of the generators would likely blend with the current infrastructure located at the existing substations. However, depending on the contrast between the existing substations and their surrounding uses, the new generator would provide additional contrast and could increase the visual impact of the substation beyond existing conditions. Expansion of the substations could also require additional security lighting, but this is not expected to result in impacts due to light shielding practices. In addition, the generators would introduce a new source of emissions (primarily a mix of carbon dioxide and water vapor) that may be visible to viewers periodically (i.e., when the peak generation plants are running).

This component would likely result in minor to moderate impacts on the visual environment depending on the scale and design of the generators and where they are located. The exact location of these generators would be determined at the project level.

11.6.5 Alternative 3: New 115 kV Lines and Transformers

Long-term visual impacts associated with Alternative 3 include changes to visual character through introduction of new electrical infrastructure, partially obstructing views of visual resources, reducing the aesthetic quality of a viewpoint, and maintenance of clear zones. At this stage, it is not anticipated that visual resources themselves would be impacted; however, it is likely that this option would create contrast that would impact a large number of viewers who, depending on the placement of the line, may be sensitive to the visual change.

11.6.5.1 Permanent Clear Zones

Under Alternative 3, permanent clear zones would be required that could result in removal of street trees and roadside landscaping (up to 291 acres), and limitations on the height of trees

placed under the transmission lines. It is anticipated that Alternative 3 would require a clear zone that is 30 to 40 feet wide. This could slightly change the visual character of the area.

11.6.5.2 Visual Changes at Substations

Under Alternative 3, three new transformers would be installed, one at each of the following substations: Sammamish, Lake Tradition, and Talbot Hill. In addition, the Clyde Hill and Hazelwood substations would need to be expanded to accommodate connections for each of the new lines. At the Sammamish, Talbot, and Lake Tradition substations, the expansions would be relatively minor and therefore would have minor to moderate visual impacts, similar to those described for a substation under Alternative 1.

Expansion of the Clyde Hill substation could impact views because it is surrounded by residential properties with views of Lake Washington, the Seattle skyline, and the Olympic Mountain Range (Figure 11-9). However, the properties immediately adjacent to the substation are not identified by the Assessor as having views (King County, 2012). Whether or not the expansion of the substation would obscure views would depend on the height of the structures added, but tall structures other than the transmission lines are not anticipated. The expansion would take place in a largely residential setting where viewer sensitivity is likely to be high, and the expansions would be of a scale that moderate visual impacts could be expected. Overall, minor to significant impacts are anticipated.

11.6.5.3 Increase in Overhead Poles and Lines

Installation of the new transmission lines could have impacts ranging from minor in areas with existing lines, to significant visual impacts in residential areas where no transmission line is present. Under Alternative 3, approximately 60 miles of 115 kV single circuit lines would be constructed. These lines would consist of single, wood poles generally 60 to 75 feet in height. New 115 kV lines would follow existing utility or road rights-of-way and would either replace or be co-located with existing transmission and distribution lines, reducing the likelihood of impacting sensitive viewers.

If new 115 kV lines are co-located with existing lines, poles must be taller than existing lines with only one circuit on the transmission line. Where lines have to cross areas with existing or planned multistory buildings, tall poles may be necessary, depending on building setbacks from the transmission lines. This could result in views being obscured. The transmission lines would generally be designed with a narrower profile than the 230 kV overhead lines proposed under Alternative 1.

The number and sensitivity of viewers would vary depending on the location of the new lines. Viewer sensitivity would likely be higher in residential areas than in most commercial locations. Residential areas are predominant throughout the Eastside, and even more so in the areas where Alternative 3 would need to be implemented. In residential areas 60- to 75-foot transmission lines would be taller and therefore contrast more with the surrounding structures. Viewer sensitivity would also be high near parks and natural areas. Parks and homes within 500 feet of the project alignment would be the most likely to have their views affected by the addition of a 115 kV transmission line. More detailed analysis should be conducted for the Phase 2 EIS to confirm the distance where impacts are most likely. In most

areas of the Eastside, power lines of this type and size are common along major roads. However, along the approximately 60 miles of new lines that would be constructed under this alternative, substantial clearing would be required in some areas where there are few tall overhead lines present. In such areas, the contrast imposed by the new lines and the potential for the lines to obstruct views would generate the greatest visual impacts from this alternative.

In highly urbanized portions of the combined study area, the view is dominated by buildings and other structures. In such areas, there would be a greater number of viewers, but the contrast between new transmission lines and surrounding areas would be less than in lower density residential areas. In addition, if the new transmission lines are placed along roadways, street trees would be replaced with smaller trees that remain below the lines. Although this would still change the visual character of the roadway, it would not result in the same level of contrast that a clear zone would create.

11.6.5.4 Light and Glare

As the substations are expanded, additional security lighting would be required, which might result in minor light impacts.

11.7 WHAT MITIGATION MEASURES ARE AVAILABLE FOR POTENTIAL IMPACTS TO VIEWS AND VISUAL RESOURCES?

In areas where new electrical infrastructure is introduced, the following mitigation options should be considered:

- Choosing routes that are already developed with power lines and where minimal vegetation clearing is necessary;
- Consulting with Cities and affected residents when locating structures, rights-of-way, and other disturbed areas to minimize visual impacts;
- Complying with applicable plans and policies within potentially affected jurisdictions;
- Placing and designing structures to minimize impacts on specific visual resources and popular public viewpoints;
- Using aesthetically pleasing materials and landscaping to shield electrical equipment from public view;
- For steel poles, using paint colors that reduce the contrast of the poles with the surrounding environment;
- Placing portions of the transmission line underground (as in Alternative 1, Option C) or underwater (as in Alternative 1, Option D) in areas where significant impacts would occur from overhead lines; and

- For 115 kV lines proposed in corridors with existing distribution lines, placing both transmission and distribution lines on the same poles (referred to as "underbuild") to limit additional visual clutter.

11.8 ARE THERE ANY CUMULATIVE IMPACTS TO VIEWS AND VISUAL RESOURCES AND CAN THEY BE MITIGATED?

The Eastside is developing rapidly, with widespread construction-related visual impacts associated with residential, commercial, and industrial projects, as well as regional roadway and other infrastructure projects. Construction of the Energize Eastside Project would add to the overall short-term visual impacts associated with construction equipment and activity, but is not expected to represent a significant cumulative impact because of the overall high level of construction in the area.

Once construction is complete, the finished project could contribute to cumulative visual impacts. The region is urbanizing, with accompanying changes to its visual character. New electrical infrastructure and associated clearing would result in long-term changes to views and visual resources that would contribute to the trend of changing visual character. Development of other transmission or distribution lines could contribute to a trend of increased view obstruction in some neighborhoods. Road development and utility expansion in the Eastside could result in clearing of vegetation that could contribute to the trend of reduced vegetation and a more urbanized visual character.

11.9 ARE THERE ANY SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS TO VIEWS AND VISUAL RESOURCES?

Under Alternative 1, potentially significant impacts to visual resources are likely with any overhead line alignment because of the high number of sensitive viewers and the high degree of contrast that would be created. Significant impacts would be unavoidable with development of a new overhead transmission line corridor. If existing corridors are used, significant impacts may occur, but could be reduced through careful siting or installation of underground lines.

It may be possible to implement Alternative 2 without significant visual impacts. However, the energy storage facility could result in significant visual impacts, depending on the scale and location of the facility, which are not known at this time. Other components, such as peak generation plants or distributed generation facilities would be small enough in scale that impacts would be minor to moderate, or they can be screened with vegetation or other means to avoid significant impacts.

Under Alternative 3, significant impacts to visual resources may be unavoidable. In order to provide transmission capacity where it is needed, transmission lines could be required in areas where few overhead lines are present, creating new clear zones and introducing new electrical infrastructure into the visual environment for a high number of sensitive viewers.

Such construction would permanently change the visual environment for surrounding viewers. However, at this time no specific alignment has been established. If this alternative is carried forward into the project-level EIS for Energize Eastside, additional analysis will be provided.