Energize Eastside Project

Final Environmental Impact Statement

VOLUME 2: APPENDICES

MARCH 2018

PREPARED FOR:
The Cities of Bellevue, Newcastle,
Redmond and Renton

PREPARED BY:
ESA

energize EASTSIDE EIS

Environmental Impact Statement

VOLUME 2: APPENDICES

** For printed copies of the Final EIS, Appendix J-2 and Appendix K are bound separately as Volume 3 and Volume 4, respectively*

A

Appendix A: General Construction and Access

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APPENDIX A-1. GENERAL CONSTRUCTION AND ACCESS DESCRIPTION

Note: Information provided by PSE

Construction of transmission lines require pre-construction field surveying, site preparation, construction (i.e., installation of new structures, removal of existing structures), demobilization, and property restoration, which are performed following a relatively standardized sequence.

PSE aims to avoid or minimize impacts where practicable through project design considerations (e.g., pole types and access routes). Along some route segments, PSE has easement rights that outline access agreements for the purpose of maintaining PSE's existing facilities and/or accessing PSE's right-of-way (ROW). Depending on the segments chosen for the project, PSE plans to exercise these rights and, if necessary, acquire additional rights for construction of the project. To the extent possible, PSE uses existing or acquires new easement rights to provide access necessary to maintain and/or construct facilities.

TYPICAL CONSTRUCTION SEQUENCING

Construction of a transmission line typically occurs in the following sequence:

1) Pre-construction surveying
    a. Conducting environmental surveys and obtaining geotechnical data by conducting soil borings
    b. Identifying pole locations
    c. Surveying, including ROW and boundary and structure locations (i.e., footings, underground utilities)
2) Site preparation
    a. Staking the ROW, critical areas, and pole locations
    b. Installing temporary erosion control measures
    c. If necessary, constructing access routes to the pole sites and developing installation sites
    d. Brushing, trimming, and clearing of vegetation in the ROW to ensure the safe operation of the line
3) Construction
    a. Installing pole foundations or auger holes for direct embedment
    b. Assembling and erecting the poles
    c. Stringing the conductor and wires
    d. Removing existing structures, if necessary

4) Demobilization and clean up
5) Restoration and re-planting vegetation

The general process for the various types of poles being proposed are essentially the same, except for poles with engineered foundations (e.g., drilled piers), which require additional steps.

The subsequent sections describe specific construction activities in further detail.

PRE-CONSTRUCTION - IDENTIFYING POLE LOCATIONS

The placement, or "spotting," of poles depends on factors such as available ROW width, location of access routes, topography, and obstacle avoidance. In turn, the height, loading, foundation type, and overall size of each structure will be greatly affected by the location of the structures.

The process for the spotting of poles is as follows:

- During the engineering process, PSE will work with individual landowners to adjust pole locations where practicable to reduce impacts for the landowners.
- Proposed pole locations discussed with landowners will represent where poles are generally expected to be located, pending geographical and site-specific environmental review following city or county approval of a route. Unforeseen subsurface obstacles, such as geologic erratics, can cause a pole to be moved up or down the corridor (typically less than 20 feet).

In general, PSE considers the following factors when locating poles:

- **Technical considerations**, including electrical clearances, severe terrain accommodations, structural loading, manufacturability of structures, constructability of the line, and code requirements.
- **Critical areas (e.g., wetlands and streams)** so as to locate poles outside of critical areas and their buffers to the extent possible.
- **Electrical effects** to maintain additional buffers or install mitigation measures when co-located with other facilities (e.g., pipelines).
- **Landowner considerations** by moving poles farther away from residences and/or locating poles on property lines and edges of tree lines.
- **Cost** to provide a cost-effective and feasible design within set parameters.

To reduce the environmental impacts of pole locations, where practicable, PSE will:

- Place new poles in approximately the same location of the existing poles.
- Locate poles near existing accessible routes to minimize construction traffic impacts.
- Avoid placing poles in areas that require significant access disturbance.
- Avoid environmental features by making small adjustments in the route and through careful structure placement.
- Avoid critical areas unless another constraint forces a pole into such areas.

SITE PREPARATION

Vegetation Management and Maintenance

Using the existing transmission line ROW is one of PSE's preferred routing criteria, as the vegetation in such corridors is already maintained to some degree. This includes selective removal of problem trees from beneath power lines or removal of hazardous trees that may fall into the electrical system as part of regular maintenance on all power line ROW. Proper pruning and discriminating use of growth regulators and herbicides are also among the methods employed. The method selected depends on factors such as location, property use, and access. Growth regulators and herbicides are not commonly used in urban environments.

Emphasis is placed on the removal of large, problem-tree species, especially those that have disease or insect infestation that can result in irreversible decline. Tree removal is especially important where pruning alone cannot achieve safe clearance from power lines.

Trimming, natural pruning techniques, or directional trimming will be used if proper line clearances can be achieved. Directional trimming concentrates on removing limbs and branches where the tree would normally shed them and direct future growth out and away from the electrical wires. While a newly pruned tree might look different to some, natural pruning is designed to protect the health of the tree. It minimizes re-growth and reduces trimming costs.

Directional trimming is the recommended method of the International Society of Arboriculture (ISA), American National Standards Institute (ANSI), and the National Arbor Day Foundation.

Both tree removal and natural pruning would be performed by specially trained contract crews. Upon completing of tree work, the crews would clean up the site and any wood that is cut would be left on site in pieces of manageable size at the property owner's request or taken off site.

Guidelines for 230 KV Lines

Vegetation within a utility corridor that has transmission line(s) with an operational voltage of more than 200 kV must be managed in compliance with federal requirements. The fines/penalties associated with having a power outage caused by vegetation can be substantial. To ensure compliance with the North American Electric Reliability Corporation (NERC) standard, PSE allows vegetation with a mature height of no greater than 15 feet within the wire zone. For evaluation purposes, the same vegetation requirement was applied to the managed ROW zone. The area outside of the managed ROW, but still within the legal ROW, is subject to select clearing of trees that pose a risk of damaging the line.

The wire zone is the area measured 10 feet away from the outermost conductor(s) in a static position, whereas the managed ROW zone is the area that extends roughly 16 feet from the outside of the transmission wires in their static position.

The vegetation impact assessment used GIS analysis to evaluate the tree inventory data and the preliminary transmission line design to assess the number of trees that would likely require removal within a specific route.

Guidelines for 115 kV Lines

Some of the alternatives for the Energize Eastside project include rebuilding or relocating 115 kV lines. NERC vegetation standards do not apply to PSE's 115 kV transmission or distribution line rights-of-way; however, in general, PSE will remove trees that mature at a height of greater than 25 feet near 115 kV lines. It should be noted that, some trees within the corridor or along roadways with a height of greater than 25 feet, may be allowed to remain in the wire zone if they can be pruned in a manner that allows sufficient clearance from the lines.

Access

Use of existing access routes is preferred as that is typically the best way to minimize impacts. When a project entails replacement of an existing transmission line, such as Energize Eastside, efforts are made to identify the existing or historic access routes. During initial construction of the transmission line, access routes are established along the corridor. As an area develops and structures are built along the corridor, some of the original access points are no longer viable and new ones need to be established to replace or maintain existing transmission line equipment.

Access to each structure location is identified in the field with a preference to those areas that require the least amount of improvement (e.g., use of existing roads or trails). The field-identified access routes are mapped using handheld GPS units. The GPS data are imported into the surveyed route maps for reference. Each route will be assessed on site with the affected property owners to gather site-specific limitations and if necessary, identify improvement and restoration details.

Along the corridor, the access and pole locations are identified by the land surveyor and engineering team. As necessary, the access to each pole location is improved or created. Preliminary access routes for construction and maintenance are shown on figures at the end of this appendix, by segment.

The typical width of access roads is 20 feet.

Utility Locates and Civil Work

As required by state law, utility locates are performed prior to ground-disturbing activities. Appropriate temporary erosion control measures may be installed prior to and during work activities. Initial vegetation management activities then commence, removing those species that are incompatible with the safe operation of the transmission line. If civil work is required to establish either a temporary or permanent construction area, that work typically takes place following vegetation removal.

A work area with an approximate radius of 50 feet around the new pole location would be typical. This area would provide a safe working space for placing equipment, vehicles, and materials.

CONSTRUCTION

PSE will work to restore property impacted by construction to its previous or an improved state, as practical and required under applicable law. PSE will mitigate in-kind when restoration is not possible, as required by applicable law. PSE will comply with local codes related to construction noise. PSE will work with property owners to minimize impacts during construction as much as practicable.

Pole Installation

Each steel pole will be installed either by direct embedment or placed on a drilled pier foundation. (Based on design and construction limitations, other foundation types may be utilized as well.) The type of foundation that will be used to support the poles will depend on the structural loading, structural strength of the soil, and site accessibility. In areas near co-located underground utilities, such as the Olympic pipeline system, the proposed pole design and location is reviewed with BP, the pipeline operator. As appropriate, BP's general construction procedures will be followed when construction activities take place in the area of the Olympic pipeline system, which includes on-site inspection.

The hole for the transmission pole is typically initiated using a vacuum excavator (typically called a Vactor truck), which is one of the least invasive methods of excavation. If soil conditions allow, the entire hole could be excavated using a Vactor truck; however, it may be necessary to use traditional auger equipment to achieve the necessary depth. Typical hole diameter is approximately 18 inches greater than the diameter of the base of the pole. Generally, the depth of the hole will be 10 percent of the pole height plus 4 feet.

In areas of soft soils, a steel casing may be used during drilling to hold the excavation open, after which the steel casing would be cut below grade and backfilled upon completion.

For direct embed poles, the base section of the pole is installed in the hole and the annulus filled with select backfill. When backfill must be imported, material is obtained from commercial sources.

For poles that require drilled pier foundations, the hole is advanced in the same manner as that for the direct embed poles. Reinforced-steel anchor bolt and rebar cages are then installed in the excavation. These cages are inserted in the holes prior to pouring concrete and are designed to strengthen the structural integrity of the foundations and are delivered to the structure site via flatbed truck. The excavated holes containing the reinforcing anchor bolt cages would be filled with concrete and be left to cure for 28 days.

To construct the actual steel structure, two methods of assembly can be used, the first of which is to assemble the poles, braces, cross arms, hardware, and insulators on the ground. A crane is then used to set the fully framed structure by placing the poles in the excavated holes or on the drilled pier foundation. Alternatively, aerial framing can be used by setting the first pole section in the ground or on the foundation, and subsequently adding the remaining sections and equipment via a crane. It may be more efficient and less disruptive to adjacent property owners in some locations to use a helicopter to install poles. This is identified as a mitigation measure in Section 5.1.3 of the Final EIS.

Stringing

Installation of the conductor, shield wire, and communication fiber on the transmission line support structures is called stringing. The first step of wire stringing would be to install insulators (if not already installed on the structures during ground assembly) and stringing pulleys, which are temporarily attached to the lower portion of the insulators at each transmission line support structure to allow conductors to be pulled along the line. When an existing transmission line is being replaced, the new poles will be installed and the existing wires could be transferred to them from the existing poles that will be removed. This is done so that the existing conductor can be used to pull in the new conductor in a more efficient manner. In some instances, where the existing conductor is not suitable to pull in the new wire, a rope (called a sock line) may be used.

Once the existing conductors have been transferred to the stringing sheaves, they would be attached to the new conductors and used to pull them through the sheaves into their final location. Pulling the lines may be accomplished by attaching them to a specialized wire stringing vehicle. Following the initial stringing operation, pulling and sagging of the line would be required to achieve the correct tension of the transmission lines between support structures. After the new lines have been set, the existing poles and old conductors are then removed.

Where a sock line is needed, workers would need to carry the line from pole to pole, requiring access to properties between poles. It may be more efficient and less disruptive to adjacent property owners in some locations to use a helicopter to string the sock line. This is identified as a mitigation measure in Section 5.1.3 of the Final EIS.

Pulling and tensioning sites are expected to be required approximately every 2 miles along the corridor. Equipment at sites required for pulling and tensioning activities would include tractors and trailers with spooled reels that hold the conductors and trucks with the tensioning equipment. To the extent practicable, pulling and tensioning sites would be located within the existing corridor.

Depending on topography, minor grading may be required at some sites to create level pads for equipment. Finally, the tension and sag of conductors and wires would be fine-tuned, stringing sheaves would be removed, and the conductors would be permanently attached to the insulators at the support structures.

Removal of Existing Poles and Lines

The existing 115 kV poles are expected to temporarily remain during and after construction of the 230 kV system to support the existing conductors and dedicated fiber optic line. The existing fiber optic line will need to stay in service throughout construction as it is used for substation controls. Once the new fiber optic (OPGW) lines are installed, the old fiber optic lines and poles can be removed. PSE expects that the old poles would be removed any time from a couple of days to a few months after the construction of the new lines. Some of the existing poles have joint tenant utilities, typically telecommunications. These are not owned by PSE and will need to be relocated by their respective owners. In those situations, the existing poles would remain until the joint facilities are relocated. This is typically a 90-day process; however, it can take longer depending on joint facility crew availability.

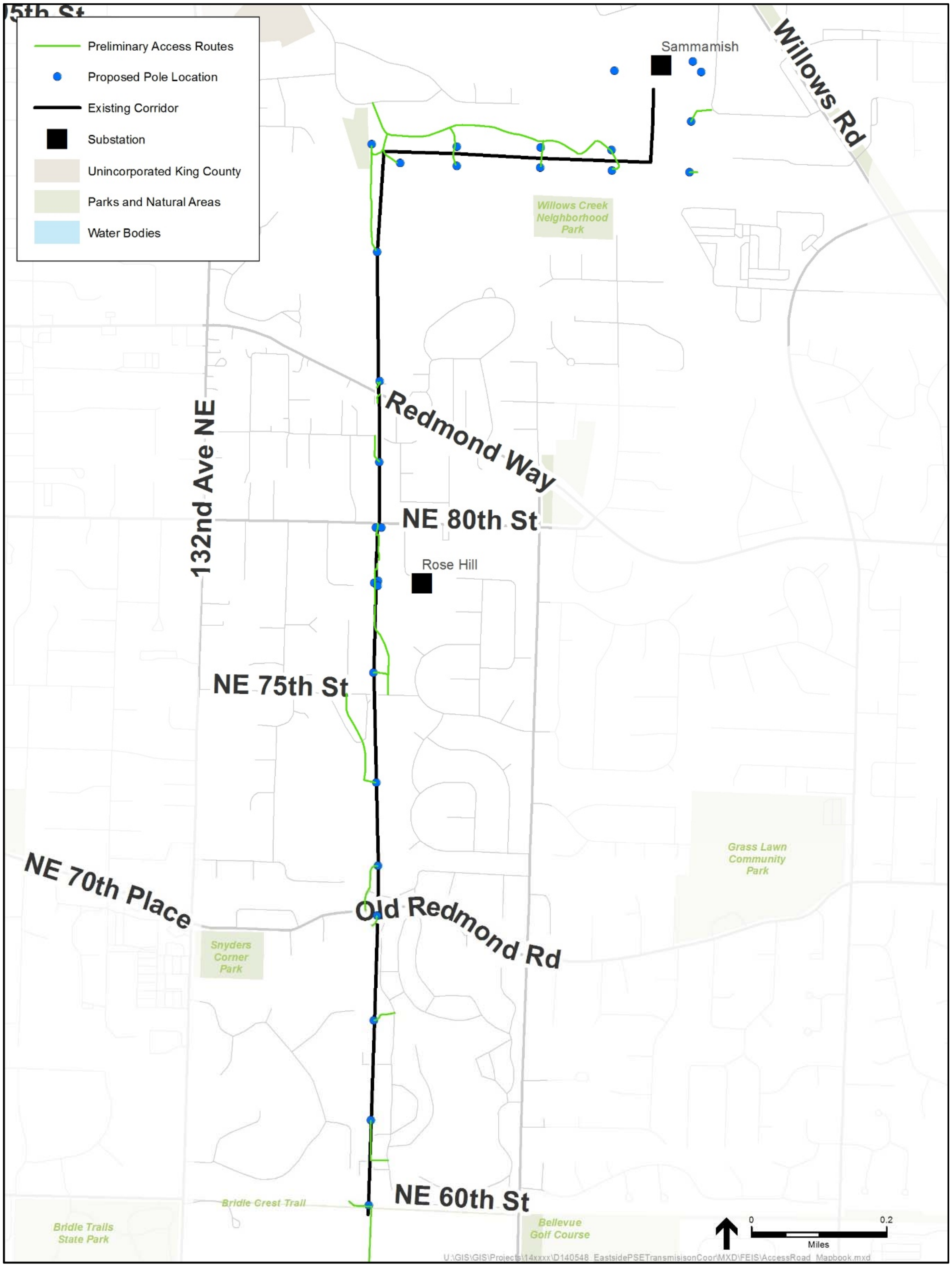
Demobilization and Restoration

Construction sites, staging areas, material storage yards, and access roads would be kept in an orderly condition throughout the construction period. Disturbed areas not required for access roads and maintenance areas around structures would be restored and revegetated, as agreed to with the property owner or land management agency.

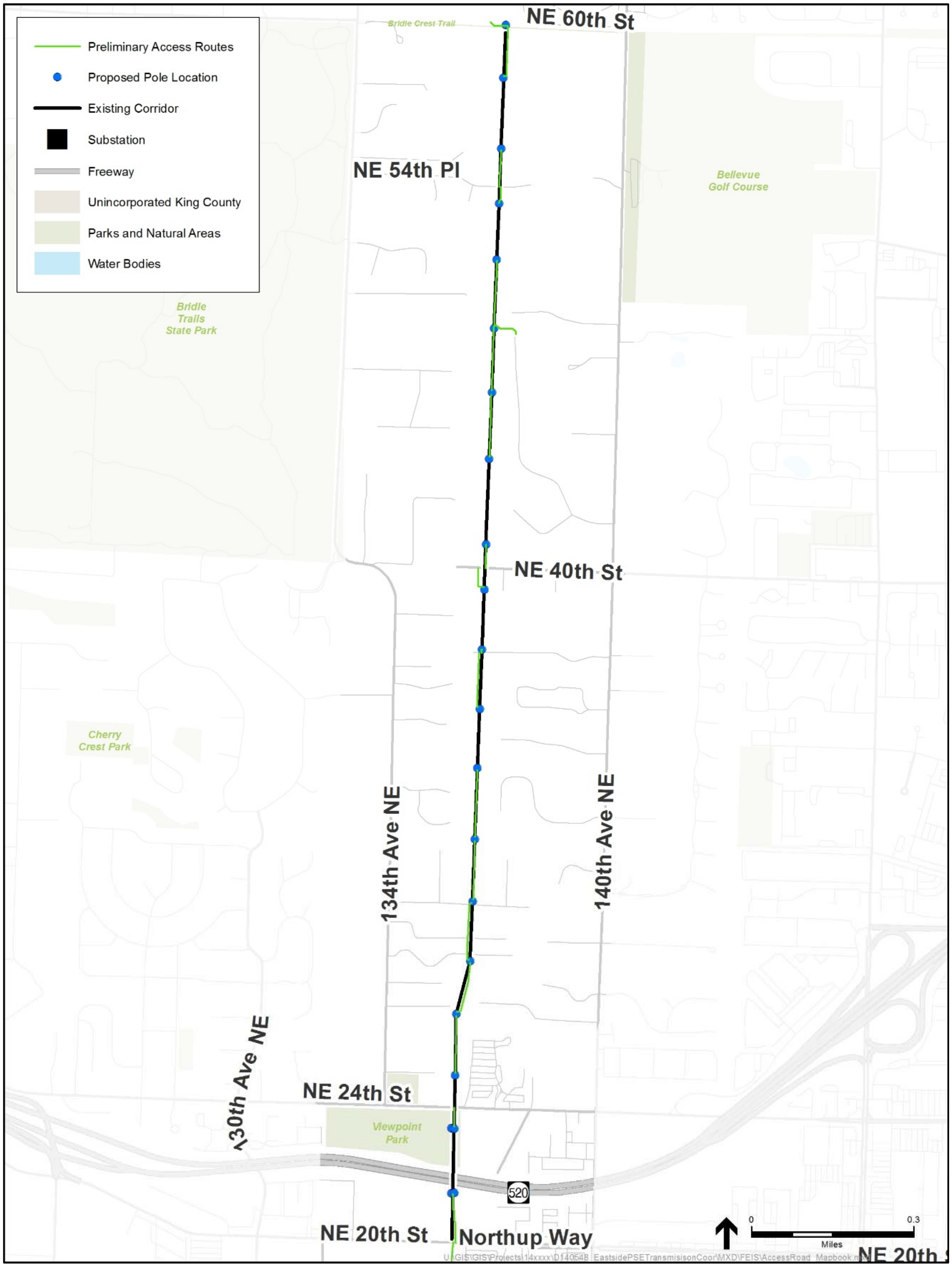
APPENDIX A-2. PRELIMINARY CONSTRUCTION ACCESS ROUTES AND PROPOSED POLE LOCATIONS

On the following maps, locations of preliminary construction access routes are based on a single dataset provided by PSE in August 2017 and do not reflect coordination with individual property owners (PSE, 2017, specifically data layer titled *Proposed_Access_Route_v2*). Locations of proposed pole locations are based on several datasets provided by PSE in 2017, depending on segment (including files titled *energize eastside non-variance (4-1 to RIC)_plan strs only_rev p* and *North_8-3-17.dxf and South_8-3-17.dxf*).

Interactive maps of the latest data showing proposed pole locations and surveyed trees are also available on the internet (www.energizeeastsideeis.org/), allowing the user to zoom into site-specific locations. Specific pole locations may be refined as PSE completes its final design during the permitting process.

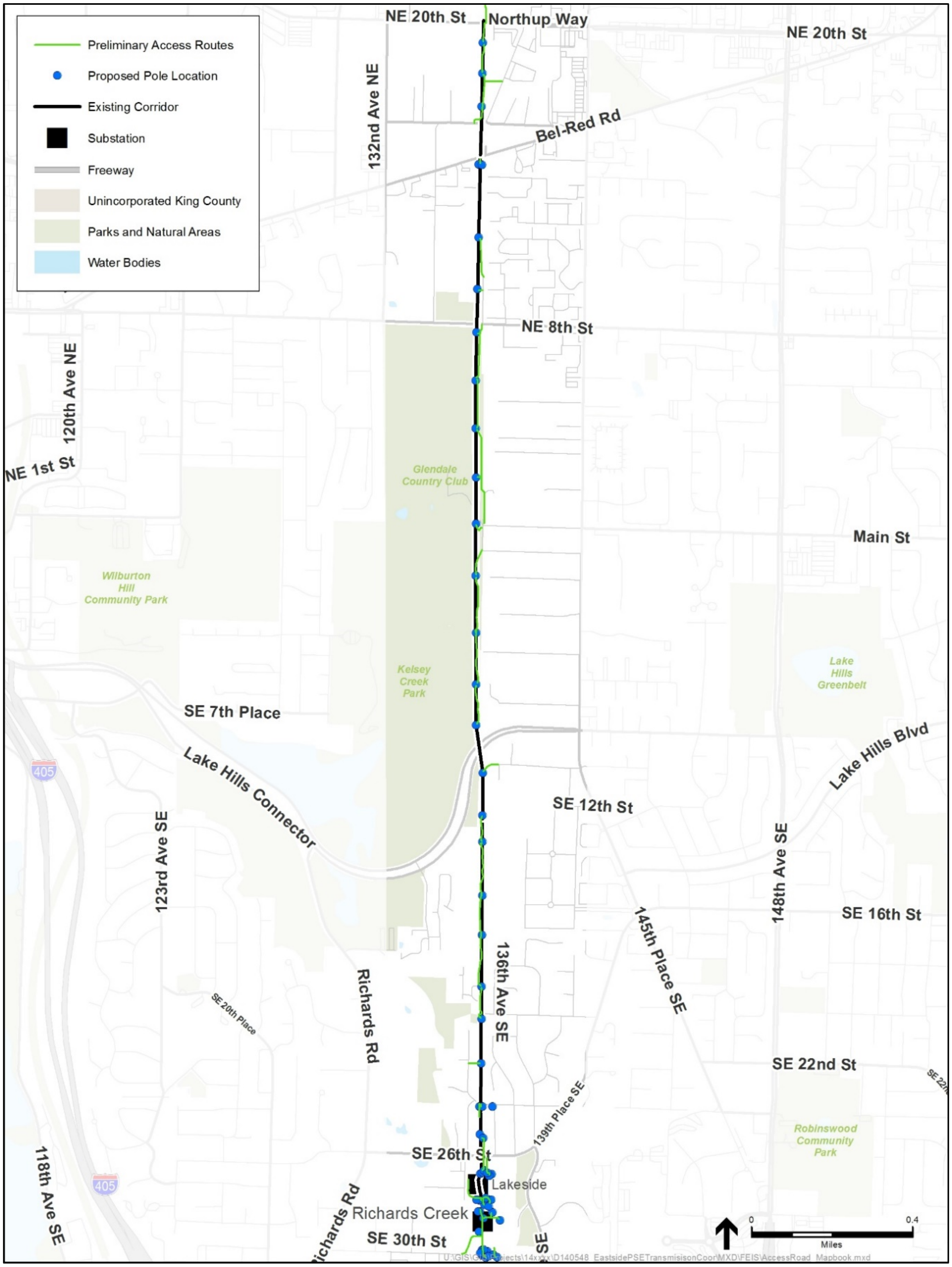


Preliminary Construction Access Routes Prior to Property Owner Consultation and Proposed Pole Locations – Redmond Segment

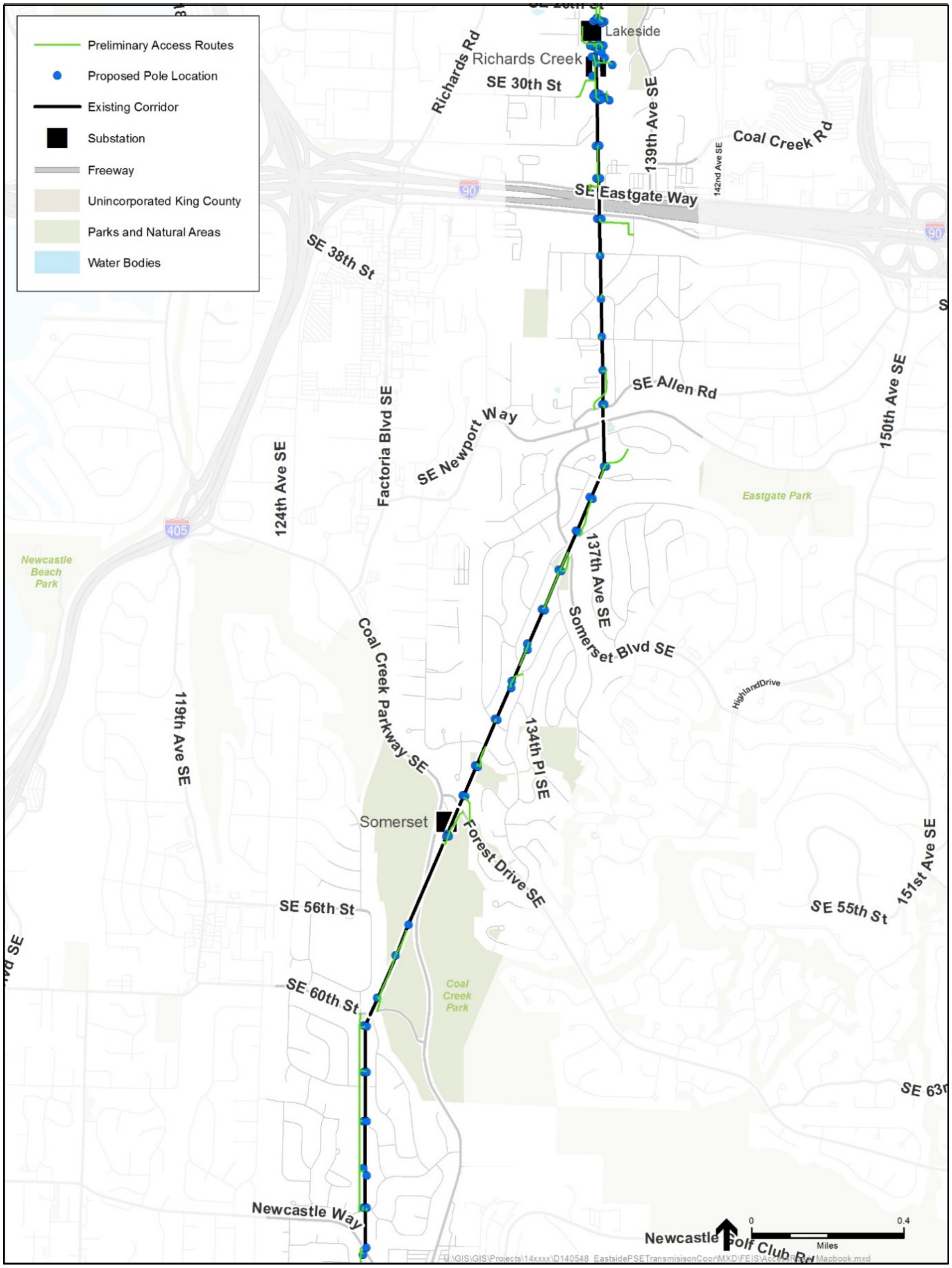


Preliminary Construction Access Routes Prior to Property Owner Consultation and Proposed Pole Locations – Bellevue North Segment

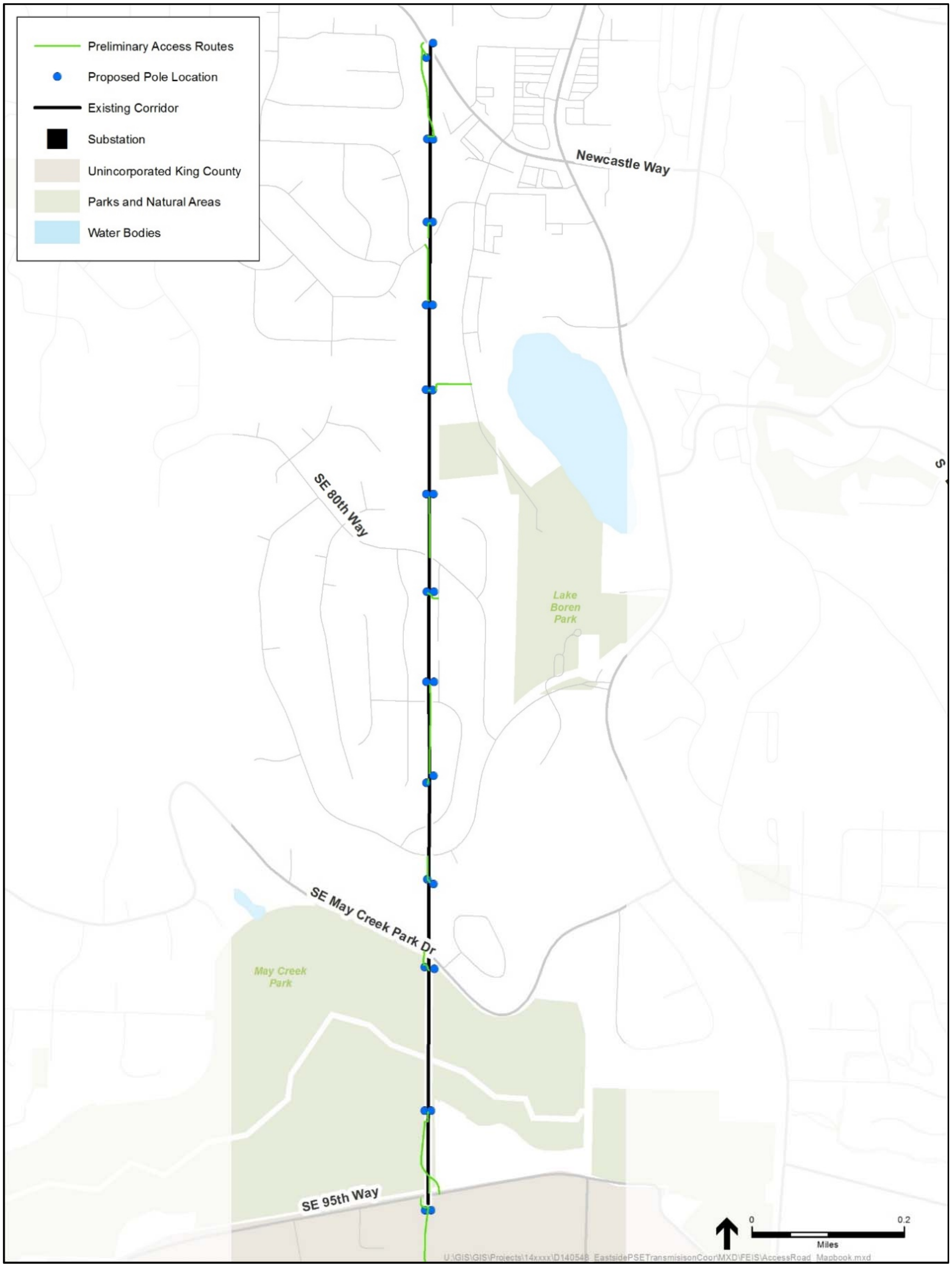
DSD 005853



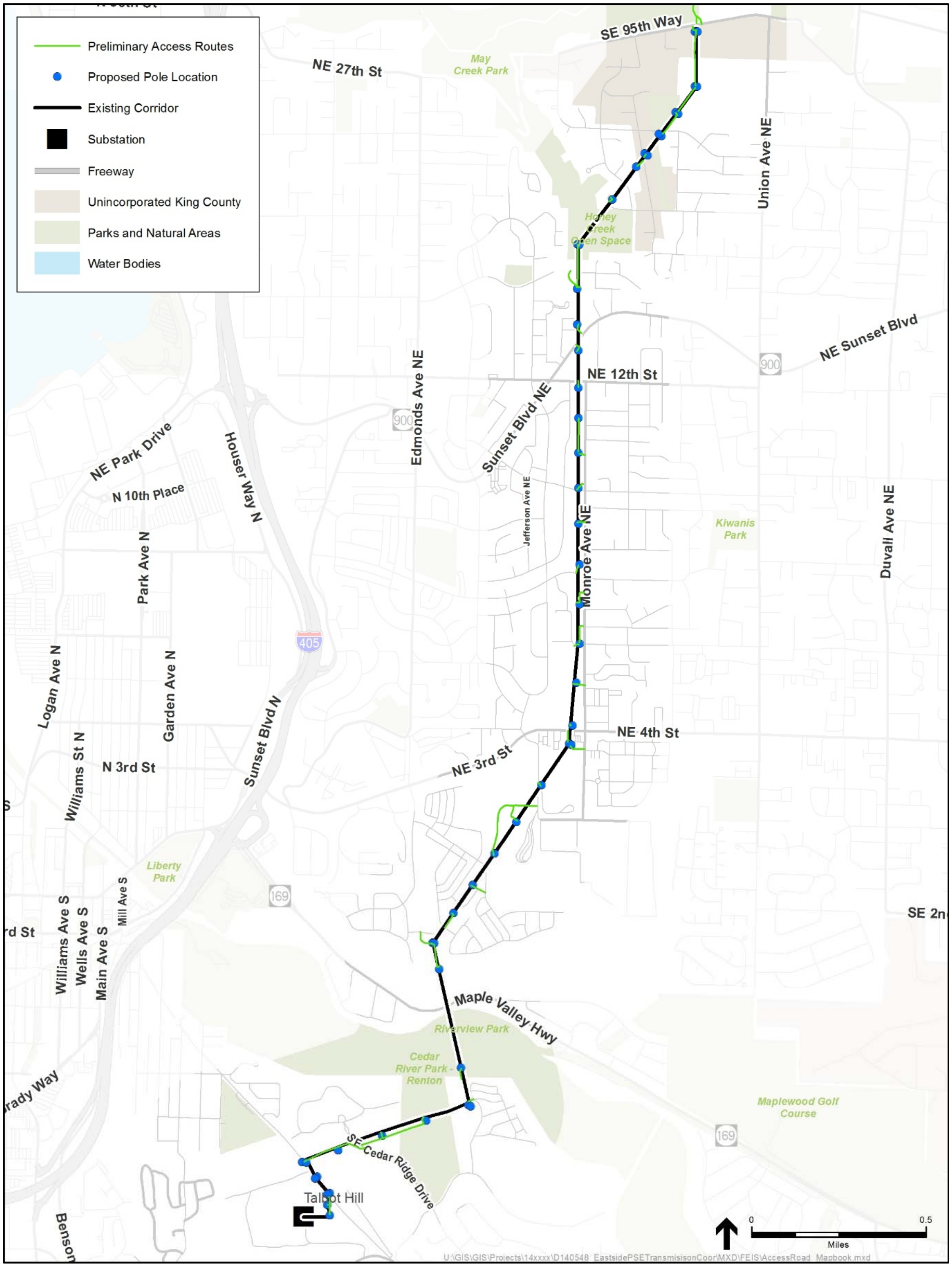
Preliminary Construction Access Routes Prior to Property Owner Consultation and Proposed Pole Locations – Bellevue Central Segment



Preliminary Construction Access Routes Prior to Property Owner Consultation and Proposed Pole Locations– Bellevue South Segment



Preliminary Construction Access Routes Prior to Property Owner Consultation and Proposed Pole Locations– Newcastle Segment



Preliminary Construction Access Routes Prior to Property Owner Consultation and Proposed Pole Locations– Renton Segment

APPENDIX A-3. INFORMATION FROM PSE ON HELICOPTER USE

Questions Related to Potential Helicopter Use for Energize Eastside
October 26, 2017

1. What are the specific locations where PSE would consider helicopter use for pole installation?

Response: It is difficult to assess the specific locations where a helicopter might be used to set poles. Some of the areas in Somerset are possible candidate locations because of the complex terrain in the area. It is important to note that using a helicopter is typically the last option utilized by a contractor due to costs and additional FAA permitting in congested areas. If another option is available, it would be utilized first, but if all options are exhausted the helicopter option would remain as the only/best choice.

Additionally, where access along the corridor is difficult, a helicopter could be used in the stringing of the conductor process by pulling the "sock line" through the travelers that are temporarily attached to the poles. The new conductor is then attached to the sock line and the conductor is then pulled into place. The use of pulling in the sock line, would be more likely in the southern portion of the project.

2. How would the construction process be different from using cranes in these locations (specific steps, durations)?

Response: In general, the construction technique used to construct a transmission line structure using a crane or a helicopter is the same except for setting of the pole. Traditional construction uses a crane, which must have a flat solid area to setup. In those pole locations where foundations are required, the bolt cage is lowered into the hole with the crane prior to pouring of the concrete. Helicopters can also be used to lower in the bolt cage. When the poles are set, the pole sections are picked up by the crane and placed into the hole, with the subsequent pole sections being set on top of one another. If a helicopter is used, then the pole is typically constructed off site and the entire structure is then flown into its final location where it is lowered into the hole. Therefore, it is anticipated that construction duration when helicopters where used could be shorter than traditional construction methods.

3. Would the use of helicopters affect the number of trees to be removed, either increasing or decreasing the number?

Response: In general, the use of helicopters is not expected to substantially change the number of trees that may need to be removed or trimmed. It is expected that the difference would entail fewer trees would be affected with the use of helicopters since some of the trees affected trees associated with corridor access could remain.

4. What measures would PSE use to notify people of helicopter construction (how large an area, how much advance notice, options for timing, alternate accommodations)?

Response: If helicopters were used, PSE and their contractor would comply with the local and FAA congested air permit conditions and notification requirements[1]. As these are specialty helicopters and work techniques, the work would likely be scheduled weeks in advance. The public notice and awareness outreach would be flexible and could be communicated in advance.

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[1] http://fsims.faa.gov/WDocs/8700.1%20GA%20Ops%20Insp%20Handbk/Volume%202/2_102_00.htm

Questions Related to Potential Helicopter Use for Energize Eastside
October 26, 2017

5. Is there any information about how PSE would allow or limit use of helicopters by your contractors?

Response: PSE will review and approve the contractor's work plan prior to construction. PSE's experience with best construction practices and desire to minimize the impacts to the homeowners/public would be used to review all construction methods prior to work being authorized. The use of helicopters requires additional coordination and typically is more expensive; therefore, solid justification is necessary for their use. This often includes minimizing land disturbance that may be necessary to access pole locations, thereby reducing traditional access and associated restoration costs.

Questions for PSE on Energize Eastside Final EIS - Helicopter Use

December 18, 2017

1. **Is it correct to say that use of helicopters would only be used to reduce impacts related to site clearing and grading (such as in steep topography, or heavily vegetated areas) for construction access, and for reducing the need to cross properties while pulling the sock line (such as in densely developed or heavily vegetated areas)?**

   Response: Reducing construction impacts through smaller/fewer access roads, reduced overall project duration/time installing a pole or foundation, and more efficiently pulling in the sock line are all reasons to use a helicopter.

2. **It appears that construction equipment would still have to reach a pole site to bore a hole, even if the pole was going to be set by helicopter, so is it accurate to say that the impact potentially avoided by use of helicopters for setting poles would be the clearing and grading related to crane access?**

   Response: The potential impact created through eliminating clearing and grading necessary for crane access is a benefit of helicopter use. The size of the access road could be reduced due to smaller equipment needed at the pole location if more of the work can be done with a helicopter.

3. **Are there areas along the alignment that you can confirm would not likely require helicopter use?**

   Response: Pole locations which are adjacent to roads or parking lots are less likely to need helicopter work for installing the pole. These locations might still benefit from pulling the sock line with a helicopter to reduce construction times and impacts to customer yards/landscaping etc.

4. **Are there any circumstances where you know FAA rules would not allow helicopter use?**

   Response: Not at this time. PSE will follow all applicable FAA regulations in the use of helicopter. The FAA has numerous safety rules and procedures, all of which have to be followed by the helicopter operator. Permit application and advance notification are required prior to lifting work being conducted. A "congested air" permit would be required due to the location of the job. The FAA could deny the permit.

5. **If a helicopter is being used, how would the concrete be poured? Would the helicopter carry the concrete?**

   Response: It is not anticipated that concrete will be brought in by helicopter for this project. A standard concrete truck or a pumper truck could be used to pour the foundation even if a helicopter is used to set the pole.

6. **How long does it take per pole to place a foundation bolt cage, pour a foundation, and place a pole with the use of a helicopter?**

   Response: The process typically takes 1-3 days - steps are: 1) rebar placement; 2) bolt cage install and leveling etc.; and 3) concrete placement and finish work.

7. **How long does it take to place a direct embed pole with the use of a helicopter?**

   Response: Basically just the time to fly from loading zone (LZ) to pole hole, lower the pole into place, align and plumb the pole, and then start back fill work to secure pole position. This typically takes around 30 to 60 minutes per section of pole. The additional sections of the poles would take less time each as they would just be lowered and secured onto the previous section.

8. **How long does it take for a helicopter to pull a sock line from pole to pole?**

   Response: Typically, it takes around 30 seconds to 2 minutes to carry the sock line between poles with the span distance being the primary factor in determining the time necessary. Catching the "fly door" on the traveler with the sock line at each structure is as quick as 5-20 seconds based on weather conditions and other factors. Passing the "needle" at Dead End structures is a 1-5 minute operation.

APPENDIX A-4. ESA TECHNICAL MEMORANDUM ON HELICOPTER NOISE FROM POWERLINE STRINGING AND POLE INSTALLATION

ESA

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Technical memorandum

date	January 16, 2018
to	Reema Shakra, Project Manager
cc	Mark Johnson, Project Director
from	Chris Sanchez, Senior Technical Associate
subject	Helicopter Noise from the Installation of Transmission Poles and Lines

In response to your e-mail, this memorandum responds to your request for impact analysis of noise from transmission pole/line installations using helicopters. The following is a synopsis of potential noise impacts and how they may apply to elements of the Energize Eastside Project. ESA estimated the 1-hour equivalent sound level (Hourly Leq) values that would be associated with pole/line installations as well as landing zone areas.

It is assumed that the pole installation would be conducted using a heavy duty helicopter, such as CH47D Chinook, and line installation would be conducted using a light duty helicopter, such as Hughes 500D. The Federal Aviation Administration's (FAA) Aviation Environmental Design Tool version 2d (AEDT 2d) includes a set of data called Noise-Power-Distance (NPD) data for both helicopters. NPD data includes A-weighted maximum noise levels (LAMAX) for hovering operations at the distances from 200 feet to 25,000 feet. For this study, the following are used as a reference noise level for helicopter activities:

- CH47D – 86 dBA LAMAX at 200 feet
- H500D – 80 dBA LAMAX at 200 feet

These maximum noise levels were then used to estimate average hourly noise levels associated with helicopter construction activity. For pole installation, it was assumed that a CH47D helicopter would be hovering at one location for the entire hour. For line installation, it was assumed that the H500D helicopter operating time would be approximately 15 minutes per hour at tubular steel pole (TSP) sites during sock line stringing. At the landing zone, it was assumed that helicopters would take 15 minutes per hour related to helicopter landing and takeoff. For both pole and line installation, it was assumed that the helicopter would hover approximately 250 feet above the ground. Based on the above assumptions, following hourly Leq levels will be used:

- CH47D Hovering – 86 dBA Hourly Leq at 200 feet
- CH47D at Landing Zone – 80 dBA Hourly Leq at 200 feet
- H500D Hovering and at Landing Zone – 74 dBA Hourly Leq at 200 feet

As shown in **Table 1**, *Construction Noise Levels at Sensitive Receptor Locations,* hourly average helicopter noise levels associated with these construction activities at the closest sensitive receptor locations would range from 69 dBA to 82 dBA for helicopter activities at a lateral distance of 200 to 350 feet.

For the Energize Eastside Project, a mitigation measure to avoid some non-noise related impacts would involve the use of helicopters for pole installation and line stringing. At some locations, sensitive receptors could be as close as 15 feet laterally from the proposed alignment. Consequently, noise levels at immediately adjacent receptors to pole installation and line stringing would essentially be the same as the reference noise level at a height of 200 feet. Assuming that helicopter landing zones would have a 350-foot buffer from the nearest sensitive receptor, noise levels at such receptors would be the same as predicted in Table 1, below.

Most cities in the project area have a noise ordinance that limits the hours of construction activity but do not establish a quantitative noise standard. As an example, under the Bellevue City Code (BCC), noise emanating from construction sites is prohibited outside of the hours of 7 a.m. to 6 p.m. Monday through Friday, and 9 a.m. to 6 p.m. on Saturdays. No construction site noise is permitted on Sundays and legal holidays. If after-hours sounds from a construction site are clearly audible across a real property boundary or at least 75 feet from their source, it will be considered a noise disturbance (BCC 9.18.040.A.4) Additionally, sounds created by the repair or installation of essential utility services and streets are exempt from the restrictions of the noise ordinance (BCC 9.18.020.B.2) as are sounds originating from aircraft in flight (BCC 9.18.020.A.6).

Consequently, while helicopter noise would likely be clearly audible at the nearest receptors it would still be consistent with the restrictions of local noise ordinances and would be temporary in nature as construction activities would take less than three days to complete at any given location, with the exception of activities at the helicopter landing zones.

TABLE 1
CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTOR LOCATIONS

Construction Noise Source	Distance to Closest Sensitive Receptor[a]	Hourly Leq at Closest Sensitive Receptor
CH47D – Pole Installation[b]	320 feet	82 dBA
H500D – Line Installation[c]	320 feet	70 dBA
CH47D at Landing Zone[d]	350 feet	75 dBA
H500D at Landing Zone[d]	350 feet	69 dBA

[a] Direct distances between a helicopter and a receptor based on the hovering height of 250 feet and horizontal distance to a receptor of 200 feet with the assumption of 6 dB noise propagation rate per doubling the distance.

[b] Helicopter Hourly Leq values near pole installation are calculated assuming the helicopter would hover above the site at an elevation of approximately 250 feet above the ground surface for an hour.

[c] Helicopter Hourly Leq values near TSP locations are calculated assuming the helicopter would hover above the site at an elevation of approximately 250 feet above the ground surface for up to 15 minutes per hour.

[d] Helicopter Hourly Leq values are calculated assuming the helicopter would operate in the immediate vicinity of the helicopter landing zone for up to 15 minutes per hour.

SOURCE: ESA, 2018

B

Appendix B: Supplemental Information: Land Use

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APPENDIX B-1. METHODS FOR DETERMINING STUDY AREA

The adjacent parcel study area was created for the right-of-way by selecting all parcels adjoining the right-of-way where the corridor will be running. For areas not in a current right-of-way, a qualitative approach was used. The goal was to capture all of the parcels that were next to or adjoining the PSE easement. This included both the parcel the easement runs through (easement parcel) and the adjoining parcels, within a reasonable distance. A reasonable distance methodology assumes that if the easement parcel is large, the adjoining parcels on the nearby side are brought in, while those on the far side are left out. A common example is represented in Figure B-1. Here, it is reasonable to assume that the parcels on the east are close enough to be adjacent, but the parcels on the west are not.

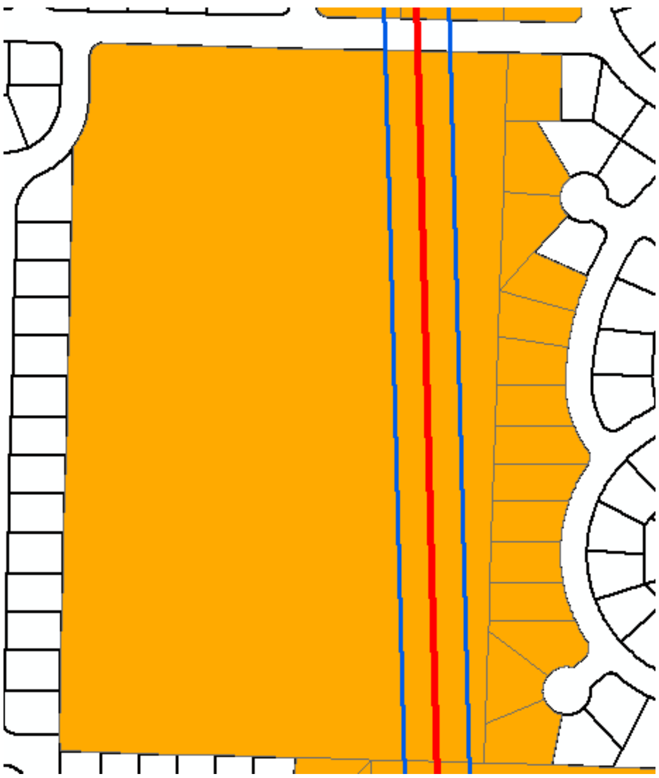

Figure B-1. Adjacent Parcels for Study Area Example

APPENDIX B-2. APPLICABLE ZONING REGULATIONS BY STUDY AREA CITY

The tables below list the zoning districts of parcels included in the study area, shown by segment and option. In each zoning district, an electric utility facility would either be designated as a permitted, conditional, or prohibited use. If an electrical facility is considered a conditional use, the applicable jurisdiction would require a public hearing in front of the hearing examiner. Also included in the tables is each jurisdiction's definition of an electrical utility facility or utility.

Redmond Segment			
Electrical Utility Facility	Electrical Utility Facility defined as: unstaffed facilities, except for the presence of security personnel, that are used for or in connection with or to facilitate the transmission, distribution, sale, or furnishing of electricity, including but not limited to electric power substations (RZC 21.78)		
Zoning Districts	**Permitted**	**Conditionally Permitted**	**Prohibited**
R-1		X	
R-4		X	
R-5		X	
R-6		X	
R-12		X	
BP	X		
MP	X		

Source: City of Redmond Municipal Code. Accessed August 2016. Available at: http://online.encodeplus.com/regs/redmond-wa/doc-viewer.aspx?tocid=003#secid-1067.

Bellevue Segments			
Electrical Utility Facility	Electrical Utility Facility defined as: distribution substations, transmission stations, transmission switching stations, or transmission lines that are built, installed, or established. (Bellevue LUC 20.50.018 E)		
Zoning Districts	**Permitted**	**Conditionally Permitted**	**Prohibited**
R-1		X	
R-1.8		X	
R-2.5		X	
R-3.5		X	
R-5		X	
R-10		X	
R-15		X	
R-20		X	
R-30		X	
BR-GC		X	
CB		X	
O		X	
OLB		X	
PO		X	
LI		X	
BR-CR		X	
BR-ORT		X	

Source: http://www.codepublishing.com/WA/Bellevue/LUC/BellevueLUC2020.html#20.20.255

Newcastle Segment			
Electrical Utility Facility (Regional)	Electrical Utility Facility (Regional) defined as: a facility for the distribution or transmission of services from or to an area beyond Newcastle; including but not limited to: electrical distribution substations, electrical transmission stations, electrical transmission switching stations, electrical transmission lines greater than 115 kV and maintenance and utility yards (NMC 18.96.689).		
Zoning Districts	**Permitted**	**Conditionally Permitted**[1]	**Prohibited**
R-1		X	
R-4		X	
R-6		X	
R-6-P		X	
R-18		X	
CB		X	
O		X	
LOS		X	

[1] Subject to additional criteria listed in NMC 18.44.052.

Source: http://www.codepublishing.com/WA/Newcastle/#!/Newcastle18/Newcastle1808.html#18.08.060

Renton Segment			
Utilities Large	Utilities Large defined as: Utilities Large includes large-scale facilities with either major above-ground visual impacts, or serving a regional need such as two hundred thirty (230) kV power transmission lines, natural gas transmission lines, and regional water storage tanks and reservoirs, regional water transmission lines or regional sewer collectors and interceptors. (RMC4-11-210)		
Zoning Districts	**Permitted**	**Conditionally Permitted**	**Prohibited**
R-1		X	
R-4		X	
R-6		X	
R-8		X	
R-10		X	
R-14		X	
IL		X	
RC		X	
COR		X	
CV		X	
CA		X	

Source: http://www.codepublishing.com/WA/Renton/#!/renton04/Renton0403/Renton0403090.html#4-3-090

APPENDIX B-3. APPLICABLE POLICIES BY STUDY AREA CITY

Policies by Subarea Plan

Subarea Plan	Policy
Redmond	
Comprehensive Plan	Infrastructure and services meet the needs of a growing population and promote a safe and healthy community. The planning and placement of utilities in Redmond has supported the community's vision for the location and amount of growth. Long-term planning for utilities has contributed to a high quality of life for Redmond residents and businesses by ensuring efficient utility delivery. Proper utility planning has also protected Redmond's natural environment and resources.
	FW-12: Ensure that the land use pattern accommodates carefully planned levels of development, fits with existing uses, safeguards the environment, reduces sprawl, promotes efficient use and best management practices of land, provides opportunities to improve human health and equitable provision of services and facilities, encourages an appropriate mix of housing and jobs, and helps maintain Redmond's sense of community and character.
	FW-13: Ensure that the land use pattern in Redmond meets the following objectives: • Takes into account the land's characteristics and directs development away from environmentally critical areas and important natural resources; • Supports the preservation of land north and east of the city outside of the Urban Growth Area, for long-term agricultural use, recreation and uses consistent with rural character; • Provides for attractive, affordable, high-quality and stable residential neighborhoods that include a variety of housing choices; Advances sustainable land development and best management practices, multimodal travel and a high quality natural environment.
	FW-22: Make each neighborhood a better place to live or work by preserving and fostering each neighborhood's unique character and preparation for a sustainable future, while providing for compatible growth in residences and other land uses, such as businesses, services or parks.

Subarea Plan	Policy
	CF-18: Identify lands useful for public purposes in functional plans and in the appropriate elements of the Comprehensive Plan. Identify alternative sites or lands more generally where acquisition is not immediate. Identify lands specifically when acquired and used for public purposes on the Land Use Map, or in the appropriate elements of the Comprehensive Plan where not otherwise identified by City or other governmental agency functional plans.
	LU-14: Encourage the provision of needed facilities that serve the general public, such as facilities for education, libraries, parks, culture and recreation, police and fire, transportation and utilities. Ensure that these facilities are located in a manner that is compatible with the City's preferred land use pattern.
	UT-58: Work with energy service providers to ensure energy facility plans reflect and support Redmond's Land Use Plan and that energy resources are available to support the Land Use Plan.
	UT-61: Recognize the current Electrical Facilities Plan, authored by Puget Sound Energy, as the facility plan for electrical utilities serving Redmond and the vicinity. Use this plan, where it is consistent with Redmond's land use goals, as a guide in identifying and preserving utility corridors and locating electrical facilities.
	UT-63: Coordinate with Puget Sound Energy or any successor when considering land use designations or new development in the vicinity of proposed facility locations that might affect the suitability of the designated areas for location of facilities.
	UT-59: Work with energy service providers to promote an affordable, reliable, and secure energy supply that increases development and use of renewable and less carbon-intensive sources, and that minimizes demand and consumption.
Bellevue	
Comprehensive Plan	CE-4: Balance the interests of the commercial and residential communities when considering modifications to zoning or development regulations.
	LU-2: Retain the city's park-like character through the preservation and enhancement of parks, open space, and tree canopy throughout the city.
	LU-29: Help communities to maintain their local, distinctive neighborhood character, while recognizing that some neighborhoods may evolve.
	LU-1: Promote a clear strategy for focusing the city's growth and development as follows: 1. Direct most of the city's growth to the Downtown regional growth center and to other areas designated for compact, mixed use development served by a full range of transportation options.

Subarea Plan	Policy
	2. Enhance the health and vitality of existing single family and multifamily residential neighborhoods. 3. Continue to provide for commercial uses and development that serve community needs.
	UT-8: Design, construct, and maintain facilities to minimize their impact on surrounding neighborhoods.
	UT-45: Coordinate with non-city utility providers to ensure planning for system growth consistent with the city's Comprehensive Plan and growth forecasts.
	UT-47: Defer to the serving utility the implementation sequence of utility plan components.
	UT-48: Coordinate with the appropriate jurisdictions and governmental entities in the planning and implementation of multi-jurisdictional utility facility additions and improvements.
	UT-58: Require the undergrounding of all new electrical distribution lines except that interim installation of new aerial facilities may be allowed if accompanied by a program to underground through coordination with the city and other utilities. Require the undergrounding of all existing electrical distribution lines where a change in use or intensification of an existing use occurs, unless delayed installation is approved as part of a specific program to coordinate undergrounding of several utilities or in conjunction with an undergrounding program for several sites or when related to street improvements.
	UT-62: Support neighborhood efforts to underground existing electrical transmission and distribution lines.
	UT-63: Support neighborhood efforts to form financial arrangements, such as local improvement districts, to cover the non-utility share of project costs for undergrounding electrical lines.
	UT-64: Require the reasonable screening and/or architecturally compatible integration of all new utility and telecommunication facilities.
	UT-66: Encourage directional pruning of trees and phased replacement of improperly located vegetation in the right-of-way. Perform pruning and trimming of trees in an environmentally sensitive and aesthetically acceptable manner and according to professional arboricultural specifications and standards.
	UT-67: Encourage consolidation on existing facilities where reasonably feasible and where such consolidation leads to fewer impacts than would construction of separate facilities. Examples of facilities that could be shared are towers, electrical, telephone and light poles, antenna, substation sites, trenches, and easements.
	UT-68: Encourage the use of utility corridors as non-motorized trails. The city and utility company should coordinate the acquisition, use, and enhancement of utility corridors for pedestrian, bicycle and equestrian trails and for wildlife corridors and habitat.

Subarea Plan	Policy
	UT-69: Avoid, when reasonably possible, locating overhead lines in greenbelt and open spaces as identified in the Parks and Open Space System Plan.
	UT-72: Encourage cooperation with other jurisdictions in the planning and implementation of multi-jurisdictional utility facility additions and improvements. Decisions made regarding utility facilities shall be made in a manner consistent with, and complementary to, regional demand and resources, and shall reinforce an interconnected regional distribution network.
	UT-74: Encourage system practices intended to minimize the number and duration of interruptions to customer service.
	UT-75: Prior to seeking city approval for facilities, encourage utilities service providers to solicit community input on the siting of proposed facilities which may have a significant adverse impact on the surrounding community.
	UT-77: Require all utility equipment support facilities to be aesthetically compatible with the area in which they are placed by using landscape screening and/or architecturally compatible details and integration.
	UT-94: Require in the planning, siting, and construction of all electrical facilities, systems, lines, and substations that the electrical utility strike a reasonable balance between potential health effects and the cost and impacts of mitigating those effects by taking reasonable cost-effective steps.
	UT-95: Work with Puget Sound Energy to implement the electrical service system serving Bellevue in such a manner that new and expanded transmission and substation facilities are compatible and consistent with the local context and the land use pattern established in the Comprehensive Plan.
	UT-96: Require siting analysis through the development review process for new facilities, and expanded facilities at sensitive sites, including a consideration of alternative sites and collocation.
	UT-98: Discourage new aerial facilities within corridors that have no existing aerial facilities.
Bel-Red Corridor Plan	Utility-related cabinets that occur in the right-of-way should not call attention to themselves, and therefore should not be decorated.
Wilburton Grand Connection Initiative	No policies that could impact the project.
Bel-Red Subarea Plan	No policies that could impact the project.
Bridle Trails Subarea Plan	Policy S-BT-34: Provide Bellevue-owned utility service to surrounding jurisdictions in accordance with the Annexation Element of the Comprehensive Plan.

Subarea Plan	Policy
Eastgate Subarea Plan	No policies that could impact the project.
Factoria Subarea Plan	Policy S-FA-24: Encourage the undergrounding of utility distribution lines in areas of new development and redevelopment.
	Policy S-FA-35: Minimize disruptive effects of utility construction non property owners, motorists, and pedestrians.
	Policy S-FA-49: Incorporate infrastructure improvements and implement design guidelines that will enhance pedestrian crossings (respecting the significant traffic volumes and multiple turning movements at these intersections), improve transit amenities, and develop an active building frontage along Factoria Boulevard with direct pedestrian routes to retail storefronts from the public sidewalk and weather protection for pedestrians.
	Policy S-FA-52. Allow buildings to abut the Factoria Boulevard public right-of-way, so long as there is adequate space for the arterial sidewalks.
	Policy S-FA-51: Consider establishing a maximum building setback from the right-of-way for structures along the Factoria Boulevard commercial corridor.
Newport Hills Plan	Policy S-NH-55: Encourage undergrounding of utility distribution lines on existing development where reasonably feasible.
	Policy S-NH-50. Include the following elements in a redeveloped commercial district: new commercial buildings at the street edge
Richards Valley Plan	Policy S-RV-19. Encourage the combination of utility and transportation rights-of-way in common corridors and coordinate utility construction with planned street and bike lane improvements which could result in a more efficient allocation of funds.
	Policy S-RV-20. Use common corridors for new utilities if needed. *Discussion: If new power lines are needed in the Subarea, they should be developed in areas that already contain power lines, rather than causing visual impacts in new areas.*
SE Bellevue Plan	N/A
Wilburton/NE 8th St Plan	Policy S-WI-43: Encourage the undergrounding of utility distribution lines in developed areas and require the undergrounding of utility distribution lines in new developments when practical.
	Policy S-WI-49. Allow flexibility for commercial buildings to be sited near frontage property lines.

Subarea Plan	Policy
Newcastle	
Comprehensive Plan	UT-P1: The City shall require that the undergrounding of new utility distribution lines, with the exception of high voltage electrical transmission lines.
	UT-P2: The City shall require the undergrounding of existing utility distribution lines where physically feasible as streets are widened and/or areas are redeveloped based on coordination with local utilities.
	UT-P3: The City shall promote collocation of major utility transmission facilities such as high voltage electrical transmission lines and water and natural gas trunk pipe lines within shared utility corridors, to minimize the amount of land allocated for this purpose and the tendency of such corridors to divide neighborhoods.
	UT-P10 The City should require utility providers to design and construct overhead transmission lines in a manner that is environmentally sensitive, safe, and aesthetically compatible with surrounding land uses.
	UT-P12: The City should encourage the replacement of outdated equipment with technologically updated or advanced alternatives, providing that the cost of the updated equipment is fiscally reasonable.
	UT-P14 The City should require utility providers to minimize visual and other impacts of transmission towers and overhead transmission lines on adjacent land uses through careful siting and design.
	UT-P17 The City should require an analysis from utilities that states either the direct benefits to the City of high capacity transmission lines or the necessity of high capacity transmission lines through the City.
	LU-G3: preserve the existing character, scale, and neighborhood quality as new development occurs
	LU-G8: Strive to preserve and enhance natural features, such as stream channels, that contribute to the City's scenic beauty.
	LU-G13: The City shall identify lands useful for public purposes such as utility and transportation corridors, landfills, sewage treatment facilities, storm water management facilities, recreation, schools, and other public uses.
	LU-P17: Non-residential uses may be allowed in new residential developments when proposed uses are determined to be both viable and beneficial to the surrounding neighborhood.
	HO-P2: The City shall protect the quality and character of existing single family neighborhoods as described in the Land Use Element.
Newcastle Subarea Plan	Policy S-NC-44: Encourage the use of utility and railroad easements and rights-of-way for hiking, biking, and equestrian trails wherever appropriate in the Subarea.

Subarea Plan	Policy
Renton	
Comprehensive Plan	L-48: Accommodate change within the Renton community in a way that maintains Renton's livability and natural beauty.
	L-55: Protect public scenic views and public view corridors, including Renton's physical, visual and perceptual linkages to Lake Washington and the Cedar River.
	L-56: Preserve natural landforms, 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 and neighborhoods.
	U-2: Protect the health and safety of Renton citizens from environmental hazards associated with utility systems through the proper design and siting of utility facilities.
	U-3: Promote the co-location of new utility infrastructure within rights-of-way and utility corridors and coordinate construction and replacement of utility systems with other public infrastructure projects to minimize construction-related costs and disruptions.
	U-7: Non-City utility systems should be constructed in a manner that minimizes negative impacts to existing development and should not interfere with operation of City utilities. City development regulations should otherwise not impair the ability of utility providers to adequately serve customers.
	U-72: Coordinate with local and regional electricity providers to ensure the siting and location of transmission and distribution facilities is accomplished in a manner that minimizes adverse impacts on the environment and adjacent land uses.
	U-73: Encourage electricity purveyors to make facility improvements and additions within existing utility corridors wherever possible.

4-3-090 City of Renton Shoreline Master Program Regulations

In addition to the various plan policies listed in the table above, the Shoreline Master Program applies for any portion of the project that is in a designated Shoreline of the State or within 200 feet of the ordinary high water mark or the floodway, whichever is greater. As a portion of the project crosses the Cedar River shoreline (in Renton), the following regulations would apply to any structure that lies within the Shoreline jurisdiction.

Part 4-3-090(C)(2)(c) Shoreline High Intensity Overlay District Acceptable Activities and Uses

Acceptable Activities and Uses: As listed in RMC 4-3-090E Use Regulations.

Part 4-3-090(C)(4)(c) Shoreline High Intensity Overlay District Acceptable Activities and Uses

Subject to RMC 4-3-090E Use Regulations, which allows land uses in RMC Chapter 4-2 in this overlay district, subject to the preference for water-dependent and water-oriented uses. Uses adjacent to the water's edge and within buffer areas are reserved for water oriented development, public/community access, and/or ecological restoration.

Part 4-3-090(D)(2)(a) General Development Standards, Environmental Effects, No Net Loss of Ecological Functions

i. No net loss required: Shoreline use and development shall be carried out in a manner that prevents or mitigates adverse impacts to ensure no net loss of ecological functions and processes in all development and use. Permitted uses are designed and conducted to minimize, in so far as practical, any resultant damage to the ecology and environment (RCW 90.58.020). Shoreline ecological functions that shall be protected include, but are not limited to, fish and wildlife habitat, food chain support, and water temperature maintenance. Shoreline processes that shall be protected include, but are not limited to, water flow; erosion and accretion; infiltration; ground water recharge and discharge; sediment delivery, transport, and storage; large woody debris recruitment; organic matter input; nutrient and pathogen removal; and stream channel formation/maintenance. ii. Impact Evaluation Required: In assessing the potential for net loss of ecological functions or processes, project-specific and cumulative impacts shall be considered and mitigated on- or off-site. iii. Evaluation of Mitigation Sequencing Required: An application for any permit or approval shall demonstrate all reasonable efforts have been taken to provide sufficient mitigation such that the activity does not result in net loss of ecological functions. Mitigation shall occur in the following prioritized order: (a) Avoiding the adverse impact altogether by not taking a certain action or parts of an action, or moving the action. (b) Minimizing adverse impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology and engineering, or by taking affirmative steps to avoid or reduce adverse impacts. (c) Rectifying the adverse impact by repairing, rehabilitating, or restoring the affected environment. (d) Reducing or eliminating the adverse impact over time by preservation and maintenance operations during the life of the action. (e) Compensating for the adverse impact by replacing, enhancing, or providing similar substitute resources or environments and monitoring the adverse impact and taking appropriate corrective measures.

Part 4-3-090(D)(2)(c) General Development Standards, Environmental Effects, Critical Areas within Shoreline Jurisdiction

i. Applicable Critical Area Regulations: The following critical areas shall be regulated in accordance with the provisions of RMC 4-3-050 Critical Area Regulations, adopted by reference except for the provisions excluded in subsection 2, below. Said provisions shall apply to any use, alteration, or development within shoreline jurisdiction whether or not a shoreline permit or written statement of exemption is required. Unless otherwise stated, no development shall be constructed, located, extended, modified, converted, or altered, or land divided without full compliance with the provision adopted by reference and the Shoreline Master Program. Within shoreline jurisdiction, the regulations of RMC 4-3-050 shall be liberally construed together with the Shoreline Master Program to give full effect to the objectives and purposes of the provisions of the Shoreline Master Program and the Shoreline Management Act.

If there is a conflict or inconsistency between any of the adopted provisions below and the Shoreline Master Program, the most restrictive provisions shall prevail.

(a) Aquifer protection areas.

(b) Areas of special flood hazard.

(c) Sensitive slopes, twenty-five percent (25%) to forty percent (40%), and protected slopes, forty percent (40%) or greater.

(d) Landslide hazard areas.

(e) High erosion hazards.

(f) High seismic hazards.

(g) Coal mine hazards.

(h) Fish and wildlife habitat conservation areas: Critical habitats.

(i) Fish and wildlife habitat conservation areas: Streams and Lakes: Classes 2 through 5 only.

ii. Inapplicable Critical Area Regulations: The following provisions of RMC 4-3-050 Critical Area Regulations shall not apply within shoreline jurisdiction:

(a) RMC 4-3-050N Alternates, Modifications and Variances, Subsections 1 and 3 Variances, and

(b) RMC 4-9-250 Variances, Waivers, Modifications and Alternatives.

(c) Wetlands, including shoreline associated wetlands, unless specified below.

iii. Critical Area Regulations for Class 1 Fish Habitat Conservation Areas: Environments designated as Natural or Urban Conservancy shall be considered Class 1 Fish Habitat Conservation Areas. Regulations for fish habitat conservation areas Class 1 Streams and Lakes are contained within the development standards and use standards of the Shoreline Master Program, including but not limited to RMC 4-3-090F.1 Vegetation Conservation, which establishes vegetated buffers adjacent to water bodies and specific provisions for use and for shoreline modification in Subsections 4-3-090E and 4-3-090F. There shall be no modification of the required setback and buffer for non-water dependent uses in Class 1 Fish Habitat Conservation areas without an approved shoreline conditional use permit.

iv. Alternate Mitigation Approaches: To provide for flexibility in the administration of the ecological protection provisions of the Shoreline Master Program, alternative mitigation approaches may be applied for as provided in RMC 4-3-050N Alternates, Modifications and Variances, subsection 2. Modifications within shoreline jurisdiction may be approved for those critical areas regulated by that section as a Shoreline Conditional Use Permit where such approaches provide increased protection of shoreline ecological functions and processes over the standard provisions of the Shoreline Master Program and are scientifically supported by specific studies performed by qualified professionals.

C

Appendix C:
Scenic Views and Aesthetic Environment Methodology

energize EASTSIDE EIS

APPENDIX C-1. SCENIC VIEWS AND AESTHETIC ENVIRONMENT METHODOLOGY

1. INTRODUCTION

This appendix describes the process for assessing impacts to scenic views and the aesthetic environment as a result of the Energize Eastside project. Scenic views are the observation of a visual resource from a particular location, with visual resources 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. The aesthetic environment is the portion of the environment that influences human perception of the world. It is comprised of the natural (topography, presence of trees, water bodies) and built (buildings, utility infrastructure) environments. This appendix details the process used to identify impacts to scenic views and the aesthetic environment and how significance was assigned.

2. GUIDANCE USED

SEPA (WAC 197-11) requires all major actions sponsored, funded, permitted, or approved by state and/or local agencies to undergo planning to ensure that environmental considerations, such as impacts related to scenic views and the aesthetic environment, are given due weight in decision-making. Because the value of scenic views and the aesthetic environment is subjective, based on the viewer, it is difficult to quantify or estimate impacts. In particular, little guidance exists supporting a standard methodology for assessing visual impacts associated with transmission line projects. A number of methodologies were reviewed to inform the methodology used for this project. For this project, the assessment of impacts was generally based on methods described in the Federal Highway Administration (FHWA) *Guidelines for Visual Impact Assessment* (FHWA, 2015). FHWA guidelines do not specify thresholds for determining significant impacts, nor do state or local regulations. Therefore, significance was assigned based on criteria similar to those described in *The State Clean Energy Program Guide: A Visual Impact Assessment Process for Wind Energy Projects* (Vissering et al., 2011).

3. STUDY AREA

The FHWA Guidance suggests identifying an Area of Visual Effect (AVE) based on the physical constraints of the environment and the physiological limits of human sight (FHWA, 2015). This concept was used for determining the study area, which takes into account where the project would be visible given the topographical and human sight constraints. Impacts to scenic views and the aesthetic environment would only occur in places where the project would be visible. To identify areas where the project would be visible, a geographic information system (GIS) analysis was conducted.

Key Changes from Phase 2 Draft EIS

The study area was refined to focus on PSE's Proposed Alignment.

Two sets of tools in ArcMap allow a user to run such an analysis: (1) Viewshed, and (2) Observer Points (ESRI, 2016). For this analysis, the viewshed tool was used because it allows use of lines as key visual elements. The viewshed tool creates a raster[1] that records the number of times an input point or polyline feature[2] can be viewed from a particular area. When polyline input is used, every node[3] and vertex[4] along each input line is processed as an individual observation point, so an area where multiple vertices can be viewed would have a higher raster value.

Data Used to Determine Study Area

King County 2002/2003 Digital Surface Model (DSM) (King County, 2003a)

PSE GIS Alignment Data (PSE, 2016a)

For this analysis, the EIS Consultant Team used the PSE alignment data (a GIS file that shows where the project would be located) as the input polyline to determine what areas of the landscape have line of sight to the proposed transmission line.[5] Applying an offset informs the viewshed model that the line being observed would be located above the ground (Figure C-1). The heights identified in Table C-1 were used to prescribe an offset height to the polyline in the viewshed analysis.[6]

Table C-1. PSE GIS Alignment Data - Proposed Maximum Pole Height by Segment

Segment	Option(s)	Proposed Maximum Pole Height (feet)
Redmond	N/A	120’
Bellevue North	N/A	100’
Bellevue Central	Existing Corridor	115’
Bellevue Central	Bypass 1	115’
Bellevue Central	Bypass 2	115’
Bellevue South	Existing Corridor	95’
Bellevue South	SE Newport Way	80’
Bellevue South	SE 30th St | Factoria Blvd | Coal Creek Parkway	125’
Bellevue South	124th Ave SE	80’
Newcastle	N/A	100’
Renton	N/A	125’

Source: PSE, 2016b.

1 A raster is a matrix of cells (or pixels) organized into a grid where each cell contains a value representing information, such as whether or not a view can be seen.
2 A polyline feature is a continuous line composed of one or more line segments.
3 A node is a point at which lines intersect or branch.
4 A vertex is an angular point of a polygon.
5 Note: line of sight does not necessarily mean the object is within the range of human sight.
6 Pole heights were assigned at the “option(s)” level, with the highest proposed pole option being used.

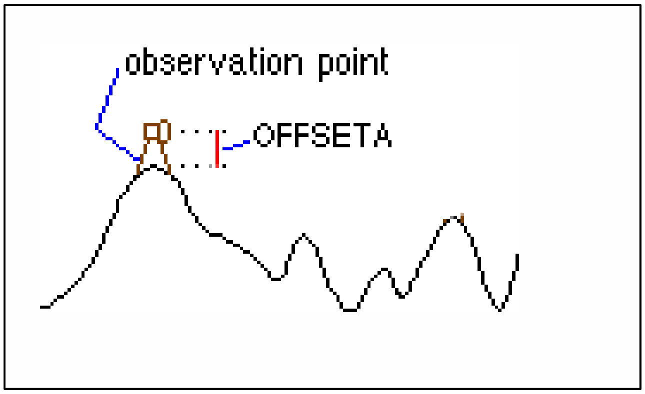

Figure C-1. Factoring Line Heights (ESRI, 2016)

The data used as the “ground” for this analysis were the King County Digital Surface Model (DSM). The King County DSM was used instead of bare earth data because it gives the heights of vegetation and buildings, in addition to taking into account the underlying topography. The EIS Consultant Team used DSM data because in urban environments views are often obstructed by vegetation and buildings, rather than by the topography of the landscape alone (GIS Geography, 2016).

Figure C-2 shows the output from the GIS analysis described above. The GIS analysis provides a rough approximation of where the project would be visible. It includes areas where the line would be so small that it is unrealistic that it would be distinguishable on the horizon. Also, in some instances dense areas of tree stands were misinterpreted by the GIS analysis as being a rise in topography from which views could be had, skewing the results to show more areas as being potentially impacted than would actually occur. In general, the highest concentrations of areas with views of the project corridor would be within one-quarter mile of the corridor. This is consistent with what is commonly found for transportation projects (FHWA, 2015).

For the purposes of this project, a study area with a one-quarter mile radius from the centerline of the proposed transmission line corridor (including all segment options) was used. However, Interstate 405 (I-405) and all areas to the west of I-405 were removed because the freeway provides such a wide separation that the project is not expected to visually impact I-405 drivers or the neighborhoods west of the freeway. The study area focuses on areas where the proposed transmission line would be within the foreground view, where viewers are most likely to experience the scale of the project and observe details and materials. While the project would be visible at greater distances, significant scenic or aesthetic impacts are not probable given the project’s scale relative to its largely mixed urban context.

The study area used for the Phase 2 Draft EIS included route options in central and south Bellevue outside of PSE’s existing corridor that are not included in the Final EIS because the Final EIS focuses on PSE's Proposed Alignment (Figure C-2). Figure C-3 shows the study area used for the Final EIS.

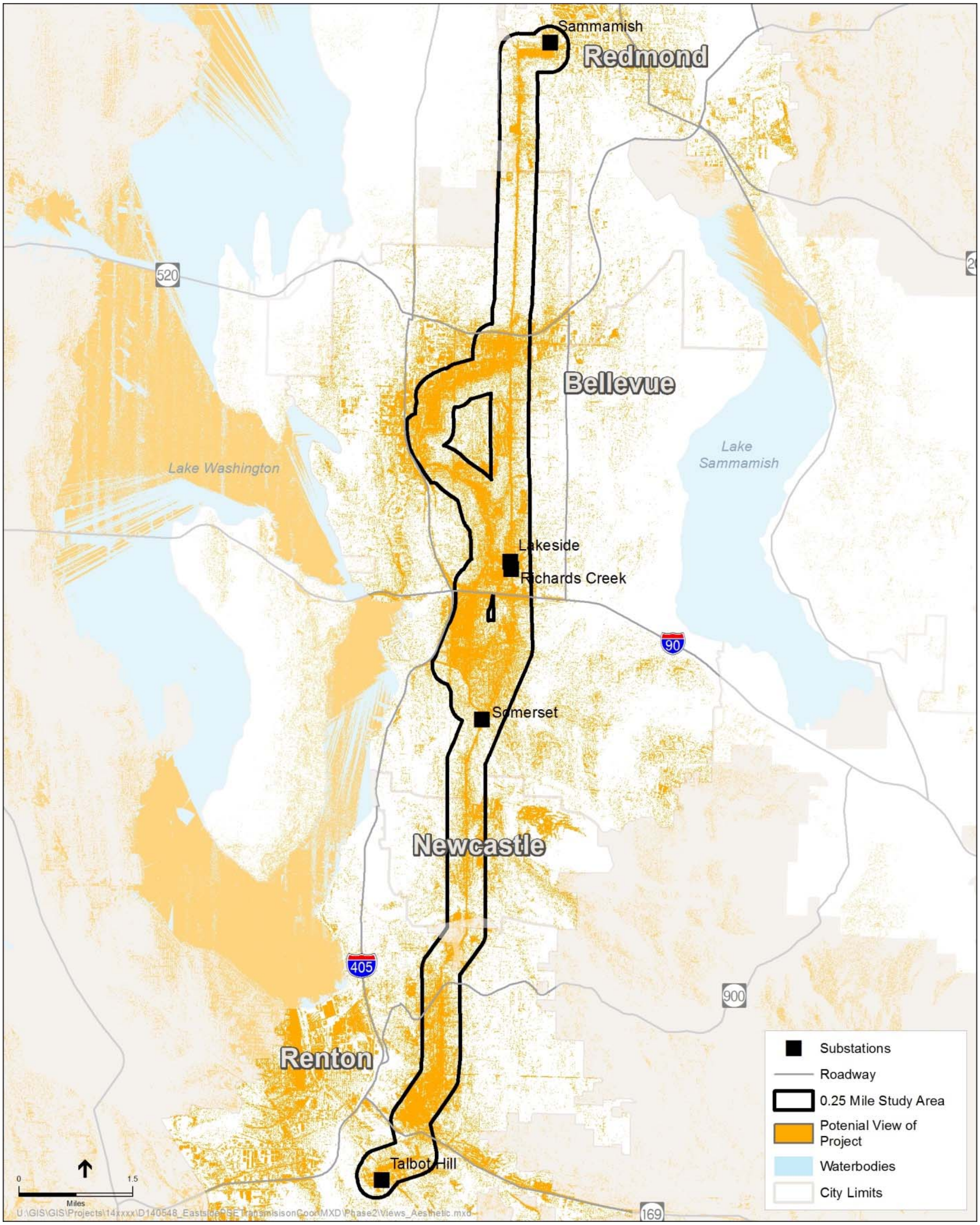

Figure C-2. Study Area for the Phase 2 Draft EIS

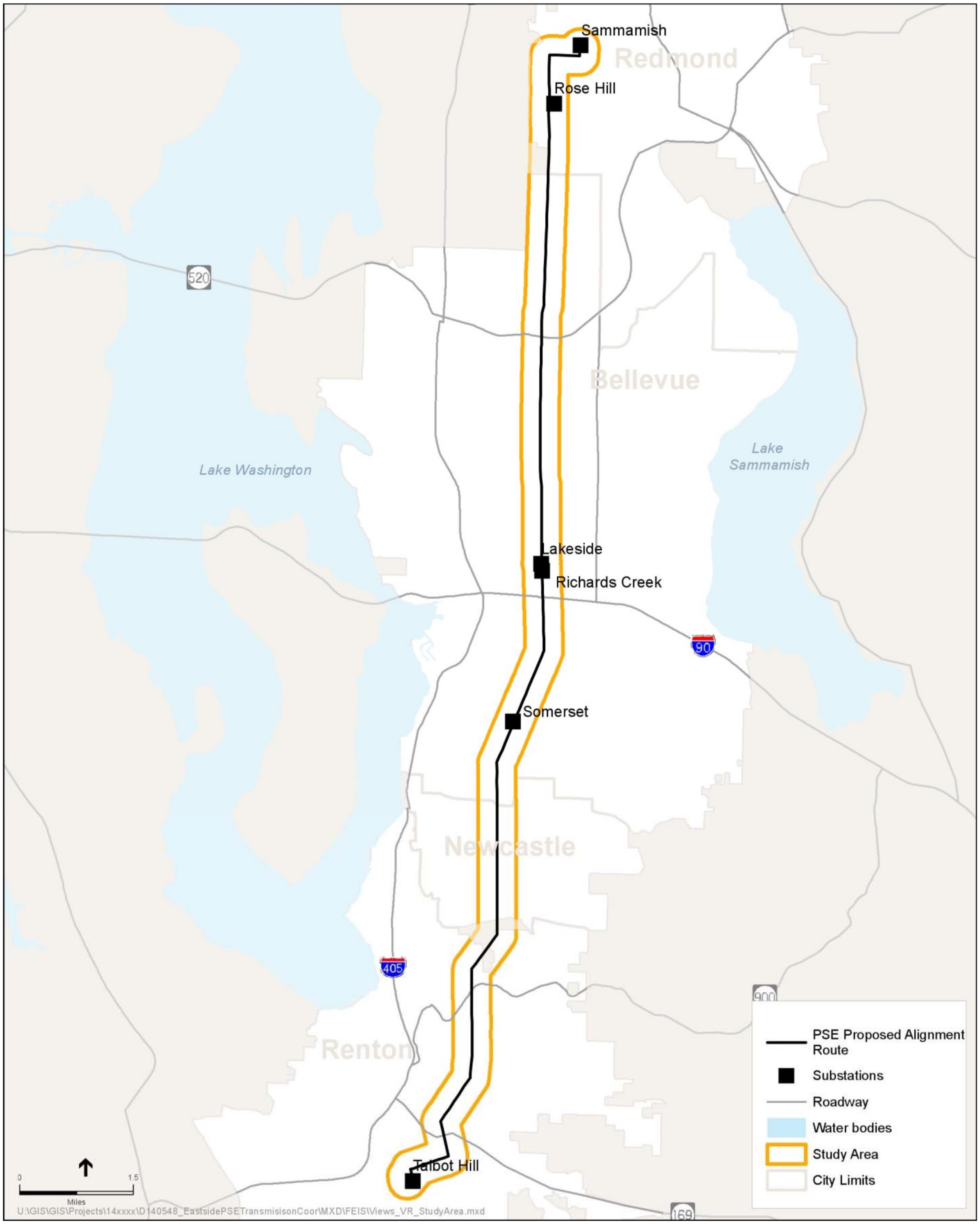

Figure C-3. Study Area for the Final EIS

4. CHARACTERIZING THE AESTHETIC ENVIRONMENT

The existing aesthetic environment was characterized through an assessment of the visual character (what is present in the built and natural environments), the affected population (viewers), and the existing visual quality. Visual quality is based on consistency of visual character with viewer preferences. To assess the visual quality of the study area, the visual quality criteria described in the FHWA Guidance were used. These concepts were applied by the EIS Consultant Team in the manner described in the table below based on professional experience and consideration of viewer preferences stated in study area comprehensive plans and public comments received during the EIS process.

Key Changes from Phase 2 Draft EIS

Additional analysis of utility coherence based on design refinements.

Table C-2. Application of FHWA Methodology to Determine Visual Quality

FHWA Visual Quality Criteria	FHWA Description	Application
Natural Harmony	What a viewer likes and dislikes about the natural environment. The viewer labels the natural environment as being either harmonious or inharmonious. Harmony is considered desirable; disharmony is undesirable.	**High:** A natural area that is relatively undisturbed by development. Could include secluded lakes, open plains, forests, etc. **Medium:** An area with a small amount of development that blends with the natural environment and does not disrupt the natural harmony of the area. **Low:** An area with a large amount of development where the built environment takes precedence in the viewshed over the underlying natural environment.
Built Order	What a viewer likes and dislikes about the built environment. The viewer labels the built environment as being either orderly or disorderly. Orderly is considered desirable; disorderly is undesirable.	**High:** A built environment with urban design that is identified in a comprehensive plan or other planning document as being aesthetically pleasing. **Medium:** An area with consistent building height and form. It does not overtly meet any set design standards, but also is not inconsistent with set design standards. **Low:** An area with inconsistent building height and form that does not meet set design standards (if they exist).
Utility Coherence	What the viewer likes and dislikes about the utility environment, which is comprised of the utility's geometrics, structures, and fixtures. The viewer labels the utility environment as being either coherent or incoherent.	**High:** Minimal utility presence, small poles with few wires*. Configuration is consistent in height and form. Utility infrastructure blends with the rest of the aesthetic environment. **Medium:** Moderate utility presence. There could be larger, taller poles or more wires.* Configuration is consistent in height and

FHWA Visual Quality Criteria	FHWA Description	Application
	Coherent is considered desirable; incoherent is undesirable.	form. Utility infrastructure blends with the rest of the aesthetic environment for the most part. **Low:** High utility presence. There are larger, taller poles with configurations that are inconsistent in height and form. The utility infrastructure is the prominent feature in the viewshed and does not blend with the rest of the aesthetic environment.

*Note: Changes in wire diameter are not expected to be perceivable and therefore are not considered as part of this analysis (see Appendix C-2).

5. CHARACTERIZING SCENIC VIEWS

Scenic views are views of visual resources that are considered special attributes of the study area and region. Visual resources associated with the study area were identified in the Phase 1 Draft EIS based on study area plans, regulatory codes (as summarized in Section 9), and scoping comments. These are listed in Table C-3. The visual resources evaluated in the Phase 2 Draft EIS were selected because there was the potential for significant scenic view impacts under the proposed project. The EIS Consultant Team determined that some of the visual resources identified in the Phase 1 Draft EIS were no longer applicable due to distance, topographic constraints, or the presence of dense vegetation between viewers and the visual resources. Table C-3 details why scenic views of certain Phase 1 visual resources were not evaluated further in the Phase 2 EIS.

Table C-3. Identification of Study Area Scenic Views

Visual Resource Identified in Phase 1	Included in Phase 2 GIS Analysis?	Reason
Mount Rainier	Yes	Scenic views could be impacted by the project.
Cascade Mountain Range	Yes	Scenic views could be impacted by the project.
Issaquah Alps (Cougar Mountain, Tiger Mountain, and Squak Mountain)	Yes	Scenic views could be impacted by the project. Used Cougar Mountain because it is in the foreground.
Lake Washington	Yes	Scenic views could be impacted by the project.
Lake Sammamish	Yes	Scenic views could be impacted by the project.
Seattle skyline	Yes	Scenic views could be impacted by the project.
Bellevue skyline	Yes	Scenic views could be impacted by the project.
Lake Sammamish	Yes	Scenic views could be impacted by the project.

Visual Resource Identified in Phase 1	Included in Phase 2 GIS Analysis?	Reason
Sammamish Valley	No	Topography makes is unlikely that scenic views would be impacted with the powerline in the foreground and background views would not be significant because the line would be too far away from the viewer.
Cedar River	No	Due to topographic constraints and the presence of dense vegetation within the Cedar River ravine, scenic views of the Cedar River are unlikely from outside of the ravine. No residential views of the river would be obstructed by the lines and, due to the topography, the line would be located high enough above the roadway that it would not impact drivers' views of the river. Therefore, impacts to views of the Cedar River are assessed as impacts to the aesthetic environment, with the primary viewers considered being users of the Cedar River Trail or Riverview Park.
Beaver Lake	No	Visual resource would not be visible from the Phase 2 study area.
Pine Lake	No	Visual resource would not be visible from the Phase 2 study area.

6. IMPACTS TO THE AESTHETIC ENVIRONMENT

Key Changes from Phase 2 Draft EIS

- Additional analysis of utility coherence based on design refinements.
- Updated simulations and key viewpoints specific to PSE's Proposed Alignment.
- Updated tree removal data for Bellevue Central and Bellevue South Segments and the Newcastle options.

The assessment of impacts to the aesthetic environment was based on the FHWA concepts of compatibility of impact (degree of contrast), sensitivity to the impact (viewer sensitivity), and degree of impact (whether it would result in a beneficial, neutral, or adverse impact).

6.1 Degree of Contrast

To assess impacts to the aesthetic environment, tree removal data (The Watershed Company, 2016, 2017), proposed pole configurations and locations (PSE, 2017), and visual simulations (Power Engineers, 2017) were used to determine the degree of contrast produced by the project. The degree of contrast is the extent to which a viewer can distinguish between an object and its background. It was assessed by taking into consideration the project form, materials, and visual character in comparison to existing conditions and the surrounding areas (Table C-4).

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Table C-4. Contrast Evaluation

FHWA Visual Quality Criteria	What Constitutes a Change?	Potential for impacts	Method Used
Natural Harmony	Tree removal	**Volume:** A large number of trees would be removed within a small area. **Location:** Occurs in a location where other trees would not hide the tree removal from view or where there isn't currently tree management, resulting in a noticeable cleared area.	Reviewed tree removal data against the existing presence of trees.
Built Order	Project's height and scale makes it a dominant visual feature in the built environment	**Height:** Project height is substantially taller than surrounding built features. **Form:** form is noticeably different than surrounding built features.	Visual simulations.
Utility Coherence	**Change in pole configuration:** Going from pairs of single-circuit monopoles to one double-circuit monopole	**Frequency:** Occurs numerous times within a short distance. **Location:** Occurs in a location with high viewer sensitivity.	Assessing PSE data for pole location and the associated configuration.

6.1.1 Natural Harmony

To assess tree removal, GIS data from The Watershed Company were reviewed to assess where tree removal would occur and how it might result in visual changes based on presence of existing vegetation. Tree removal is the same in the Final EIS as was assessed in the Phase 2 Draft EIS for the Redmond, Bellevue North, and Redmond Segments; therefore, no new analysis was conducted. Updated tree removal data were available for the Bellevue Central and Bellevue South Segments and both Newcastle options (see Appendix L).

6.1.2 Built Order

The tool of identifying landscape units was not employed due to the length of the corridor and the diversity of the natural, cultural, and project landscapes; however, the concept of identifying unique natural, cultural, and project landscapes to select key views was used. For this assessment, the discussion was divided into the natural (topographic, land cover, water bodies) and built (building form, utility infrastructure) environments to reduce confusion associated with use of the terms "cultural" and "project" environments.

To assess changes to each component of the aesthetic environment, viewpoints were selected at various locations along the transmission line corridor to show different ways the natural and built environments could be impacted; for instance, areas where the project corridor would cross unique topography, water bodies, vegetation, land uses (different land uses typically have different building forms and impacted viewers), or where the existing transmission infrastructure would be changed (e.g., different pole heights or configurations). Areas identified as being sensitive during the public scoping period were also used as viewpoints (Table C-5). Additional simulations were also provided in response to comments on the Phase 2 Draft EIS (Table C-6).

Data Used to Assess Impacts to the Aesthetic Environment

GIS Shapefiles:

- ***Parks*** (Bellevue, 2015; Newcastle, 2015; Renton, 2015; Issaquah, 2015; Kirkland, 2015; Redmond, 2015; King County, 2015b)
- ***Water Bodies*** (Ecology, 2014)
- ***Land Use*** (King County, 2015a)
- ***Land Cover*** (NOAA, 2011)
- ***Topography*** (King County, 2003b)

Public Comments

Visual simulations of what the project would look like at these viewpoints provide the foundation for assessing aesthetic impacts. The concept of discussing dynamic versus static viewsheds was adopted as part of the impacts analysis (view duration), but viewsheds were not identified as being dynamic or static.

Table C-5. Public Comments From Phase 2 Scoping that Requested Visual Simulations

Suggested Viewpoint Location	Rationale behind why it was or was not included
Lower Somerset homeowners' view of Willow 2.	**Included** – covered via the Somerset Drive SE simulation.
Factoria Boulevard and Coal Creek Pkwy.	**Included** – covered via the 5365 Coal Creek Parkway simulation.
West viewing section of Somerset in Bellevue.	**Included** – covered via the Somerset Drive SE simulation.
Newport Way SE corridor from the on the west side of the street.	**Included** – covered via the 12919 SE Newport Way simulation.
Public parks and rights-of-way.	**Included** – covered via the Lake Boren Park simulation and 8030 128th Ave SE simulation.
Because of the topography of Newcastle, vantage points should include locations on the west and east boundaries of the route.	**Included** – 8030 128th Ave SE simulation looks to the east and Lake Boren Park simulation looks to the west.
Because of the topography of Newcastle, vantage points should include vantage points to the east of Coal Creek Parkway from which the project would be visible.	**Not included –** the transmission line would not be visible due to topography and the presence of dense vegetation.
Houses that line Somerset Drive SE, all of which will have the lines parallel to the view sides of the houses.	**Included** – covered via the Somerset Drive SE simulation.

Suggested Viewpoint Location	Rationale behind why it was or was not included
Newport Way at the driveway of Monthaven Community.	**Included** – covered via the 13357 SE Newport Way simulation.
Skyridge/College Hill and Sunset communities.	**Included** – covered via the Skyridge Park (1990 134th Pl SE, Bellevue) simulation.
Skyridge hiking trail, which starts at the end of 134th Ave SE (dead end) and ends at the Skyridge Park playground. This is a new trail and has views of Richard's Valley, especially in the winter.	**Included** – covered via the Skyridge Park (1990 134th Pl SE, Bellevue) simulation.
Sunset Park should be considered for Route 2.	**Not included** – Sunset Park was considered, but a simulation was not created. The EIS Consultant Team visited that portion of the site and determined that the presence of dense vegetation would reduce the likelihood that the project would be visible. The substation simulation provides a representative simulation.
Grand Connection just east of I-405 and the viewing platform at the western edge of the Bellevue Botanical Garden are two of these -- and high tension poles are unsightly.	**Not included** – There are no aesthetic guidelines applicable to the project that are associated with the Grand Connection. The Lake Hills Connector simulation is considered to be sufficient for representing the highest degree of adverse aesthetic impacts in this portion of the study area.
The viewing platform at the western edge of the Bellevue Botanical Garden.	**Not included** – EIS Consultant Team visited the site and confirmed that the project would not be visible due to the topography and presence of dense vegetation.
Residents east of 108th Street.	**Not included** – outside of study area. Assume commenter meant “108th Avenue.”
Residents in western Wilburton.	**Included** – covered via NE 8th Street simulation.
Residents in the Spring District.	**Included** - covered via Spring District simulation.
Residents looking east from the central business district, west from Wilburton and southwest and south from the Spring District.	**Not included** – outside of study area.
Drivers on I-405.	**Not included** – outside of study area.

Table C-6. Public Comments On Phase 2 Draft EIS that Requested Visual Simulations

Suggested Simulation	Rationale behind why it was or was not included
The west end of NE 42nd St, west of 140th Ave between NE 40th St and NE 44th Pl.	**Not included** – topography and vegetation cover along the Bellevue North Segment were reassessed to identify another simulation location, and 13508 NE 29th Pl, Bellevue, was selected due to the relatively high amount of potential vegetation removal and downhill topography, resulting in the potential for a longer line of sight.
More views from Bridle Trails.	**Included** – additional simulation provided for Bridle Trails. See 13508 NE 29th Pl, Bellevue, simulation.
Somerset Hill North Panorama.	**Included** – similar view covered via the 13300 SE 44th Pl, Bellevue simulation.
Somerset Hill South Panorama.	**Included** – similar view covered via the 4411 Somerset Dr SE, Bellevue simulation.
Tyee Middle School Ballfield.	**Included** – similar view covered via the 13630 SE Allen Rd, Bellevue simulation.
Kelsey Creek Farm	**Included** – similar view covered via the 703 130th Pl SE, Bellevue simulation.
Forest Hill Park	**Included** – similar view covered via the 13233 SE 51st Pl, Bellevue simulation.
Change in view of Mt. Rainier from homes along the transmission line in Newcastle.	**Not included** – simulations were not used to evaluate impacts to scenic views. They were used to evaluate impacts to the aesthetic environment. Impacts to scenic views were evaluated using the GIS analysis described in Section 7.
Outside of the 0.25-mile study area.	**Included** – covered via the 703 130th Pl SE, Bellevue simulation.
Shows telecommunications equipment. *	**Included** – covered via the 13630 SE Allen Rd, Bellevue simulation.

*Note: This simulation shows what it would look like if the cell equipment were placed in the middle wire zone. Appendix C-2 includes a diagram that shows what it would look like if cellular equipment were to be placed above the wire zone (approximately 10 feet higher than if it were placed in the middle wire zone).

Table C-7 provides the list of viewpoints used in the Final EIS, the segment they are viewing, and the reasons supporting the selection of each viewpoint (i.e., unique natural or built environment or scoping comment). Table C-8 provides a list of viewpoints that were used to inform the analysis, but were not incorporated directly into the EIS. Figure C-4 shows all of the simulations created by Power Engineers and their locations, and the simulations area included as Appendix C-3.

To the extent possible, these viewpoints were selected to align with visual simulations that had already been completed for the project. The visual simulations were created by Power Engineers. Their methods for creating the visual simulations are detailed in Appendix C-3. Power Engineers collected photos using a full frame Canon 5D Mark II or III professional Digital Camera. All photos were taken with a 50mm. lens. In some extreme foreground situations, a 28mm. lens may be used. Power Engineers developed an existing conditions 3D Model of the study area, including terrain and structures. The photos were registered into a 3D modeling program and 3D sun and atmosphere conditions were applied based on notes taken when the photo was shot. Power Engineers then used PLS-CAD model data (3D engineering designs developed for each transmission line structure) provided by PSE to create a 3D rendering. Photoshop was used to create foreground screening elements (e.g., trees, structures, etc.) (Power Engineers, 2016). For the Phase 2 Draft EIS, all of the renderings show brown poles because it was determined that patina[7] would be applied under all of the segment options. However, for the Final EIS, galvanized (light gray), self-weathering (reddish brown), or painted (powder coat) finishes are considered to be equally likely. Pole finishes could vary throughout the project corridor and have not been decided at this point. Appendix C-3 provides simulations showing galvanized steel and self-weathering steel poles for select viewpoints.

6.1.3 Utility Coherence

As a result, the assessment of visual coherence of the utility lines themselves focused primarily on where the general pole types would change in each segment (i.e., where there would not be consistent height and form). For this Final EIS, due to design refinements, there is a greater understanding of what pole types would be used within each segment than was known during the Draft EIS. Because of the greater diversity of pole types used within each segment, there is a higher likelihood of inconsistent height and form (non-coherence). For the Final EIS, the following criteria were used to determine utility coherence.

For identifying adverse impacts, the probability of impacts was highest for transitions from pairs of single-circuit monopoles to one double-circuit because these two groups of configurations differ more in height and form than so other transitions. If such transitions occur in locations at great distances from each other, they are not considered to be significant because the inconsistency would not be as noticeable to the viewer. However, if the change occurs in an area frequently within a short distance, and occurs in a location with high viewer sensitivity, it has the potential to result in adverse impacts due to visual clutter.

6.2 Viewer Sensitivity

The evaluation of viewer sensitivity was also based on FHWA guidance, and considered viewer exposure and viewer awareness. Exposure considers the proximity, extent, and duration of views. Awareness considers viewer attention and focus, and whether affected views are protected by policy, regulation, or custom (FHWA, 2015). All viewers within the study area were considered to be close to the project. Viewer extent is specific to each component because it depends on the number of viewers impacted. This was assessed by identifying areas with higher residential density and recreational resources that are heavily used. The viewer extent of residential viewers was determined by assigning areas of high, medium, and low population density by assessing American Community Survey 2014 Census block data on a segment-by-segment basis within the quarter-mile radius study area (U.S. Census Bureau, 2014). Figure C-5 shows areas with high, medium, and low population

[7] Patina is a film applied to the surface of metals that turns brown as oxidation occurs over long periods of time.

density. The viewer extent of recreational users was assessed by identifying those recreation areas (parks, trails, outdoor recreation facilities) that lie within the study area, and determining whether or not the view or natural setting of the recreation areas is identified as a defining feature (based on findings in the Phase 1 Draft EIS; see Table 11-1 in the Phase 1 Draft EIS, and the recreation analysis in the Phase 2 Draft EIS; see Section 3.6)[8]. If a recreation area that is used for its views or natural setting would be impacted, how frequently the recreation area is used was assessed. The duration of views is consistent for all components, with residential viewers experiencing the longest view duration due to their stationary nature and fixed views of the transmission line. Recreational users have a shorter view duration that is confined to the time spent at the recreational resource, with park users having longer view duration and trail users, who are more mobile, having shorter view duration. Drivers would have the shortest view duration due to the speed at which they travel.

It was assumed that two groups were the most sensitive to changes in the aesthetic environment and scenic views: residents and recreational users in parks and other recreational settings. These two groups would have the greatest exposure to the project because they are often located near the project and would observe the project for longer durations (particularly residential viewers). They would also likely have the greatest awareness, given that these two types of viewers are most often protected by city policies (Section 9).

Table C-7. List of Viewpoints and Rationale for Selection

Key Viewpoint (KVP)	Location	Segment/ Option	Reason for selecting viewpoint (Natural Environment or Built Environment and why)
1	SE 30th St	All Segments/ Options	• Shows the new substation when taking into account grading and clearing.
2	Redmond Way	Redmond	• Representative of the natural environment along the segment (topography and vegetation). • Representative of the built environment.
3	13540 NE 54th Pl	Bellevue North	• Representative of the natural environment along the segment (topography and vegetation). • Representative of the built environment (single-family residential development; project configuration and height for most of segment).
4	13508 NE 29th Pl	Bellevue North	• Commenters requested another simulation of the Bellevue North Segment. • Shows a different pole configuration than what would be typical.

[8] Please note: the study area for the scenic views and aesthetic environment assessment is larger than the study area used for the recreation analysis.

Key Viewpoint (KVP)	Location	Segment/ Option	Reason for selecting viewpoint (Natural Environment or Built Environment and why)
			• Shows an area where there is a bend in the corridor, change in topography, and where a higher degree of vegetation removal would be required than other areas of the segment.
5	13606 Main St	Bellevue Central	• Shows project from rise in topography. • Is identified in the Wilburton Subarea Plan as a key view.
6	13636 Main St	Bellevue Central	• Shows project from rise in topography, but from a side view. • Is identified in the Wilburton Subarea Plan as a key view.
7	703 130th Pl SE	Bellevue Central	• From Kelsey Creek Park. • Developed in response to comments on the Phase 2 Draft EIS.
8	2160 135th Pl SE	Bellevue Central	• Shows pole variation near substation.
9	4411 Somerset Dr SE	Bellevue South	• Shows the project following the ridge.
10	13300 SE 44th Pl	Bellevue South	• Shows project looking east toward Somerset from downhill.
11	4730 134th Pl SE	Bellevue South	• Identified via public comment.
12	8446 128th Ave SE	Newcastle – Options 1 and 2	• Representative of the built environment (single-family residential development; project configuration and height for entire segment). • Shows the project from the ridge near the corridor.
13	Lake Boren Park	Newcastle – Options 1 and 2	• View from recreational use. • Shows the project from a lower elevation looking up at the project.
14	1026 Monroe Ave NE	Renton	• Shows project surrounded by institutional and single-family residences.
15	318 Glennwood Court SE	Renton	• Shows project surrounded by single-family residential development and placed on a ridge.

Table C-8. List of Other Simulations that Informed the Analysis

Location	Segment/Option
13505 NE 75th St	Redmond
267 140th Ave NE	Bellevue Central
106 136th Ave SE	Bellevue Central
13600 SE 5th St	Bellevue Central
13633 SE 5th St	Bellevue Central
13711 SE 18th St	Bellevue Central
1990 134th Pl SE	Bellevue Central
13630 SE Allen Rd	Bellevue South
13744 SE Allen Rd	Bellevue South
4411 137th Ave SE	Bellevue South
4489 137th Ave SE	Bellevue South
13233 SE 51st Pl	Bellevue South
12727 SE 73rd Pl	Newcastle – Options 1 and 2
SE 84th St	Newcastle – Options 1 and 2
12732 SE 80th Way	Newcastle – Options 1 and 2
7954 129th Pl SE	Newcastle – Options 1 and 2
3000 NE 4th St	Renton

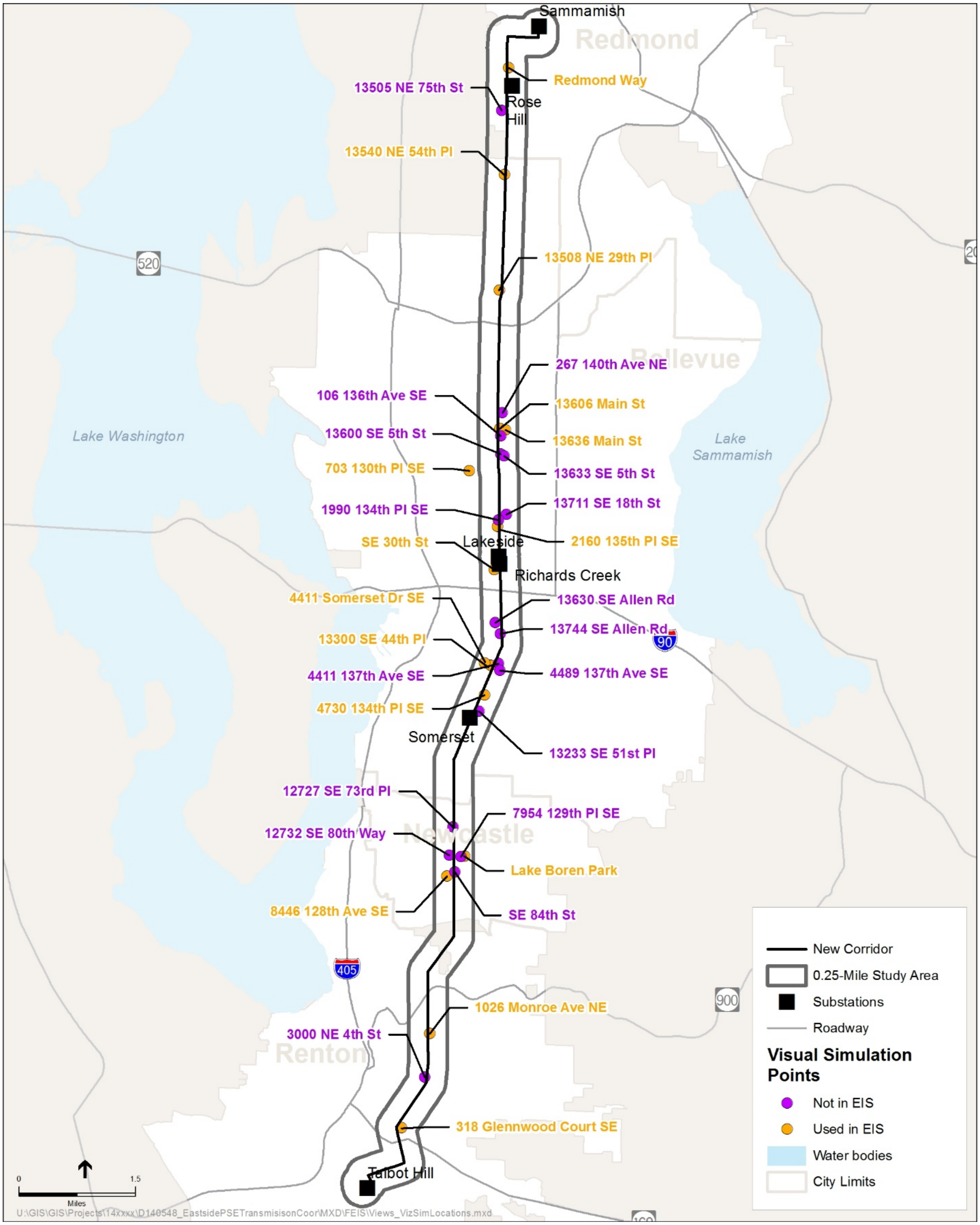

Figure C-4. Viewpoint Map

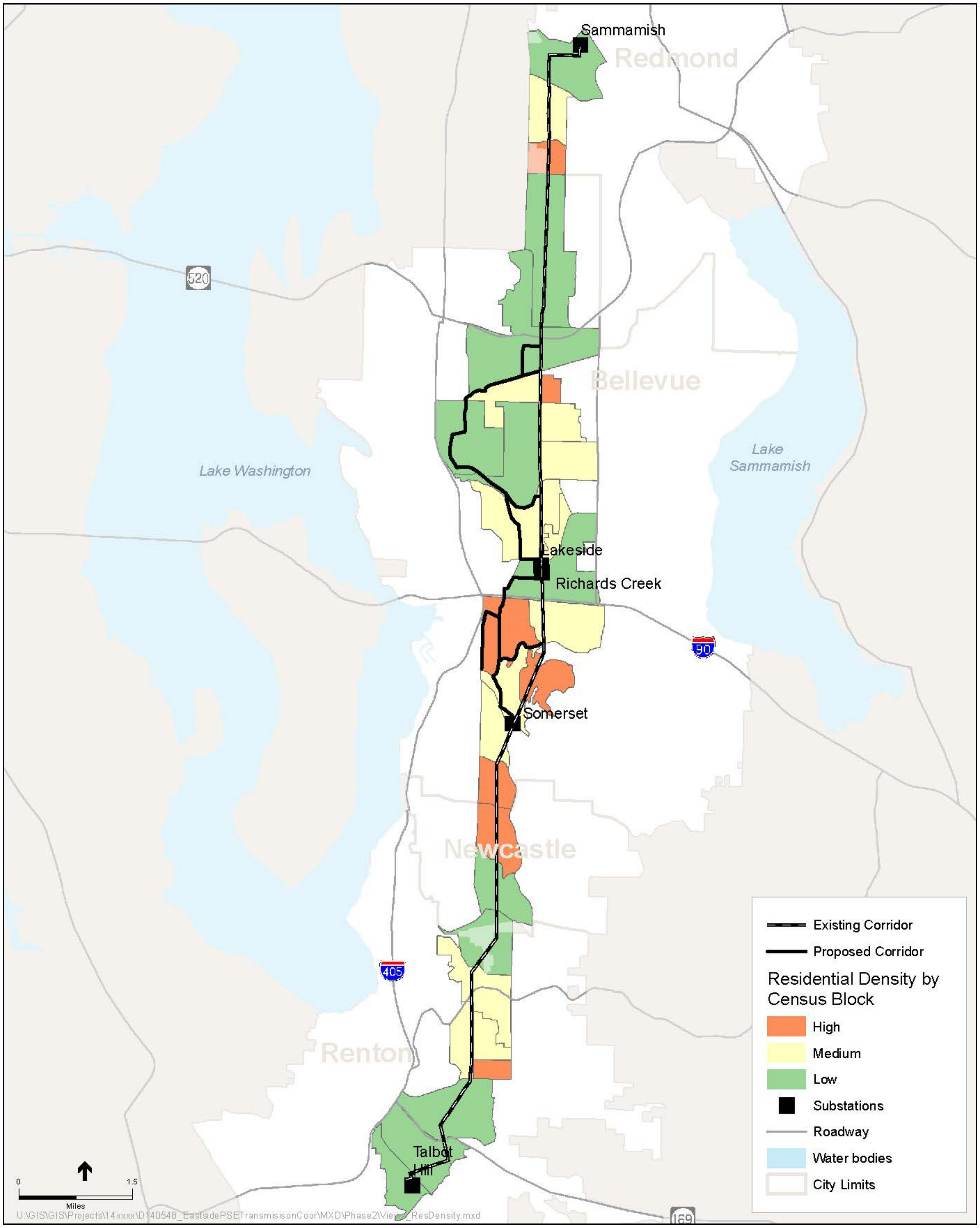

Figure C-5. Population Density Map

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7. IMPACTS TO SCENIC VIEWS

The assessment of impacts to scenic views was based the potential for view obstruction and the FHWA concept of sensitivity to the impact (viewer sensitivity).

7.1 Scenic View Obstruction

Key Changes from Phase 2 Draft EIS

Updated scenic view obstruction analysis specific to PSE's Proposed Alignment.

A GIS analysis was conducted to identify areas from which a portion of the proposed transmission line would obstruct the view of an identified visual resource. This GIS analysis identified where visual resources can be seen based on the location and height of the visual resource and the topography of the surrounding area. This area was further refined based on a similar analysis that determined where the proposed transmission line could be seen based on the location of the segment, the proposed height of the poles, and the surrounding topography. The outputs from these two analyses were overlaid to determine where the project may impact scenic views. This is a conservative estimate that was qualitatively refined through identification of barriers to views (dense tree stands, etc.).

For this analysis, the viewshed tool was also used. To determine the area where scenic views can be observed, a process similar to the one used for the aesthetic environment study area was adopted. However, for this analysis, visual resources were used as observation points and their unique offsets were applied (Table C-9).

Table C-9. Visual Resources input into Viewshed Tool

Visual Resource	Offset Applied
Mount Rainier	Line of frontage at 14,411 feet (based on mountain height)
Cascade Mountain Range	Line of frontage at 5,000 feet (based on Typical King County DEM data height)
Issaquah Alps (Cougar Mountain)	Line of frontage at 1,600 feet (based on Typical King County DEM data height)
Lake Washington	Line along the eastern shoreline at 20 feet above sea level
Lake Sammamish	Line along the western shoreline at 30 feet above sea level
Seattle skyline	Line of downtown frontage with a height of 650 feet (slightly higher than Safeco Plaza)
Bellevue skyline	Line encompassing downtown Bellevue at 460 feet (slightly higher than Bellevue Towers Two)

To assess the areas that would be affected under different build scenarios, the heights of the existing and proposed lines were "burned" into the DSM to identify which areas with scenic views are already impacted by views of a transmission line and which areas with scenic views are not currently impacted, but would be after construction of the project (Table C-10).

Table C-10. Existing and Proposed Maximum Pole Height by Segment

Segment	Existing Height Used for the GIS Analysis	Height Used for the GIS Analysis
Redmond	61’	109'
Bellevue North	54’	105'
Bellevue Central	56’	113'
Bellevue South	60’	North of SE Allen Road (95’) SE Allen Road to SE 43rd (103’) SE 43rd to Somerset Substation (92’) Somerset Substation (103’) Somerset substation to SE 60th St (108’) SE 60th St to end of segment (92’)
Newcastle	55’	97’
Renton	55’	118’

Source: PSE, 2017.

To burn the lines into the DSM, a raster of the proposed alignment was created with a value of 0 assigned to everywhere except along the line, which was assigned a value equal to pole height (specified in Table C-10). Then, using a raster calculator, the line height was burned into the DSM to get a DSM+LINE (DLI) raster (Figure C-6).

Figure C-6. Factoring Line Heights

The following DLIs were created:

- One DLI as if no lines were present.
- One DLI where the existing transmission heights would be burned in.
- One DLI with the heights for the Redmond, North Bellevue, Newcastle, and Renton segments. These segments can be grouped into one DLI because there are no different pole height options.
- Four DLIs for the Bellevue South Segment options.
- Three DLIs for bypass Bellevue Central Segment options.

Each of the DLIs was used as the ground raster for a viewshed analysis to identify where the scenic resources would be viewable on the landscape, creating results for each pole height scenario. To understand the areas where views would be negatively impacted by the project, areas where scenic views are already impacted by the transmission line were subtracted from the area with scenic views that would be impacted by the proposed transmission line.

Figure C-7 shows the output from the GIS analysis described above. Similar to the GIS analysis conducted for the study area, some areas may have been identified as having scenic view impacts but in reality should not have been included because the line would be so small that it is unrealistic that it would be distinguishable on the horizon, or dense areas of tree stands were misinterpreted by the GIS analysis as being a rise in topography from which views could be had (rather than being considered hindrances to views). For areas where it was questionable if scenic views would actually be impacted, a field survey was conducted to verify. In general, areas where potential scenic views were identified had scenic views in the approximate vicinity; however, in some cases these views were less frequent than may have been shown by the analysis depending on the presence of dense vegetation. The only area that was completely eliminated from consideration was where scenic views were identified in the Liberty Ridge area. A field visit conducted on October 7, 2016 confirmed that scenic views from that location were not present due to the topography of the area. The EIS Consultant Team believes that the reason the GIS analysis identified this area as an area with potential scenic view impacts was because the DSM used was from 2002/2003. Since that time, significant grading has occurred to support development of the Liberty Ridge neighborhood. These changes to the topography are thought to have resulted in the loss of scenic views.

7.2 Viewer Sensitivity

Viewer sensitivity was evaluated as described in Section 6.2.

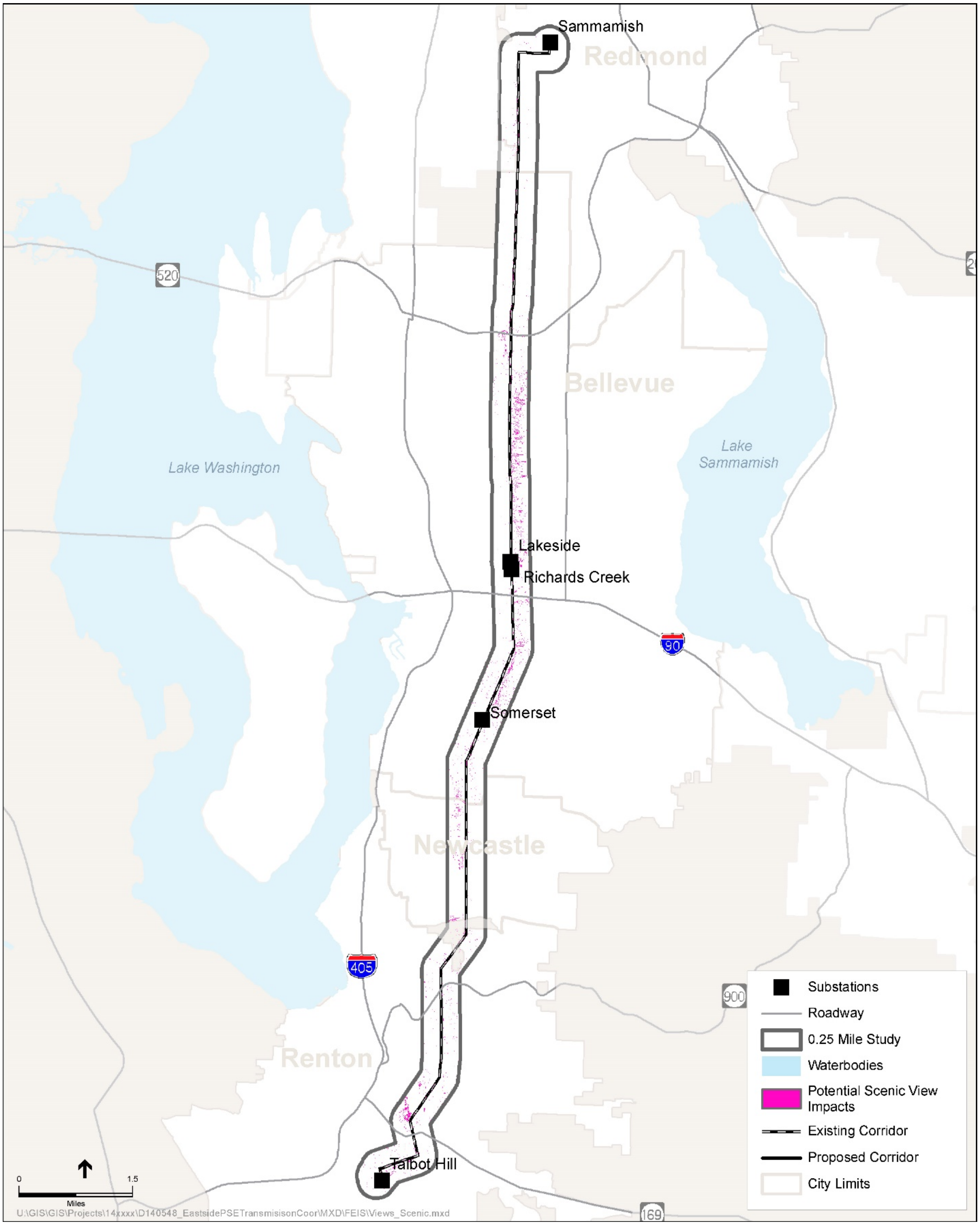

Figure C-7. Potential Areas Where Scenic Views May Be Impacted

8. THRESHOLD OF SIGNIFICANCE

The value of scenic views and the aesthetic environment is subjective, making it difficult to quantify or estimate impacts. There is no widely accepted definition of significant visual effects because the significance of an activity varies with the setting and viewer preferences. For this project, significance was determined based on criteria similar to those described in *The State Clean Energy Program Guide: A Visual Impact Assessment Process for Wind Energy Projects* (Vissering et al., 2011). These criteria, while not developed for transmission lines, were used for wind turbines, which can be similar in height and scale to utility poles and are widely studied for visual impacts. This guide suggests that the following criteria be considered when determining if a project would result in undue or unreasonable visual impacts: violation of aesthetic standards, dominance of the project in views from highly sensitive viewing areas, and failure to take reasonable mitigation measures (Vissering et al., 2011).

A review of policies and regulations applicable to the study area revealed that the existing regulatory framework was insufficient for determining significance because no clear written standards are included for impacts to scenic views or the aesthetic environment.

To develop a threshold for significance that reflects the policies of the Partner Cities, the EIS Consultant Team held a workshop in August 2016 with staff from the Partner Cities that would potentially experience scenic view or aesthetic impacts (Redmond, Bellevue, Newcastle, and Renton). The purpose of the workshop was to collaboratively define significance thresholds based on policies, past precedent, and practice within the Partner City jurisdictions.

During the workshop, city staff were provided with the following:

- A map showing where scenic views would be impacted along the entire corridor.
- Visual simulations showing key examples of how the project could change the aesthetic environment.
- A handout with each city's applicable policies and regulations.

The EIS Consultant Team walked through examples for each segment/option, and the group as a whole refined a set of significance criteria. The following significance criteria were adopted for the EIS evaluation and incorporate findings from the Partner Cities workshop:

Less-than-Significant:

- **Aesthetic environment -** The degree of contrast between the project and the existing aesthetic environment would be minimal, or viewer sensitivity is low.
- **Scenic views -** The area with impacted scenic views would not include a substantial number of sensitive viewers, including residential viewers, viewers from parks and trails, or viewers from outdoor recreation facilities; or the degree of additional obstruction of views compared to existing conditions would be minimal.

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Significant:

- **Aesthetic environment -** The degree of contrast between the project and the existing aesthetic environment would be substantial and viewer sensitivity is high.
- **Scenic views -** The area with scenic views impacted includes a substantial number of sensitive viewers, including residential viewers, viewers from parks and trails, or viewers from outdoor recreation facilities; and the degree of additional obstruction of views compared to existing conditions would be substantial.

It was agreed that significant impacts should be assigned on a sub-option level.

9. SUMMARY OF PLANNING POLICIES AND CODE REQUIREMENTS

Key Changes from Phase 2 Draft EIS

Policies updated to reflect the revised study area.

Table C-11. Planning Policies and Code Requirements

Plans	Protected Views and Visual Resources	Guidance for Reducing Visual Impacts
Redmond		
Vision 2030 City of Redmond Comprehensive Plan	Views of Mount Rainier, the Cascade Mountains, and Lake Sammamish.	N/A
	Unique public views that provide a sense of place	N/A
	Scenic, public view corridors toward the Cascades and the Sammamish Valley (Plan Policy NR-10).	N/A
	Views of surrounding hillsides, mountains, and tree line	N/A
	Tree stands and views from the valley (Plan Policy N-SV-4)	N/A
	Woodland views from neighborhood residences	N/A
	N/A	Throughout the plan, landscaping is encouraged to provide aesthetic value, unify site design, and soften or disguise “less aesthetically pleasing features of a site” (Policy CC-23). The Plan requires “reasonable screening or architecturally compatible design of above ground utility facilities, such as transformers and associated vaults” (Policy UT-15). It suggests promoting well-designed utility facilities through use of color, varied and interesting materials, art work, and superior landscape design.

DSD 005905

Plans	Protected Views and Visual Resources	Guidance for Reducing Visual Impacts
Redmond Zoning Code (RZC) *Current through June 16, 2015*	Appearance of Public Ways	Underground electrical facilities if economically-feasible (RZC 21.17).
	Public view corridors and gateways should be protected (RZC 21.42)	N/A
Bellevue		
Bellevue Comprehensive Plan 2015	Urban design that exemplifies a "City in a Park" with tree-lined streets, public art, vast parks, natural areas, wooded neighborhoods, two large lakes, and mountain views.	N/A
	Views of water, mountains, and skylines from public places (Plan Policy UD-62).	Link increased intensity of development with increased view preservation (Plan Policy UD-48).
	N/A	Implement new and expanded transmission and substation facilities in such a manner that they are compatible and consistent with the local context and the land use pattern established in the Comprehensive Plan (Plan Policy UT-95).
	N/A	Conduct a siting analysis for new facilities and expanded facilities at sensitive sites (areas in close proximity to residentially-zoned districts) (Plan Policy UT-96).
	N/A	States preference for use of new technology to reduce visual impacts.
	Green belts and open spaces per Parks and Open Space System Plan.	Avoid locating overhead lines in greenbelts or open spaces (Plan Policy UT-69).
	Distinctive neighborhood character within Bellevue's diverse neighborhoods (Plan Policy N-9).	Design, construct, and maintain facilities to minimize their impact on surrounding neighborhoods (Plan Policy UT-8).

Plans	Protected Views and Visual Resources	Guidance for Reducing Visual Impacts
	Design boulevards adjacent to parks, natural areas and open spaces to reflect scenic elements of the surrounding areas and neighborhoods. Streetscape design should promote a safe and comfortable park-like experience for all users (Plan Policy UD-70). This includes: • Bel-Red Road • Lake Hills Connector • Coal Creek Parkway • SE Newport Way	N/A
Bridle Trails Subarea Plan 2015	Wooded, natural, rural, and equestrian character of the Subarea (Plan Policy S-BT-3).	N/A
	N/A	Encourage retention of vegetation on the lower slopes of the bluff adjacent to SR 520 at approximately 136th Avenue NE to provide a visual separator between residential areas and the freeway (Plan Policy S-BT-42).*
	Roadsides in Bridle Trails Subarea.	Improve roadsides to create a unified visual appearance (Plan Policy S-BT-43).
Bel-Red Subarea Plan 2015	Bel-Red Subarea street environment (Plan Policy S-BR-25; S-BR-39; S-BR-59).	N/A
	Bel-Red Subarea parks and open space system (Plan Policy S-BR-35).	N/A
Wilburton/NE 8th St Subarea Plan 2015	N/A	Utilities should be provided to serve the present and future needs of the Subarea in a way that enhances the visual quality of the community (where practical) (Plan Policy S-WI-44)
	Significant views from park lands (Plan Policy S-WI-11)	N/A

Plans	Protected Views and Visual Resources	Guidance for Reducing Visual Impacts
	Views of prominent landforms, vegetation, watersheds, drainage ways, Downtown and significant panoramas in the Subarea (Plan Policy S-WI-40). Key views include: • From SE 1st Street and Main Street at the power line right-of-way at 136th Avenue.	N/A
Southeast Bellevue Subarea Plan 2015	Existing residential character (Plan Policy S-SE-2)	N/A
Richards Valley Subarea Plan 2015	Views of the wooded areas and wetlands in the valley.	
	Retain the remaining wetlands within the 100-year floodplain along Richards Creek and Kelsey Creek for the aesthetic value and character of the community (Plan Policy S-RV-5).	Develop sites in accordance with Sensitive Areas Regulations (Plan Policy S-RV-12).
	N/A	Use common corridors for new utilities if needed (Plan Policy S-RV-20).
	N/A	New development, should install a dense visual vegetative screen along Richards Road (Plan Policy S-RV-31).
	Eastgate I-90 Corridor	Encourage site design that includes visibly recognizable natural features such as green walls, façade treatments, green roofs, and abundant natural landscaping (Plan Policy S-RV-24).
	Streets and arterials	Disturb as little of the natural character as possible when improving streets and arterials (Plan Policy S-RV-26).

Plans	Protected Views and Visual Resources	Guidance for Reducing Visual Impacts
Eastgate Subarea Plan 2015	View amenities of adjacent single-family neighborhoods (Plan Policy S-EG-22).	N/A
	N/A	Discourage new development from blocking existing views from public spaces (Plan Policy S-EG-23).
Factoria Subarea Plan 2015	Natural setting for residential areas	N/A
	Cohesiveness and compatibility of commercial districts	Manage change in the commercial district
	N/A	Protect single family neighborhoods from encroachment by more intense uses (Plan Policy S-FA-2).
	Pathways and access points with views of Sunset Creek, Richards Creek, Coal Creek, (Plan Policy S-FA-18).	N/A
	Visual connections along Factoria Boulevard (Plan Policy S-FA-32).	N/A
	N/A	Minimize disruptive effects of utility construction on property owners, motorists, and pedestrians (Plan Policy S-FA-35).
Newport Hills Subarea Plan 2015	Emphasize as a distinct visual element the preservation of existing trees on protected slopes and hilltops (Plan Policy S-NH-44).	Use these trees to screen incompatible land uses.
	N/A	Make edges between different land uses distinct without interfering with security or visual access (Plan Policy S-NH-48).
	Existing visual features such as trees and hilltops, views of water, and passive open space (Plan Policy S-NH-54).	N/A
Bellevue City Code *Current through August 3, 2015*	N/A	Electrical utility facilities shall be sight-screened through landscaping and fencing (BCC 20.20.255.F).

Plans	Protected Views and Visual Resources	Guidance for Reducing Visual Impacts
Newcastle		
City of Newcastle 2035 Comprehensive Plan	Existing character, scale, and neighborhood quality (Plan Policy LU-G3).	N/A
	Open space, wildlife habitats, recreational areas, trails, connection of critical areas, natural and scenic resources, as well as shoreline areas (Plan Policy LU-G6).	N/A
	Natural features that contribute to the City's scenic beauty (Plan Policy LU-G8).	N/A
	N/A	The City shall promote collocation of major utility transmission facilities such as high voltage electrical transmission lines and water and natural gas trunk pipe lines within shared utility corridors, to minimize the amount of land allocated for this purpose and the tendency of such corridors to divide neighborhoods (Plan Policy UT-P3).
	N/A	The City shall encourage utility providers to limit disturbance to vegetation within major utility transmission corridors to what is necessary for the safety and maintenance of transmission facilities (Plan Policy UT-P8).
	N/A	The City should encourage utility providers to exercise restraint and sensitivity to neighborhood character in planting appropriate varieties and trimming tree limbs around aerial lines (Plan Policy UT-P9).
	N/A	The City should require utility providers to design and construct overhead transmission lines in a manner that is environmentally sensitive, safe, and aesthetically compatible with surrounding land uses (Plan Policy UT-P10).
	N/A	The City should require utility providers to minimize visual and other impacts of transmission towers and overhead transmission lines on adjacent land uses through careful siting and design (Plan Policy UT-P14).

Plans	Protected Views and Visual Resources	Guidance for Reducing Visual Impacts
	N/A	The City should require new, modified, or replacement transmission structures (such as lattice towers, monopoles, and the like) to be designed to minimize aesthetic impacts appropriate to the immediate surrounding area whenever practical (Plan Policy UT-P16).
	N/A	The City shall, where appropriate, require reasonable landscape screening of site-specific above-ground utility facilities in order to diminish visual impacts (Plan Policy UT-P20).
	N/A	Design and operate regional utility facilities to minimize impacts on the surrounding uses, the environment, and the city (NMC 18.44.052.C.1).
	N/A	Work with the City of Newcastle to adopt any conditions imposed relating to the location, development, design, use, or operation of a utility facility to mitigate environmental, public safety, or other identifiable impacts. Mitigation measures may include, but are not limited to, natural features that may serve as buffers, or other site design elements such as fencing and site landscaping (NMC 18.44.052.D).
Newcastle Municipal Code (NMC) *Current through September 19, 2017*	N/A	Design and operate regional utility facilities to minimize impacts on the surrounding uses, the environment, and the city (NMC 18.44.052.C.1).
	High volume of trees and clear mountain views.	N/A

Plans	Protected Views and Visual Resources	Guidance for Reducing Visual Impacts
Renton		
City of Renton Comprehensive Plan (2015)	Accommodate change within the Renton community in a way that maintains Renton's livability and natural beauty (Plan Policy L-48).	
	Public scenic views and public view corridors, such as "physical, visual, and perceptual linkages to Lake Washington and Cedar River" (Plan Policy L-55).	N/A
	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" (Plan Policy L-56).	N/A
	Lakes and shorelines.	N/A
	Views of the water from public property or views enjoyed by a substantial number of residences.	N/A
	N/A	Design shoreline developments to maintain or enhance aesthetic values and scenic views (Plan Policy SH-16).
	N/A	Ensure the siting and location of transmission is accomplished in a manner that minimizes adverse impacts on the environment and adjacent land uses (Plan Policy U-72).
	N/A	Make facility improvements and additions within existing corridors wherever possible (Plan Policy U-73).
	Shoreline	Design shoreline use and development to maintain shoreline scenic and aesthetic qualities derived from natural features, such as shore forms and vegetative cover (RMC 4-3-090.D.3.a).

Plans	Protected Views and Visual Resources	Guidance for Reducing Visual Impacts
	N/A	Prohibits utilities in the Shoreline Natural shoreline environment designation (RMC 4-3-090.E.1).
City of Renton Municipal Code (RMC) *Current through November 16, 2015*	N/A	Visual prominence of structures must be minimized, including light, glare, and reflected light (RMC 4-3-090.D.3.b.vii).
	N/A	Aboveground utilities must be screened with masonry, decorative panels, and/or evergreen trees, shrubs, and landscaping sufficient to form an effective sight barrier within a period of five (5) years (RMC 4-6-090.11.a.xvi).
City of Renton SMP 2011	Scenic and aesthetic qualities derived from natural features of the shoreline, such as vegetative cover and shore forms (Ordinance No. 5633).	N/A

Note: * There is a discrepancy as to whether this street is called 136th Avenue NE or 136th Place NE. For the purposes of this EIS, the location is described as 136th Avenue NE, for consistency with the City of Bellevue policy.

10. REFERENCES

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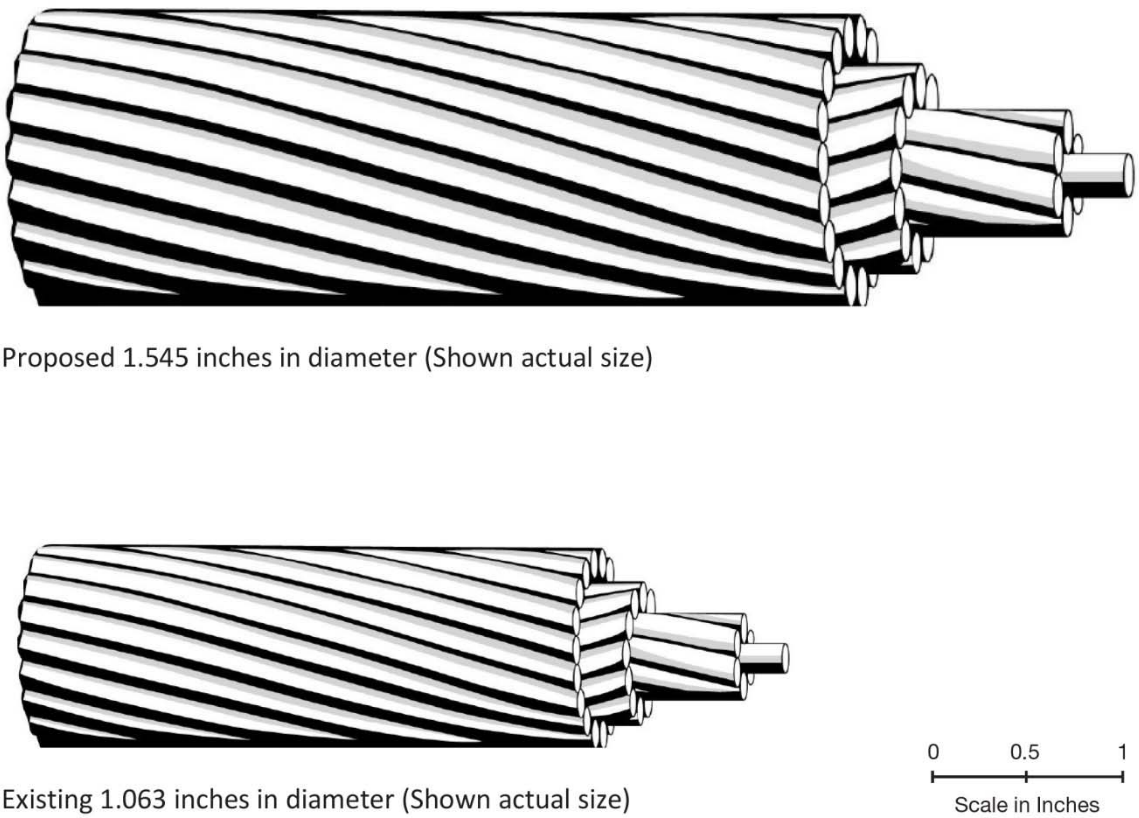
APPENDIX C-2. REPRESENTATIVE DIAGRAMS

(provided by PSE)

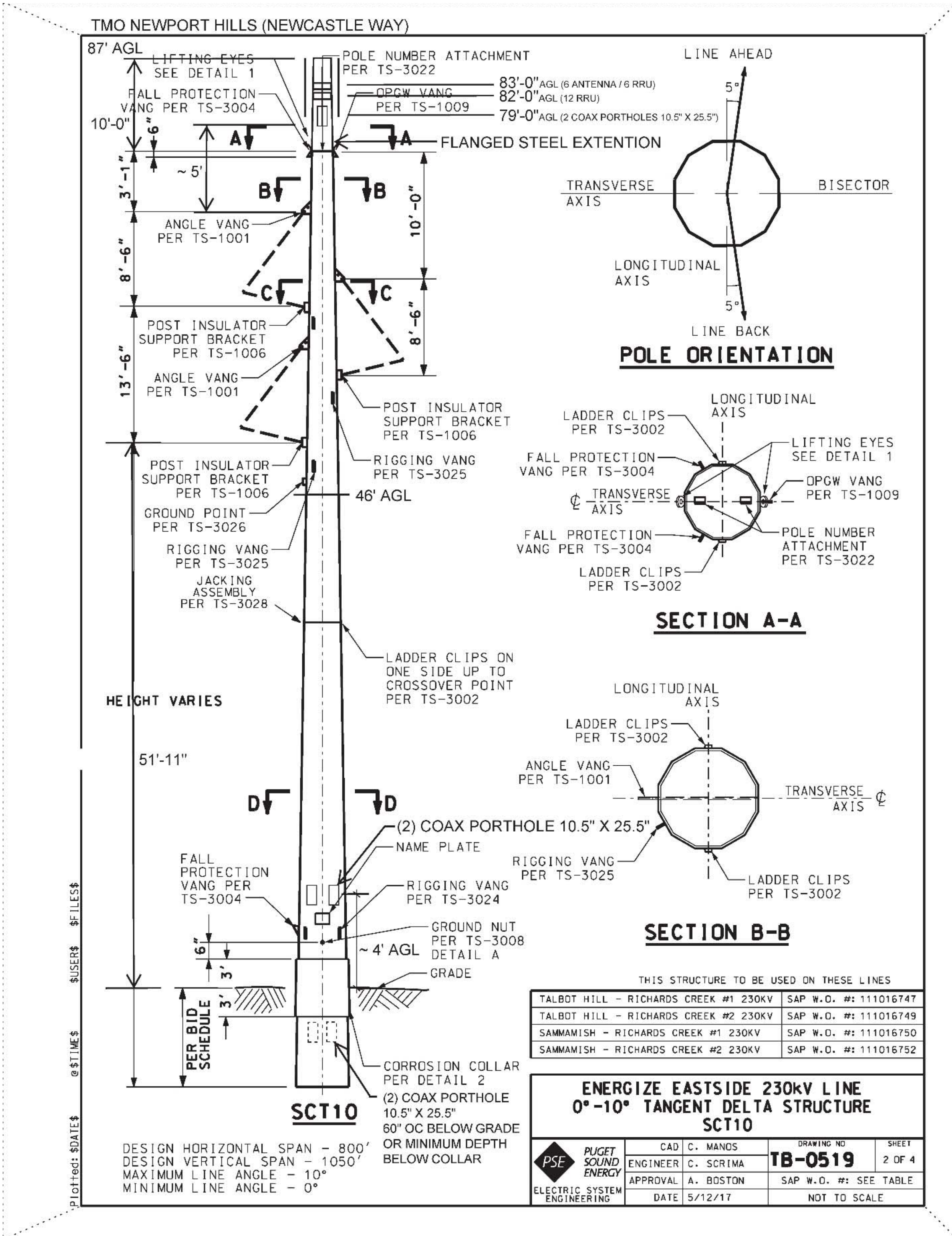
Diagram 1. Diameter of Existing Wire and Proposed Wire



Proposed 1.545 inches in diameter (Shown actual size)

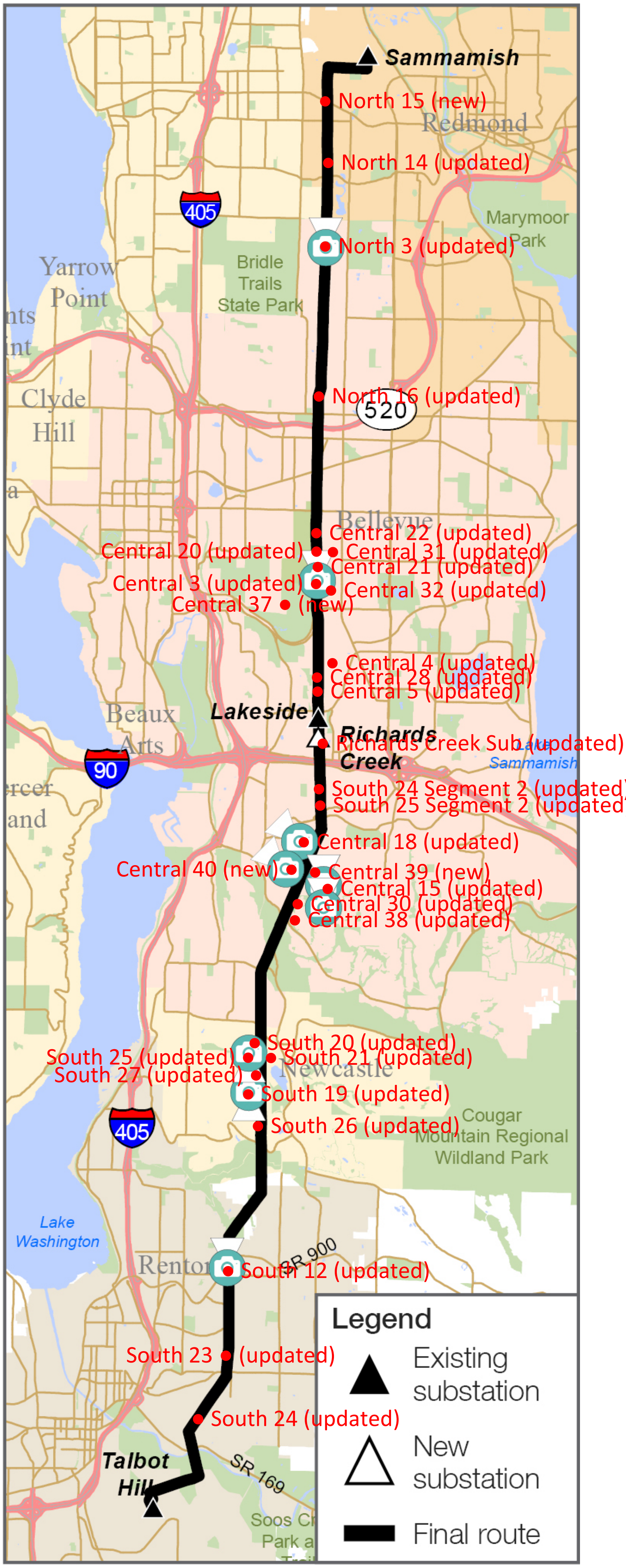
Existing 1.063 inches in diameter (Shown actual size)

Diagram 2. Cellular Equipment Above the Wire Zone



DSD 005917

APPENDIX C-3. VISUAL SIMULATIONS



Sammamish
North 15 (new)
Redmond
North 14 (updated)
Marymoor Park
North 3 (updated)
Yarrow Point
Bridle Trails State Park
Clyde Hill
North 16 (updated)
520
405
Bellevue
Central 22 (updated)
Central 20 (updated)
Central 31 (updated)
Central 21 (updated)
Central 3 (updated)
Central 32 (updated)
Central 37 (new)
Central 4 (updated)
Central 28 (updated)
Central 5 (updated)
Beaux Arts
Lakeside
Richards Creek
Richards Creek Sub (updated)
Lake Sammamish
90
South 24 Segment 2 (updated)
South 25 Segment 2 (updated)
Central 18 (updated)
Central 40 (new)
Central 39 (new)
Central 15 (updated)
Central 30 (updated)
Central 38 (updated)
South 20 (updated)
South 25 (updated)
South 21 (updated)
South 27 (updated)
Newcastle
South 19 (updated)
South 26 (updated)
Cougar Mountain Regional Wildland Park
Lake Washington
Renton
SR 900
South 12 (updated)
South 23 (updated)
South 24 (updated)
Talbot Hill
SR 169
Legend
Existing substation
New substation
Final route

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review

8/4/2017

Address	**Redmond Way, Redmond**
Date	**3/8/2016**
Time	**2:59 PM**
Viewing Direction	**Northwest**
Existing Pole Heights	**~50 feet**
Proposed Pole Heights	**~100 feet**

KOP NORTH 15
SEGMENT 1

energizeEASTSIDE

PSE PUGET SOUND ENERGY

DSD 005920

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 8/22/2017

Address	13505 NE 75th St, Redmond
Date	3/8/2016
Time	2:41 PM
Viewing Direction	South
Existing Pole Heights	~75 feet
Proposed Pole Heights	~100 feet

KOP NORTH 14
SEGMENT 1

energizeEASTSIDE

PSE PUGET SOUND ENERGY

Existing Conditions

Conceptual Project

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 8/30/2017

Address	**13505 NE 75th St, Redmond**
Date	**3/8/2016**
Time	**2:41 PM**
Viewing Direction	**South**
Existing Pole Heights	**~75 feet**
Proposed Pole Heights	**~100 feet**

KOP NORTH 14
SEGMENT 1

energize**EASTSIDE**

PSE PUGET SOUND ENERGY

Address	13540 NE 54th Pl, Bellevue
Date	3/31/2014
Time	10:49 AM
Viewing Direction	North
Existing Pole Heights	~55 feet
Proposed Pole Heights	~90 feet

KOP NORTH 3
SEGMENT 1


Existing Conditions


Conceptual Project

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 8/10/2017

Address	13508 NE 29th Pl, Bellevue
Date	7/24/2017
Time	11:38 AM
Viewing Direction	South
Existing Pole Heights	~55 feet
Proposed Pole Heights	~100 feet

KOP NORTH 16
SEGMENT 1

Address	**267 140th Ave NE, Bellevue**
Date	**5/13/2016**
Time	**10:40 AM**
Viewing Direction	**North**
Existing Pole Heights	**~60 feet**
Proposed Pole Heights	**~90 feet**

KOP CENTRAL 22
SEGMENT 1

energizeEASTSIDE

PSE PUGET SOUND ENERGY

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review

8/22/2017

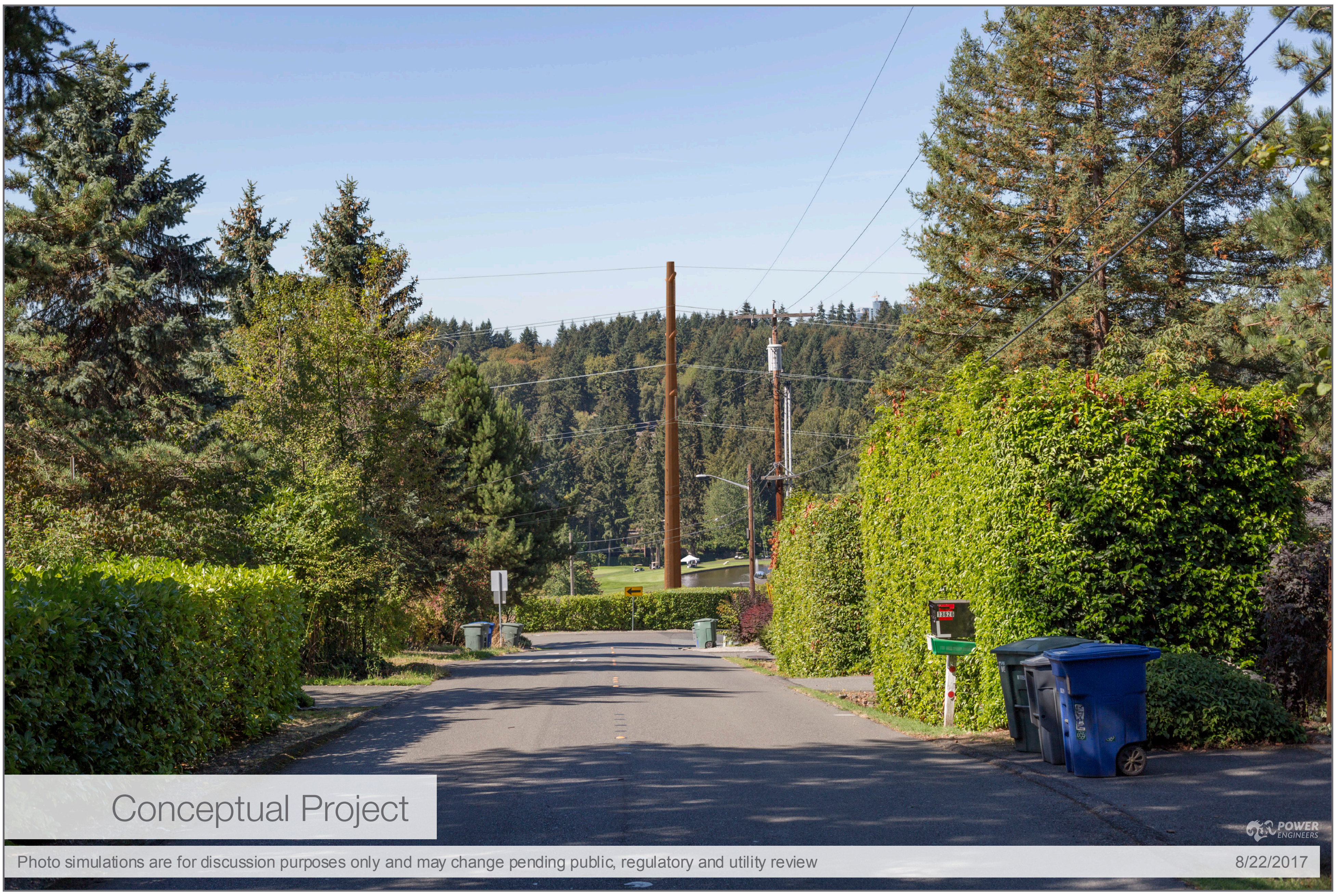
Address	13606 Main St, Bellevue
Date	3/30/2016
Time	3:52 PM
Viewing Direction	North
Existing Pole Heights	~50 feet
Proposed Pole Heights	~95 feet

KOP CENTRAL 20
SEGMENT 1

energizeEASTSIDE

PSE PUGET SOUND ENERGY

Existing Conditions



Conceptual Project

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 8/22/2017

Address	13636 Main St, Bellvue
Date	9/12/2016
Time	12:02 PM
Viewing Direction	West
Existing Pole Heights	~55 feet
Proposed Pole Heights	~95 feet

KOP CENTRAL 31
SEGMENT 1

Address	**106 136th Ave, Bellevue**
Date	**3/30/2016**
Time	**3:48 PM**
Viewing Direction	**South**
Existing Pole Heights	**~75 feet**
Proposed Pole Heights	**~100 feet**

KOP CENTRAL 21
SEGMENT 1

energize**EASTSIDE**

PSE PUGET SOUND ENERGY

Address	**13600 SE 5th St, Bellevue**
Date	**4/2/2014**
Time	**2:54 PM**
Viewing Direction	**North**
Existing Pole Heights	**~60 feet**
Proposed Pole Heights	**~100 feet**

KOP CENTRAL 3
SEGMENT 1

Address	13633 SE 5th St, Bellevue
Date	9/12/2016
Time	12:12 PM
Viewing Direction	West
Existing Pole Heights	~55 feet
Proposed Pole Heights	~100 feet

KOP CENTRAL 32
SEGMENT 1

energizeEASTSIDE

PSE PUGET SOUND ENERGY

Existing Conditions

Conceptual Project

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 8/4/2017

Address	**703 130th Pl SE, Bellevue**
Date	**7/24/2017**
Time	**1:40 PM**
Viewing Direction	**East**
Existing Pole Heights	**~75 feet**
Proposed Pole Heights	**~90 feet**

KOP CENTRAL 37
SEGMENT 1

energize**EASTSIDE**

PSE PUGET SOUND ENERGY

Address	13711 SE 18th St, Bellevue
Date	4/2/2014
Time	3:19 PM
Viewing Direction	West
Existing Pole Heights	~55 feet
Proposed Pole Heights	~95 feet

KOP CENTRAL 4
SEGMENT 1

Address	1990 134th Pl SE, Bellevue
Date	3/30/2016
Time	3:22 PM
Viewing Direction	South
Existing Pole Heights	~55 feet
Proposed Pole Heights	~90 feet

KOP CENTRAL 28
SEGMENT 1

energizeEASTSIDE

PSE PUGET SOUND ENERGY

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 9/6/2017

Address	2160 135th Pl SE, Bellevue
Date	3/31/2014
Time	4:00 PM
Viewing Direction	Southeast
Existing Pole Heights	~55 feet
Proposed Pole Heights	~100 feet

KOP CENTRAL 5
SEGMENT 1

energizeEASTSIDE

PSE PUGET SOUND ENERGY

Address	**13440 SE 30th St, Bellevue**
Date	**7/24/2017**
Time	**1:23 PM**
Viewing Direction	**East**
Existing Pole Heights	**~65-70 feet**
Proposed Pole Heights	**~70-100 feet**

Richards Creek SUBSTATION

energizeEASTSIDE

PSE PUGET SOUND ENERGY

Existing Conditions

Conceptual Project

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 11/30/2017

Address	**13630 SE Allen Rd, Bellevue**
Date	**3/30/2016**
Time	**1:44 PM**
Viewing Direction	**Northeast**
Existing Pole Heights	**~60 feet**
Proposed Pole Heights	**~95 feet**

KOP SOUTH 24
SEGMENT 2

energizeEASTSIDE

PUGET SOUND ENERGY

Address	**13744 SE Allen Rd, Bellevue**
Date	**3/30/2016**
Time	**1:42 PM**
Viewing Direction	**Northeast**
Existing Pole Heights	**~65 feet**
Proposed Pole Heights	**~90 feet**

KOP SOUTH 25
SEGMENT 2

energizeEASTSIDE

PSE PUGET SOUND ENERGY

KOP CENTRAL 18
SEGMENT 2

Address	**4411 137th Ave SE, Bellevue**
Date	**5/7/2014**
Time	**10:53 AM**
Viewing Direction	**Northwest**
Existing Pole Heights	**~55 feet**
Proposed Pole Heights	**~80 feet**

energizeEASTSIDE

PSE PUGET SOUND ENERGY

KOP CENTRAL 18
SEGMENT 2

Address	**4411 137th Ave SE, Bellevue**
Date	**5/7/2014**
Time	**10:53 AM**
Viewing Direction	**Northwest**
Existing Pole Heights	**~55 feet**
Proposed Pole Heights	**~80 feet**

energizeEASTSIDE

PUGET SOUND ENERGY

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 8/4/2017

Address	**13300 SE 44th Pl, Bellevue**
Date	**7/24/2017**
Time	**2:05 PM**
Viewing Direction	**East**
Existing Pole Heights	**~55 feet**
Proposed Pole Heights	**~75 feet**

KOP CENTRAL 40
SEGMENT 2

energize**EASTSIDE**

PSE PUGET SOUND ENERGY

Address	**4411 Somerset Dr SE, Bellevue**
Date	**7/24/2017**
Time	**9:26 AM**
Viewing Direction	**South**
Existing Pole Heights	**~55 feet**
Proposed Pole Heights	**~75 feet**

KOP CENTRAL 39
SEGMENT 2

energizeEASTSIDE

PSE PUGET SOUND ENERGY

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 7/6/2017

Address	**4489 137th Ave SE, Bellevue**
Date	**4/10/2014**
Time	**9:32 AM**
Viewing Direction	**North**
Existing Pole Heights	**~55 feet**
Proposed Pole Heights	**~80 feet**

KOP CENTRAL 15
SEGMENT 2

energize**EASTSIDE**

PSE PUGET SOUND ENERGY

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 7/6/2017

Address	**4489 137th Ave SE, Bellevue**
Date	**4/10/2014**
Time	**9:32 AM**
Viewing Direction	**North**
Existing Pole Heights	**~55 feet**
Proposed Pole Heights	**~80 feet**

KOP CENTRAL 15
SEGMENT 2

energize**EASTSIDE**

PSE PUGET SOUND ENERGY

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 7/13/2017

Address	**4730 134th Place SE, Bellevue**
Date	**8/24/2016**
Time	**3:28 PM**
Viewing Direction	**West**
Existing Pole Heights	**~44 feet**
Proposed Pole Heights	**~75 feet**

KOP CENTRAL 30
SEGMENT 2

energize**EASTSIDE**

PSE PUGET SOUND ENERGY

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 7/13/2017

Address	**4730 134th Place SE, Bellevue**
Date	**8/24/2016**
Time	**3:28 PM**
Viewing Direction	**West**
Existing Pole Heights	**~44 feet**
Proposed Pole Heights	**~75 feet**

KOP CENTRAL 30
SEGMENT 2

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review

8/4/2017

Address	13233 SE 51st Pl, Bellevue
Date	7/24/2017
Time	2:21 PM
Viewing Direction	Northwest
Existing Pole Heights	~55 feet
Proposed Pole Heights	~65 feet

KOP CENTRAL 38
SEGMENT 2

Existing Conditions

Conceptual Project

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 7/13/2017

Address	**12727 SE 73rd Pl, Newcastle**
Date	**3/8/2016**
Time	**11:42 AM**
Viewing Direction	**South**
Existing Pole Heights	**~55 feet**
Proposed Pole Heights	**~85 feet**

KOP SOUTH 20
SEGMENT 3

Existing Conditions

Conceptual Project

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 10/18/2017

Address	12727 SE 73rd Pl, Newcastle
Date	3/8/2016
Time	11:42 AM
Viewing Direction	South
Existing Pole Heights	~55 feet
Proposed Pole Heights	~75 feet

KOP SOUTH 20
SEGMENT 3

VARIANCE (C-16)

energizeEASTSIDE

PUGET SOUND ENERGY

Existing Conditions

Conceptual Project

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 10/16/2017

Address	12727 SE 73rd Pl, Newcastle
Date	3/8/2016
Time	11:42 AM
Viewing Direction	South
Existing Pole Heights	~55 feet
Proposed Pole Heights	~85 feet

KOP SOUTH 20
SEGMENT 3
NO VARIANCE (C-2)

energizeEASTSIDE

PSE PUGET SOUND ENERGY

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 7/13/2017

Address	12727 SE 73rd Pl, Newcastle
Date	3/8/2016
Time	11:42 AM
Viewing Direction	South
Existing Pole Heights	~55 feet
Proposed Pole Heights	~75 feet

KOP SOUTH 20
SEGMENT 3

energizeEASTSIDE

PSE PUGET SOUND ENERGY

Existing Conditions

Conceptual Project

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review

7/13/2017

Address	**12732 SE 80th Way, Newcastle**
Date	**9/12/2016**
Time	**5:28 PM**
Viewing Direction	**Southeast**
Existing Pole Heights	**~52 feet**
Proposed Pole Heights	**~95 feet**

KOP SOUTH 25
SEGMENT 3

energizeEASTSIDE

PSE PUGET SOUND ENERGY

Existing Conditions

Conceptual Project

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 7/13/2017

Address	12732 SE 80th Way, Newcastle
Date	9/12/2016
Time	5:28 PM
Viewing Direction	Southeast
Existing Pole Heights	~52 feet
Proposed Pole Heights	~95 feet

KOP SOUTH 25
SEGMENT 3

Address	**12732 SE 80th Way, Newcastle**
Date	**9/12/2016**
Time	**5:28 PM**
Viewing Direction	**Southeast**
Existing Pole Heights	**~52 feet**
Proposed Pole Heights	**~80 feet**

KOP SOUTH 25
SEGMENT 3

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 7/13/2017

Address	12732 SE 80th Way, Newcastle
Date	9/12/2016
Time	5:28 PM
Viewing Direction	Southeast
Existing Pole Heights	~52 feet
Proposed Pole Heights	~80 feet

KOP SOUTH 25
SEGMENT 3

energizeEASTSIDE

PSE PUGET SOUND ENERGY

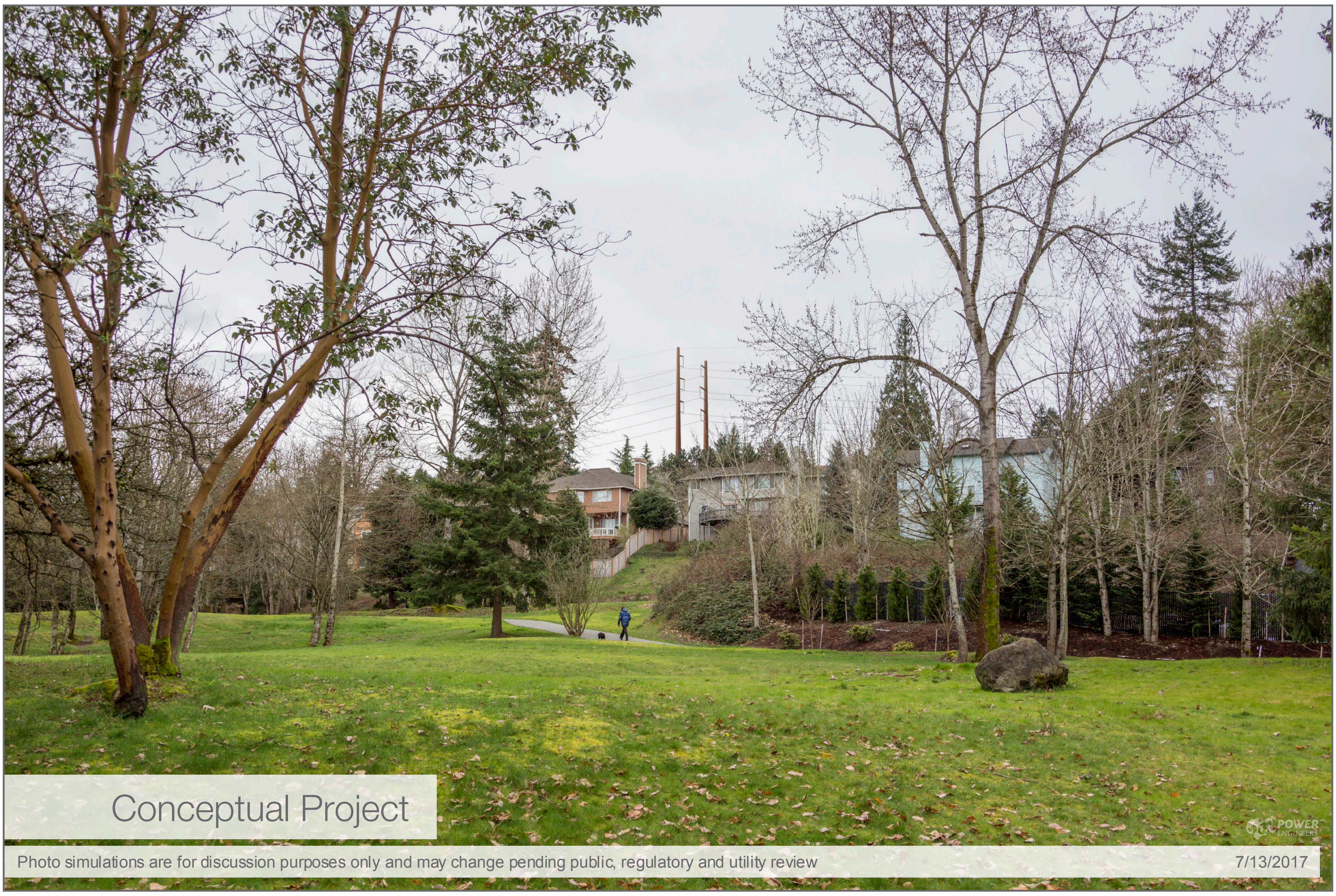
Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 10/18/2017

Address	12732 SE 80th Way, Newcastle
Date	9/12/2016
Time	5:28 PM
Viewing Direction	Southeast
Existing Pole Heights	~52 feet
Proposed Pole Heights	~80 feet

KOP SOUTH 25
SEGMENT 3
VARIANCE (C-16)

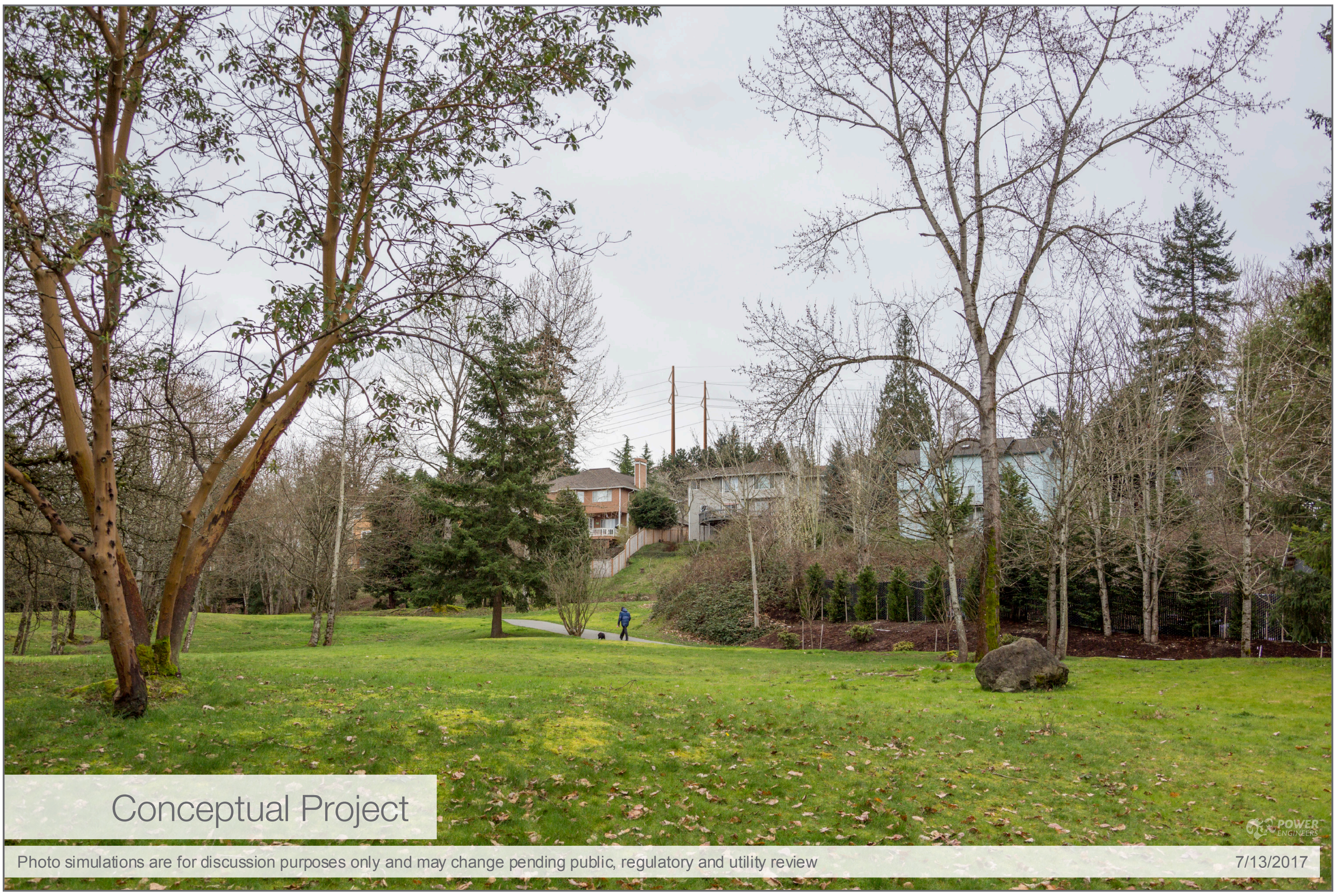
energizeEASTSIDE

PSE PUGET SOUND ENERGY



Address	Lake Boren Park, Newcastle
Date	3/8/2016
Time	11:20 AM
Viewing Direction	Southwest
Existing Pole Heights	~50 feet
Proposed Pole Heights	~95 feet

KOP SOUTH 21
SEGMENT 3



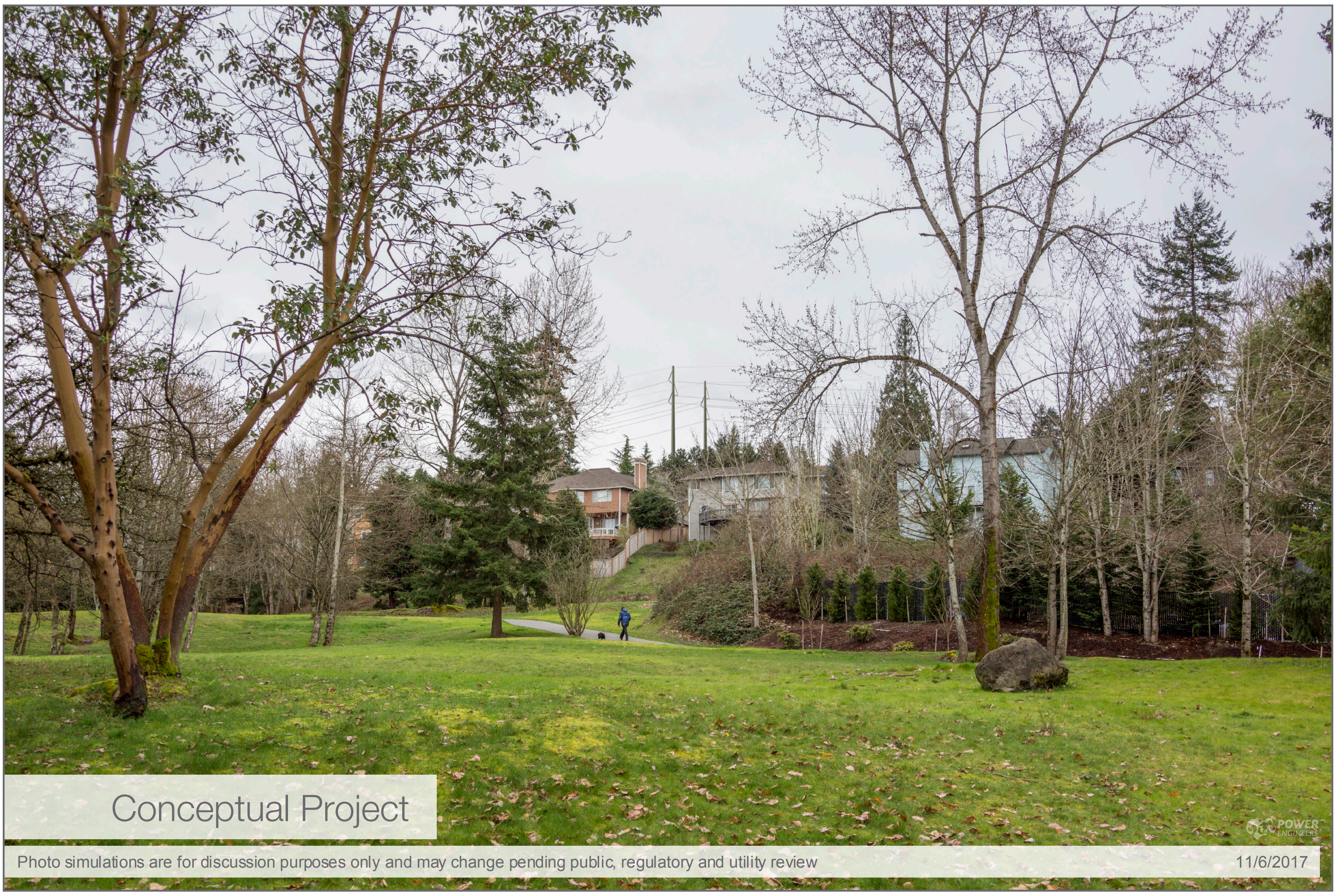
Address	**Lake Boren Park, Newcastle**
Date	**3/8/2016**
Time	**11:20 AM**
Viewing Direction	**Southwest**
Existing Pole Heights	**~50 feet**
Proposed Pole Heights	**~80 feet**

KOP SOUTH 21
SEGMENT 3

energize**EASTSIDE**

PUGET SOUND ENERGY

Existing Conditions



Conceptual Project

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Address	**Lake Boren Park, Newcastle**
Date	**3/8/2016**
Time	**11:20 AM**
Viewing Direction	**Southwest**
Existing Pole Heights	**~50 feet**
Proposed Pole Heights	**~80 feet**

KOP SOUTH 21
SEGMENT 3

VARIANCE (C-16)

Address	**7954 129th Pl SE, Newcastle**
Date	**1/5/2017**
Time	**10:48 AM**
Viewing Direction	**Southwest**
Existing Pole Heights	**~52 feet**
Proposed Pole Heights	**~95 feet**

KOP SOUTH 27
SEGMENT 3

Address	7954 129th Pl SE, Newcastle
Date	1/5/2017
Time	10:48 AM
Viewing Direction	Southwest
Existing Pole Heights	~52 feet
Proposed Pole Heights	~85 feet

KOP SOUTH 27
SEGMENT 3

energizeEASTSIDE

PUGET SOUND ENERGY

DSD 005960

Address	7954 129th Pl SE, Newcastle
Date	1/5/2017
Time	10:48 AM
Viewing Direction	Southwest
Existing Pole Heights	~52 feet
Proposed Pole Heights	~85 feet

KOP SOUTH 27
SEGMENT 3
VARIANCE (C-16)

energizeEASTSIDE

PSE PUGET SOUND ENERGY

Address	SE 84th St, Newcastle
Date	3/8/2016
Time	10:28 AM
Viewing Direction	South
Existing Pole Heights	~55 feet
Proposed Pole Heights	~95 feet

KOP SOUTH 19
SEGMENT 3

energizeEASTSIDE

PUGET SOUND ENERGY

DSD 005962

Existing Conditions

Conceptual Project

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Address	**SE 84th St, Newcastle**
Date	**3/8/2016**
Time	**10:28 AM**
Viewing Direction	**South**
Existing Pole Heights	**~55 feet**
Proposed Pole Heights	**~85 feet**

KOP SOUTH 19 SEGMENT 3

energizeEASTSIDE

PSE PUGET SOUND ENERGY

Address	SE 84th St, Newcastle
Date	3/8/2016
Time	10:28 AM
Viewing Direction	South
Existing Pole Heights	~55 feet
Proposed Pole Heights	~85 feet

KOP SOUTH 19
SEGMENT 3
VARIANCE (C-16)

energizeEASTSIDE

PUGET SOUND ENERGY

KOP SOUTH 26
SEGMENT 3

Address	**8446 128th Ave SE, Newcastle**
Date	**1/5/2017**
Time	**2:24 PM**
Viewing Direction	**Northeast**
Existing Pole Heights	**~55 feet**
Proposed Pole Heights	**~95 feet**

energize**EASTSIDE**

PSE PUGET SOUND ENERGY

KOP SOUTH 26
SEGMENT 3

Address **8446 128th Ave SE, Newcastle**	
Date	**1/5/2017**
Time	**2:24 PM**
Viewing Direction	**Northeast**
Existing Pole Heights	**~55 feet**
Proposed Pole Heights	**~95 feet**

energize**EASTSIDE**

PSE PUGET SOUND ENERGY

KOP SOUTH 26
SEGMENT 3

Address	**8446 128th Ave SE, Newcastle**
Date	**1/5/2017**
Time	**2:24 PM**
Viewing Direction	**Northeast**
Existing Pole Heights	**~55 feet**
Proposed Pole Heights	**~85 feet**

energize**EASTSIDE**

PUGET SOUND ENERGY

KOP SOUTH 26 SEGMENT 3

Address **8446 128th Ave SE, Newcastle**	
Date	**1/5/2017**
Time	**2:24 PM**
Viewing Direction	**Northeast**
Existing Pole Heights	**~55 feet**
Proposed Pole Heights	**~85 feet**

energizeEASTSIDE

PSE PUGET SOUND ENERGY

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 7/7/2017

Address	**1026 Monroe Ave NE, Renton**
Date	**4/1/2014**
Time	**3:07 PM**
Viewing Direction	**North**
Existing Pole Heights	**~55 feet**
Proposed Pole Heights	**~90 feet**

KOP SOUTH 12
SEGMENT 3

energizeEASTSIDE

PSE PUGET SOUND ENERGY

Existing Conditions

Conceptual Project

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Address	**1026 Monroe Ave NE, Renton**
Date	**4/1/2014**
Time	**3:07 PM**
Viewing Direction	**North**
Existing Pole Heights	**~55 feet**
Proposed Pole Heights	**~90 feet**

KOP SOUTH 12
SEGMENT 3

energize**EASTSIDE**

PSE PUGET SOUND ENERGY

Existing Conditions

Conceptual Project

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Address	**3000 NE 4th St, Renton**
Date	**3/8/2016**
Time	**1:55 PM**
Viewing Direction	**North**
Existing Pole Heights	**~65 feet**
Proposed Pole Heights	**~90 feet**

KOP SOUTH 23
SEGMENT 3

Existing Conditions

Conceptual Project

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review

7/13/2017

Address	3000 NE 4th St, Renton
Date	3/8/2016
Time	1:55 PM
Viewing Direction	North
Existing Pole Heights	~65 feet
Proposed Pole Heights	~90 feet

KOP SOUTH 23
SEGMENT 3

energizeEASTSIDE

PSE PUGET SOUND ENERGY


Existing Conditions


Conceptual Project

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 7/13/2017

Address	**318 Glennwood Ct SE, Renton**
Date	**8/24/2016**
Time	**10:20 AM**
Viewing Direction	**North**
Existing Pole Heights	**~50-70 feet**
Proposed Pole Heights	**~75 feet**

KOP SOUTH 24 - W
SEGMENT 3

energizeEASTSIDE

PUGET SOUND ENERGY

Existing Conditions

Conceptual Project

Photo simulations are for discussion purposes only and may change pending public, regulatory and utility review 7/13/2017

Address	**318 Glennwood Ct SE, Renton**
Date	**8/24/2016**
Time	**10:20 AM**
Viewing Direction	**North**
Existing Pole Heights	**~50-70 feet**
Proposed Pole Heights	**~75 feet**

KOP SOUTH 24 - G
SEGMENT 3

energizeEASTSIDE

PSE PUGET SOUND ENERGY

D

Appendix D: Critical Areas Regulations

energize EASTSIDE EIS

APPENDIX D. CRITICAL AREAS REGULATIONS BY CITY

City/County	Critical Area	Description	Mitigation
City of Redmond (Redmond Zoning Code (RZC) Section 21.64.010)			
	General (applicable to all critical areas)	Utility installation, construction, and associated facilities and lines are exempt from CAO regulations if located in City road ROWs and are subject to restoration. If not exempt, then utilities project (facilities and poles) are prohibited from locating in critical areas but are allowed in critical area buffers provided mitigation standards are met.	Mitigation is required (for all critical areas) to be provided on-site, in-kind if feasible. If not feasible, then off-site (within Redmond city limits), out-of-kind mitigation may be considered.
RZC 21.64.030	Wetlands	Wetlands are categorized according to Category I, II, III, and IV based on the Ecology Wetland Rating System. Buffers range from 25-300 feet. Alterations to category I wetlands are prohibited, alterations to II, III, and IV may be allowed subject to performance standards and mitigation.	Wetland acreage replacement ratios are required for mitigation (in addition to general mitigation requirements) and determined according to mitigation activity (creation, reestablishment, rehabilitation, and/or enhancement) and Category.
RZC 21.64.020	Streams	Streams are classified according to Class I, II, III, and IV based on fish use. Buffers range from 25 to 200 feet. Utility facilities and poles may be permitted within the stream buffer if no feasible alternative location exists.	Additional specific mitigation standards (outside of general requirements) apply in restoration or enhancement of stream corridors, including: using native, adaptable, and perennial plants; depth and type of substrate; planting densities; fertilizer application; pesticide use limitations, etc.

City/County	Critical Area	Description	Mitigation
RZC 21.64.020	Fish and Wildlife Habitat Conservation Areas (FWHCAs)	Classification of FWHCAs determined by adopted City maps, Washington Department of Fish and Wildlife Priority Habitats and Species maps, Washington State Conservation Commission habitat-limiting factors reports, federal and state info, and technical reports. Alterations to FWHCAs may be permitted subject to mitigation.	Additional mitigation measures are required during mitigation planning: a)consider habitat in site planning and design; b) locating buildings and structures that preserve and minimize adverse impacts to important habitat areas; c)integrate retained habitat into open space and landscaping consistent with RZC 21.32; d)where possible, consolidate habitat and vegetated open space in contiguous blocks; e)Locate habitat contiguous to other habitat, open space, or landscaped areas to contribute to a continuous system or corridor that provides connections to adjacent habitat areas; f) Use native species in any landscaping of disturbed or undeveloped areas and in any enhancement of habitat or buffers; g) Emphasize heterogeneity and structural diversity of vegetation in landscaping; h) Remove and/or control any noxious weeds or animals as defined by the City; and i). Preserve significant trees, preferably in groups, consistent with RZC 21.72, Tree Preservation, and with achieving the objectives of these standards.
RZC 21.64.050	Critical Aquifer Recharge Areas (CARAs)	CARAs are classified into Wellhead Protection Zone 1, 2, 3, and 4 based on proximity to and travel time of groundwater to City's public water source wells. Utility facilities and poles are permitted for location within these zones subject to the performance standards specific to each zone in RZC 21.64.050.D.	No additional mitigation measures.

City/County	Critical Area	Description	Mitigation
City of Bellevue Land Use Code (LUC) Part 20.25H			
LUC 20.25H.215 (mitigation sequencing) 20.25H.220 (Mitigation and restoration plan requirements)	General	Critical Areas Land Use Permit is required for any utility facilities and poles located in any of the designated critical areas and/or buffers. New or expanded facilities and systems are allowed within the critical area or buffer only where no technically feasible alternative with less impact on the critical area or buffer exists (LUC 20.25.H.055.C.2.a).	Require mitigation or restoration plan, and mitigation sequencing
LUC 20.25H.095 (designation of critical area and buffers) 20.25H.100 (performance standards) 20.025H.105 (Mitigation and monitoring - additional provisions)	Wetlands	Wetlands are classified according to Category I, II, III, and IV using the Ecology Wetland Rating System. Buffers range from 40 to 225 feet. Structure setbacks range from 0-20 feet. Utility facilities and poles may be allowed in a wetland and/or wetland buffer subject to performance standards (20.25H.100) and mitigation.	Mitigation actions that require compensation of impacted critical area buffer are required to occur in the following order of preference and in the following locations: a. On-site, through replacement of lost critical area buffer; b. On-site, through enhancement of the functions and values of remaining critical area buffer; c. Off-site, through replacement or enhancement, in the same sub-drainage basin; d. Off-site, through replacement or enhancement, out of the sub-drainage basin but in the same drainage basin. Wetland Acreage replacement ratios apply to creation or restoration mitigation activities: Category I, 6-to-1; Category II, 3-to-1; Category III, 2-to-1; Category IV, 1.5-to-1. Enhancement of existing significantly degraded wetlands may also be allowed subject to a critical areas report.

City/County	Critical Area	Description	Mitigation
LUC 20.25H.075 (designation of critical areas and buffers) 20.25H.080 (performance standards)	Streams	Streams are classified according to Type S, F, N and O based on the Washington State Department of Natural Resources (WDNR) typing. Buffers range from 25-100 feet. Structure setbacks range from 0-50 feet. Stream channels can be modified for new or expanded utility facilities and poles, subject to performance standards (LUC 20.25H.080) and mitigation.	A. Mitigation plans for streams and stream critical area buffers are required to provide mitigation for impacts to critical area functions and values in the following order of preference: 1. On-site, through replacement of lost critical area buffer; 2. On-site, through enhancement of the functions and values of remaining critical area buffer; 3. Off-site, through replacement or enhancement, in the same sub-drainage basin; 4. Off-site, through replacement or enhancement, out of the sub-drainage basin but in the same drainage basin. Mitigation off-site and out of the drainage basin shall be permitted only through a critical areas report. B. Buffer Mitigation Ratio. Critical area buffer disturbed or impacted under this part shall be replaced at a ratio of one-to-one.

City/County	Critical Area	Description	Mitigation
LUC 20.25H.150 (Designation of critical area) 20.25H.155 (uses in habitat for species of local importance) 20.25H.160 (performance standards)	Habitat Associated with Species of Local Importance	Buffers depend if they're required for known species or are 35 feet for naturally occurring ponds w/o any other CA designation. Utility facilities and poles are allowed within habitat associated with species of local importance subject to the following performance standards (LUC 20.25H.160): If habitat associated with species of local importance will be impacted by a proposal, the proposal shall implement the wildlife management plan developed by the Department of Fish and Wildlife for such species. Where the habitat does not include any other critical area or critical area buffer, compliance with the wildlife management plan shall constitute compliance with this part.	No additional mitigation measures.
City of Newcastle Municipal Code (NMC), Chapter 18.24 Critical Areas			
NMC 18.24.130 (mitigation and monitoring) 18.24.135 (off-site mitigation)	General		A. If mitigation is required to compensate for adverse impacts, unless otherwise provided, an applicant shall: 1. Mitigate adverse impacts to: a. Critical areas and their buffers; and b. The development proposal as a result of the proposed alterations on or near the critical areas; and 2. Monitor the performance of any required mitigation. On-site mitigation is preferred, but off-site mitigation (in same drainage subbasin as development proposal site) can be approved if on-site isn't practical and off-site mitigation will achieve equivalent or greater hydrological, water quality and wetland or aquatic area functions.

City/County	Critical Area	Description	Mitigation
NMC 18.24.310 (categories) 18.24.315 (Buffers) 18.24.316 (development standards) 18.24.320 (permitted alterations) 18.24.325 (specific mitigation requirements)	Wetlands	Wetlands are classified into Category I, II, III, and IV based on the Ecology Wetland Rating System. Buffers range between 25 and 225 feet depending on Category and land use. If no practical alternative location exists utility facilities and poles can be located within wetland buffers if: 1. The utility corridor is not located in a buffer where the buffer or associated wetland is used as a fish spawning area or by species listed as endangered or threatened by the state or federal government or contains critical or outstanding actual habitat for those species or heron rookeries or raptor nesting trees; 2. The construction area and resulting utility corridor are the minimum widths practical; 3. Except as provided in subsection (G) of this section, the utility corridor is located within the outer 25 percent of the buffer or within a roadway, the improved area of an existing utility corridor or the improved area of an approved trail; 4. The wetland and its buffer are protected during utility corridor construction and maintenance; 5. The utility corridor is aligned to avoid cutting significant trees, to the maximum extent practical; 6. Vegetation removal is limited to the minimum necessary to construct the corridor; 7. Vegetation removal for the purpose of corridor maintenance is the minimum necessary to maintain the utility's function; 8. Any corridor access for maintenance is at specific points into the buffer rather than by a parallel road, to the maximum extent	In addition to general mitigation requirements, mitigation for wetland or wetland buffer impacts: A. Mitigation measures must achieve equivalent or greater wetland functions, including, but not limited to: 1. Habitat complexity, connectivity and other biological functions; and 2. Seasonal hydrological dynamics, as provided in the King County Surface Water Design Manual; B. The following ratios of area of mitigation to area of alteration apply to mitigation measures: 1. For alterations to a wetland buffer, a ratio of one to one; and 2. For alterations to a wetland, proposed mitigation shall be in compliance with the acreage replacement ratios in NMC 18.24.325. C. Credit/Debit Method. To more fully protect functions and values, and as an alternative to the mitigation ratios found in the joint guidance Wetland Mitigation in Washington State Parts I and II (Ecology Publication No. 06-06-011a-b, Olympia, WA, March 2006), the administrator may allow mitigation based on the "credit/debit" method developed by the Department of Ecology in Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington: Final Report.

City/County	Critical Area	Description	Mitigation
		practical; 9. If the department determines that a parallel maintenance road is necessary, the following conditions shall be complied with: a. The width of the roadway shall be as small as possible and not greater than 15 feet; and b. The location of the roadway shall be contiguous to the utility corridor on the side farthest from the wetland; Development subject to performance standards (18.24.316) and mitigation.	
NMC 18.24.306 (classifications) 18.24.307 (development standards) 18.24.308 (permitted alterations) 18.24.309 (specific mitigation requirements)	Streams	Streams are classified as Types, F, Np, and Ns based on the WDNR typing system. Buffers range between 25 and 200 feet. If no practical alternative location exists utility corridors in stream buffers are allowed if: 1. The utility corridor is not located in a buffer where the buffer or associated stream is used by species listed as endangered or threatened by the state or federal government or contains critical or outstanding actual habitat for those species or heron rookeries or raptor nesting trees: 2. The construction area and resulting utility corridor are the minimum widths practical; 3. Except as provided in subsection (E) of this section, the utility corridor is located within the outer 25 percent of the buffer or within a roadway, the improved area of an existing utility corridor or the improved area of an approved trail; 4. The stream and its buffer are protected during utility corridor construction and maintenance; 5. The utility corridor is aligned to avoid	In addition to general mitigation requirements, mitigation for streams or their buffers is required to include: 1. For permanent alterations, restoration or enhancement of the altered stream or buffer, as determined by the city, using the following formulae: a. For mitigation on site: i. Correcting the adverse impact to any class of stream by repairing, rehabilitating or restoring the affected stream or buffer shall be on a 1:1 areal and functional basis; ii. Enhancement or restoration which is not mitigation of an alteration associated with a Type F, Np or Ns stream shall be on a 1.5:1 area and functional basis; iii. Enhancement or restoration which is not mitigation of an alteration associated with a Type S stream shall be on a 2:1 area and functional basis; b. For mitigation off site: i. Enhancement or restoration which is not mitigation of an alteration associated with a Type F, Np or Ns stream shall be on a 2:1 area and functional basis; ii. Enhancement or restoration which is not mitigation of an

City/County	Critical Area	Description	Mitigation
		cutting significant trees, to the maximum extent practical; 6. Vegetation removal is limited to the minimum necessary to construct the corridor; 7. Vegetation removal for the purpose of corridor maintenance is the minimum necessary to maintain the utility's function; 8. Any corridor access for maintenance is at specific points into the buffer rather than by a parallel road, to the maximum extent practical; 9. If the department determines that a parallel maintenance road is necessary, the following conditions shall be complied with: a. The width of the roadway shall be as small as possible and not greater than 15 feet; and b. The location of the roadway shall be contiguous to the utility corridor on the side farthest from the stream; and subject to mitigation	alteration associated with a Type S stream shall be on a 3:1 area and functional basis; and 2. For temporary alterations, restoration of the altered stream or buffer, as determined by the city; Off-site mitigation is only approved if it isn't practical to mitigate on site and it will achieve biologic, habitat, and hydrologic functions equivalent to or better than on-site mitigation.
NMC 18.24.302	Fish and Wildlife Habitat Conservation Areas	Designated FWHCAs include: areas with which state or federally designated endangered, threatened, and sensitive species have a primary association; state priority habitats and areas associated with state priority species; state-designated priority habitat or critical habitat for state-designated species; habitats and species of local importance; naturally occurring ponds under 20 acres; waters of the state; lakes, ponds, streams, and rivers planted with game fish; and land useful for preserving habitat and open space connections. Buffers based on a CAR. Utility facilities and poles located in FWHCAs subject to	Mitigation of alterations to habitat conservation areas shall achieve equivalent or greater biological functions. Mitigation shall address each function affected by the alteration to achieve functional equivalency or improvement on a per function basis. Mitigation shall be detailed in a fish and wildlife habitat conservation area mitigation plan, which may include the following as necessary: a. A native vegetation plan; b. Plans for retention, enhancement or restoration of specific habitat features; c. Plans for control of nonnative invasive plant or wildlife species; and d. Stipulations for use of innovative, sustainable building practices.

City/County	Critical Area	Description	Mitigation
		development standards (18.24.305) and mitigation.	
City of Renton Municipal Code (RMC) Chapter 4-3-050			
RMC 4-3-050.C.3 (exemptions - critical areas and buffers) RMC 4-3-050.G.2 (critical area buffers and structure setbacks from buffers) RMC 4-3-050.L. (mitigation maintenance and monitoring)	General	Utilities may be located within geologic hazard areas, habitat conservation areas, streams and lakes (Types F, Np, & Ns), and wetlands when they area within existing and improved public road rights-of-way or easements. If activities exceed the existing improved area or the public right-of-way, this exemption does not apply. Where applicable, restoration of disturbed areas would need to be conducted. Overbuilding or replacement of existing utility systems may occur in geologic hazard areas, habitat conservation areas, or wetlands if the work does not increase the footprint of the structure or line by more than 10% within the critical area and/or buffer areas, and occurs in the existing right-of-way boundary or easement boundary.	Mitigation shall be provided on site, unless on-site mitigation is not scientifically feasible due to physical features of the property. The burden of proof shall be on the applicant to demonstrate that mitigation cannot be provided on site. When mitigation cannot be provided on site, mitigation shall be provided in the immediate vicinity of the permitted activity on property owned or controlled by the applicant, and identified as such through a recorded document such as an easement or covenant, provided such mitigation is beneficial to the habitat area and associated resources. In-kind mitigation shall be provided except when the applicant demonstrates and the City concurs that greater functional and habitat value can be achieved through out-of-kind mitigation. When a mitigation plan is required, the proponent shall submit a final mitigation plan for the approval of the Administrator prior to the issuance of building or construction permits for development. The proponent shall receive written approval of the mitigation plan prior to commencement of any construction activity. Where the City requires increased buffers rather than standard buffers, it shall be noted on the subdivision plan and/or site plan.

City/County	Critical Area	Description	Mitigation
RMC 4-3-050.G.2 (critical area buffers and structure setbacks from buffers) RMC 4-3-050.6	Habitat Conservation Areas	Critical Habitats are habitats that have a primary association with the documented presence of non-salmonid or salmonid species (RMC 4-3-090.L1)) species proposed or listed by the Federal government or State of Washington as endangered, threatened, sensitive and/or of local importance. Buffers consist of an undisturbed area of native vegetation, or areas identified for restoration, established to protect the integrity, functions and values of the affected habitat. Critical area buffer widths are established based on: (1) the type and intensity of human activity proposed, (2) recommendations contained within a habitat assessment report, and (3) management recommendations issued by the Washington Department of Fish and Wildlife. Structure setback beyond the buffer is 15 ft.	The Administrator may approve mitigation to compensate for adverse impacts of a development proposal to habitat conservation areas through use of a federally and/or state certified mitigation bank or in-lieu fee program. See RMC 4-3-050.L.
RMC 4-3-050.G.2 (critical area buffers and structure setbacks from buffers) RMC 4-3-050.G.7 (streams and lakes) RMC 4-3-050.J.2 (Alterations to Critical Areas) 4-3-050.I.2 (Alterations to Critical Areas Buffers)	Streams and Lakes	Streams are classified as Type S, F, Np, and Ns based on the WDNR permanent water typing system (WAC 222-16-030). Buffers range between 50 and 175 feet. Structure setback beyond the buffer is 15 ft. Permit approval for projects on or near regulated Type F, Np and Ns water bodies are only granted if no net loss of regulated riparian area or shoreline ecological function in the drainage basin would occur and one of the following conditions is met: (1) project would meet the standard provisions of RMC 4-3-050.7, (2) project would meet alternative administrative standard provisions of	

City/County	Critical Area	Description	Mitigation
		RMC 4-3-050.7, or (3) a variance is acquired. New utility lines and facilities may be permitted to cross water bodies in accordance with an approved stream/lake study, if : fish and wildlife habitat areas are avoided to the maximum extent possible; utilities are designed to bore beneath the scour depth and hyporheic zone of the water body and channel migration zone, cross at the centerline of the stream channel at an angle greater than 60 degrees, or have crossings be contained within the footprint of an existing road or utility crossing; new utility routes avoid paralleling the stream or following a down-valley course near the channel; utility installation does not increase or decrease the natural rate of shore migration or channel migration; seasonal work windows are determined and made a condition of approval; and mitigation criteria of subsection L of RMC 4-3-050 are met.	
RMC 4-3-050.G.2 (critical area buffers and structure setbacks from buffers) RMC 4-3-050.G.8 (wellhead protection areas)	Wellhead Protection Areas	Wellhead Protection Areas are the portion of an aquifer within the zone of capture and recharge area for a well or well field owned or operated by the City. They are delineated into zones based on the Renton Wellhead Protection Plan. These include Zone 1, Zone 1 Modified, and Zone 2. There are no critical area buffers. Construction activities within zones 1 and 2 must comply with RMC 4-3-050.G.8.	

City/County	Critical Area	Description	Mitigation
RMC 4-3-050.G.2 (critical area buffers and structure setbacks from buffers) RMC 4-3-050.G.9 (wetlands) RMC 4-3.050.J.4 RMC 4-3-050.I.3 (Alterations to Critical Areas Buffers)	Wetlands	Wetlands are classified into Category I, II, III, and IV based on the Ecology Wetland Rating System. Buffers range between 0 and 200 feet depending on Category and land use. Structure setback beyond the buffer is 15 ft. for all uses and all wetland types. Utilities can be located within wetland buffers if they are located within an existing and improved public road rights-of-way or easements. Overbuilding or replacement of existing utility systems may occur in wetlands if the work does not increase the footprint of the structure or line by more than 10% within the critical area and/or buffer areas and occurs in the existing right-of-way or easement boundary. Development subject to performance standards (4-3-050.G) and mitigation.	Compensatory mitigation for wetland alterations shall be based on the wetland category and the type of mitigation activity proposed. The replacement ratio shall be based on wetland category. The created, re-established, rehabilitated, or enhanced wetland area shall at a minimum provide a level of functions equivalent to the wetland being altered and shall be located in an appropriate landscape setting.

E

Appendix E: Supplemental Information: Plants & Animals

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APPENDIX E-1. PSE VEGETATION MANAGEMENT STANDARDS

Vegetation Management Standards

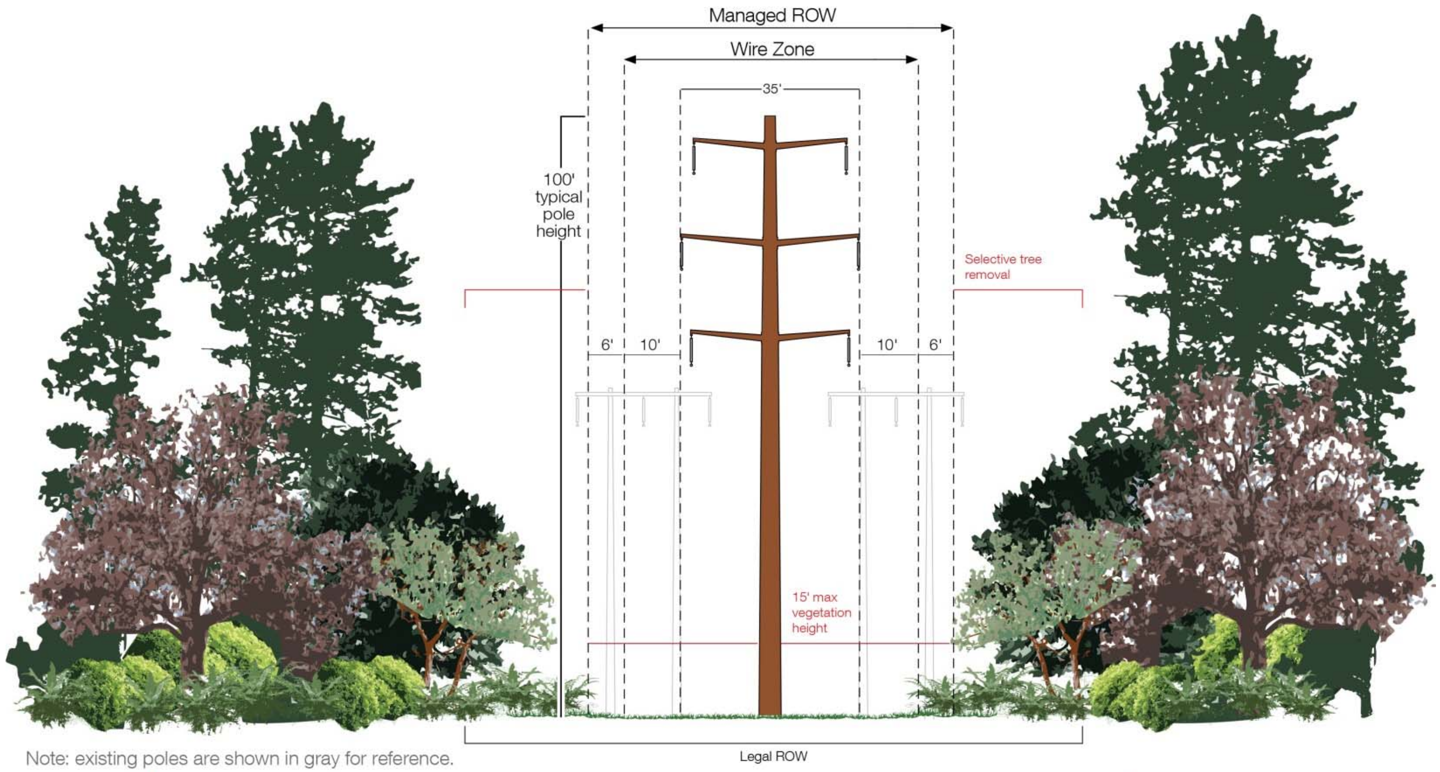
230 kV transmission lines

PSE's 230 kV transmission vegetation management standards generally requires removing trees located in the wire zone that have a mature height of more than 15 feet.

Wire Zone: Section of a utility transmission right of way extending to 10 feet from the outside transmission wire(s). Vegetation with a mature height of 15 feet or less is allowed in this zone.

Managed Right of Way (ROW): The section of a transmission right of way that extends roughly 16 feet from the outside transmission wire(s). Vegetation with a mature height of 15 feet or less is allowed in this zone.

Legal Right of Way (ROW): The full width of the easement. Maximum height of mature vegetation between the Managed ROW and Legal ROW is dependent upon tree species, tree health, and distance from the wires.



Note: existing poles are shown in gray for reference.

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DSD 005989

Vegetation Management Standards

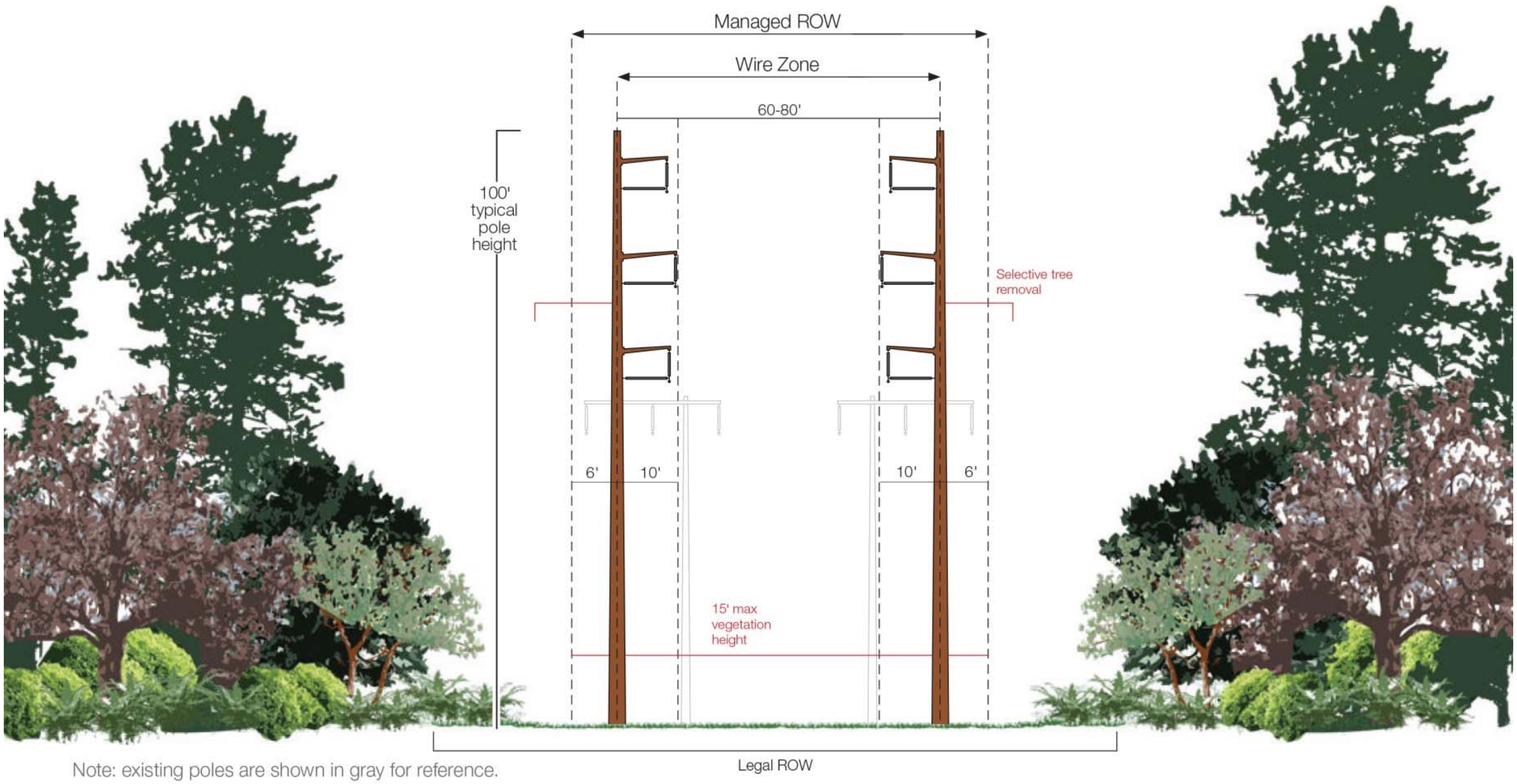
230 kV transmission lines

PSE's 230 kV transmission vegetation management standards generally requires removing trees located in the wire zone that have a mature height of more than 15 feet.

Wire Zone: Section of a utility transmission right of way extending to 10 feet from the outside transmission wire(s). Vegetation with a mature height of 15 feet or less is allowed in this zone.

Managed Right of Way (ROW): The section of a transmission right of way that extends roughly 16 feet from the outside transmission wire(s). Vegetation with a mature height of 15 feet or less is allowed in this zone.

Legal Right of Way (ROW): The full width of the easement. Maximum height of mature vegetation between the Managed ROW and Legal ROW is dependent upon tree species, tree health, and distance from the wires.



Note: existing poles are shown in gray for reference.

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Vegetation Management Standards

230 kV transmission lines

Pole Structure Type: C-16

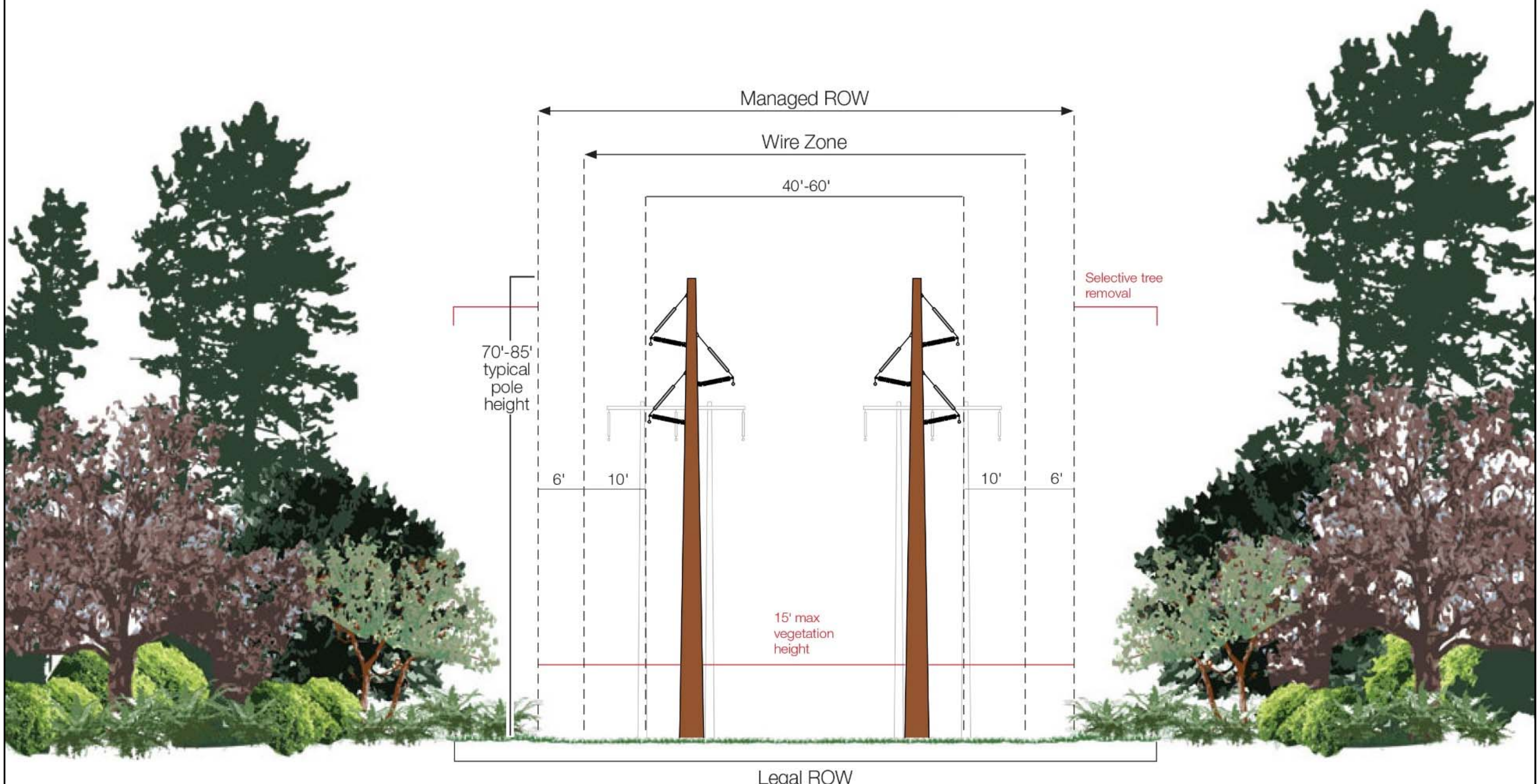
NOTE: Existing poles are shown in gray for reference.

PSE's 230 kV transmission vegetation management standards generally requires removing trees located in the wire zone that have a mature height of more than 15 feet.

Wire Zone: Section of a utility transmission right of way extending to 10 feet from the outside transmission wire(s). Vegetation with a mature height of 15 feet or less is allowed in this zone.

Managed Right of Way (ROW): The section of a transmission right of way that extends roughly 16 feet from the outside transmission wire(s). Vegetation with a mature height of 15 feet or less is allowed in this zone.

Legal Right of Way (ROW): The full width of the easement. Maximum height of mature vegetation between the Managed ROW and Legal ROW is dependent upon tree species, tree health, and distance from the wires.



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Updated: Fall 2017

APPENDIX E-2. TREE INVENTORY AND REMOVAL ANALYSIS METHODOLOGY

This appendix documents the steps taken by Environmental Science Associates (ESA) to determine the tree removal numbers for the Phase 2 Draft EIS and Final EIS. The methodology is divided into five phases or parts for ease of understanding: Inventory, Impact Analysis, Phase 2 Draft EIS Analysis, Data Analysis Review, and Final EIS. Figure E2-1 shows the legal right-of-way, the managed right-of-way, and wire zone for 230 kV transmission lines, which were used to determine the areas where trees could be affected by the project.

Part 1: Inventory

The Watershed Company (TWC) outlined its methodology for the tree inventory in a series of Tree Inventory Reports (TWC, 2016a), published in May or July 2016; see the referenced reports for detailed description. Below is a summary of these methods:

1. Boundaries for the tree inventory study area were established and included the following:
    a. Trees within the 100-foot-wide legal right-of-way along the existing 115 kV transmission line corridor.
    b. For project segments that are outside the existing corridor, trees within the road right-of-way plus a 30-foot-wide strip extending outward from either side of the road right-of-way where both sides of the street were inventoried. If only one side of the street was inventoried, only the right-of-way plus one 30-foot strip was included.
2. Trees within the inventory study area were surveyed and mapped as geospatial points and assigned a unique identification number. The identification number was marked on a tree tag attached to each tree (e.g., 3908).
3. Arborists in the field collected detailed information for each inventoried tree within the study area (e.g., tree species, tree health, etc.). There were 38 properties in the study area outside of the existing corridor that were wholly or partially inaccessible to the arborist and/or survey field crews. Tree locations on these properties were not captured completely, and/or detailed inventory data may not have been collected. Arborists used orthophotos and observations from off-site to determine tree location and inventory data as best as feasible for these properties.
4. Inventoried trees were assigned a maximum potential height (MPH). MPH was determined based on species, according to best available resources to determine mature vegetation growth potential.

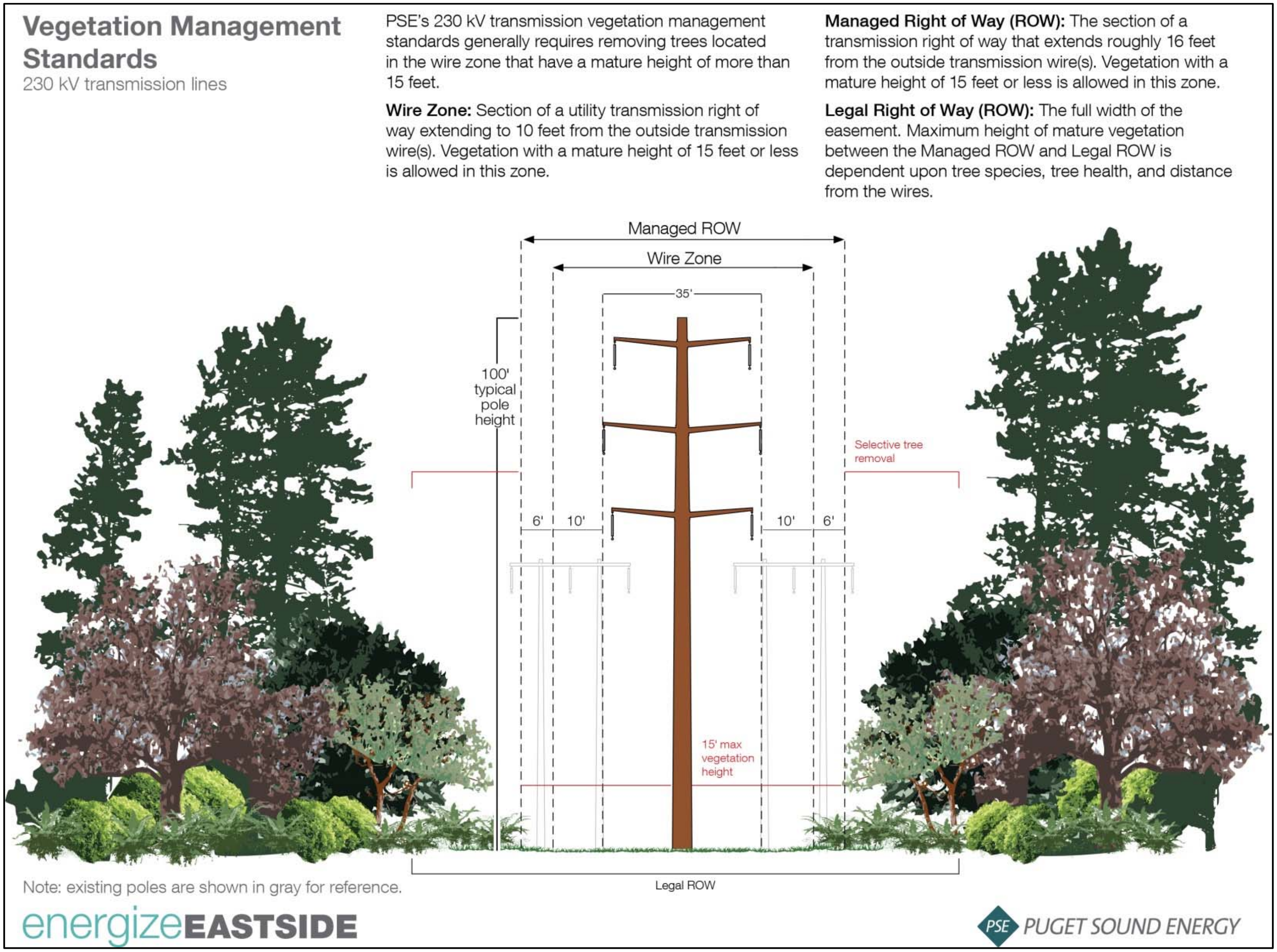

Figure E2-1. Legal Right-of-Way, Managed Right-of-Way, and Wire Zone for 230 kV Transmission Lines

Part 2: Impact Analysis

TWC outlined its methodology for the impact analysis in Methodology for Vegetation Impact Analysis (TWC, 2016b); see the referenced reports for detailed description. Below is a summary of these methods:

1. TWC placed the surveyed tree points on a georeferenced base map and overlaid it with the proposed conductor and pole alignments establishing the wire zone and managed right-of-way.
2. Trees that met the following criteria were flagged for removal:
    a. Dead and dying trees.
    b. Trees within the legal right-of-way but outside of the managed right-of-way with an MPH exceeding 70 feet.
    c. Trees within the managed right-of-way and wire zone with an MPH exceeding 15 feet.
3. TWC identified trees flagged for removal that were located in a critical area or critical area buffer, using a combination of publicly available GIS layers, wetland delineations, and stream surveys conducted by TWC.

    See the referenced report for a detailed description for limitations of the data, including errors.

Part 3: Draft EIS Analysis

The Tree Inventory Reports (TWC, 2016a), Methodology for Vegetation Impact Analysis (TWC, 2016b), a GIS data worksheet, and GIS data layers were provided to ESA to use for the analysis in the Phase 2 Draft EIS. ESA took the following steps to review TWC results:

1. Google Earth and street view, combined with ArcGIS Desktop, were used to review surveyed trees to generally confirm that the number of trees surveyed within the study area matched the number of trees present in the corridor, and to confirm that trees flagged for removal matched the proposed project alignment.
2. Surveyed trees were cross-checked against the Phase 2 Draft EIS segments and options to confirm that the TWC study area was consistent with the project description evaluated in the Phase 2 Draft EIS.
3. ESA ecologists visited five locations within the study area on 10/6/2016 by to confirm that data provided by TWC were consistent with on-the-ground conditions. ESA ecologists checked tree species, height, and location of trees at each site and cross checked with data provided. They visited the following locations:
    a. Redmond Segment – existing easement between the Sammamish substation and Redmond Way, near Willows Creek.
    b. Bellevue Central Segment – existing easement from SE 2nd Street to SE 7th Street along Lake to Lake Trail.
    c. Richards Creek substation site.
    d. Bellevue South Segment – existing easement north and south of Forest Drive.

    e. Newcastle Segment – existing easement from SE 95th Way to the May Creek crossing and existing easement near Newcastle Way.

4. ESA confirmed that the tree inventory and impact analysis methodology was consistent with standard practice.
5. To identify the number of pole centroids that would be located within critical areas and critical area buffers, ESA used the pole location centroid data provided by PSE, applied a 25-foot square centered on each pole location centroid, and overlaid the wetland/stream and wetland/stream buffer layers provided by TWC. If any portion of the 25-foot square was located outside a wetland, stream, or associated buffer, the pole centroid was excluded from the overall pole counts in critical areas and critical area buffers. This exclusion was made because PSE has the flexibility to adjust the precise location of a pole and would avoid impacts to wetlands, streams, or associated buffers where possible. The numbers of poles proposed in a wetland, stream, or associated buffer were presented in the Water Resources and Plants and Animals sections of the Phase 2 Draft EIS (Sections 3.3 and 3.4, respectively).
6. To identify tree removal within recreation sites, using GIS ESA overlaid trees identified for removal by TWC with a parks layer and reported in the Recreation section of the Phase 2 Draft EIS (Section 3.6).

Part 4: Data Analysis Review after Phase 2 Draft EIS

In response to public comment on the Phase 2 Draft EIS that suggested inconsistencies in the tree removal analysis, ESA worked with TWC to review its data analysis. TWC sent ESA the following GIS layers: legal right-of-way, managed right-of-way, wire zone, inventoried trees, and supporting attributes and metadata. Metadata provides definitions for various attributes like unique identifiers, tree species, MPH, notes, and trees flagged for removal. In GIS, ESA conducted the following queries to review the analysis done by TWC:

1. Trees flagged for removal:
    a. Checked to see if trees flagged for removal were located within the managed right-of-way or the wire zone (including checking if any trees were flagged for removal outside of these two zones).
    b. ESA reviewed the attributes of the trees flagged for removal within the managed right-of-way and wire zone to see if they met the removal criteria (i.e., had an MPH greater than 15 feet or were dead/dying).
    c. Checked to see if trees flagged for removal <u>outside</u> of the managed right-of-way and wire zone (but within the legal right-of-way) had an MPH exceeding 70 feet or were dead/dying.
2. Trees <u>not</u> flagged for removal:
    a. Checked to see if trees not flagged for removal within the managed right-of way or wire zone met the removal criteria (had an MPH greater than 15 feet or were dead/dying).
    b. Checked to see if trees not flagged for removal <u>outside</u> of the managed right-of-way and wire zones (but within the legal right-of-way) had an MPH exceeding 70 feet or were dead/dying.

3. In response to the review by ESA, TWC provided clarification regarding trees that did not appear to be categorized correctly. There were no changes to TWC's tree impact numbers as a result of this review. Differences in ESA's results were caused by slight differences in the way ESA had interpreted and analyzed the information provided by TWC. TWC documented this review and changes in a memo, Energize Eastside Vegetation Impact Analysis (TWC, 2017).
4. ESA then checked the tree removal numbers and calculations used in the Phase 2 Draft EIS against the updated GIS data provided by TWC and presented the revised information in Chapter 3, *Errata*, of this Final EIS. While this corrected the Phase 2 Draft EIS analysis, it was not intended to provide the full analysis of PSE's Proposed Alignment for the Final EIS, which is described in Part 5 below.

Part 5: Final EIS

ESA presented the tree inventory and removal numbers in the Final EIS based on revised GIS data provided by TWC. Two sets of GIS data were used for the Final EIS: tree inventory data collected and analyzed during 2015 and 2016, and tree inventory data that were collected and analyzed in 2017. The tree data from 2017 were only available for portions of the alignment being considered for permits (i.e., in South Bellevue and Newcastle). The following subsections summarize what was included in the two datasets, and how the data are presented in the Final EIS.

The Watershed Company GIS Data (2016)

This tree inventory was conducted for the Phase 2 Draft EIS and data were collected as described above. For the Final EIS, these data were used for the Redmond Segment, Bellevue North Segment, Bellevue Central Segment north of Lakeside substation, and the Renton Segment.

To determine which trees were associated with each segment, ESA created a GIS attribute field called "Seg." An ESA GIS analyst conducted a spatial assessment of the data and identified the segment with which each tree was associated. TWC provided information as to whether a tree would be removed under any of the Phase 2 alternatives/options. For the Final EIS, the only option that was considered was "A1_Exesmt." Filters were applied based on "Seg" and whether or not the "A1_Exesmt" field said "remove." The "Signfcnt" field provided in TWC's attribute data denotes if a tree was marked as being significant or not (as defined by local regulations). "Critical_A" indicated if the tree is located in a critical area. "CA_Buffer" indicated if the tree is located in a critical area buffer. The following values were counted as being in the buffer: (In, LIKELY IN, POSSBLY IN, Y).

The Watershed Company GIS Data (2017)

The tree data from 2017 were only available for portions of the alignment being considered for permits, which included the following:

- The portion of the Bellevue Central Segment that included the Lakeside substation.
- Richards Creek substation site.
- Bellevue South Segment.
- Newcastle Segment, Option 1 (No Code Variance).
- Newcastle Segment, Option 2 (Code Variance).

TWC used a different, more refined methodology to analyze the tree data for these sections (TWC, 2018).

The Bellevue South dataset from the Watershed Company included the Bellevue Central Segment associated with the Lakeside substation and the Richards Creek substation. A GIS analyst at ESA created a "Seg" field and conducted a spatial analysis to determine which trees are associated with the Lakeside substation (in the Bellevue Central Segment), which are associated with the Richards Creek substation site, and which are associated with the Bellevue South Segment (as defined in the Final EIS). The data had similar fields to those associated with the 2016 attribute data, so similar filters were applied.

References:

TWC (The Watershed Company). 2016a. Tree Inventory: Energize Eastside Project. Includes the following separate reports: City of Bellevue Tree Inventory Report; King County Tree Inventory Report; City of Newcastle Tree Inventory Report; City of Redmond Tree Inventory Report; City of Renton Tree Inventory Report; Richards Creek Parcel Tree Inventory Report; Segment O Tree Inventory Report; Segment P Tree Inventory Report; and Bypass Routes 1 and 2 Tree Inventory and Analysis Report. Prepared for Puget Sound Energy, Bellevue, WA. Prepared by The Watershed Company, Kirkland, WA. May and July 2016.

TWC (The Watershed Company). 2016b. Methodology for Vegetation Impact Analysis. Prepared for Puget Sound Energy, Bellevue, WA. Prepared by The Watershed Company, Kirkland, WA. September 2016.

TWC (The Watershed Company). 2016c. GIS Dataset Labeled as twc_ee_veg_impact_results_20160914. September 14, 2016.

TWC (The Watershed Company). 2017. Energize Eastside Vegetation Impact Analysis. Prepared for Puget Sound Energy, Bellevue, WA. Prepared by The Watershed Company, Kirkland, WA. November 2017.

TWC (The Watershed Company). 2018. Energize Eastside Tree Impact Assessment, Draft Methodology for Vegetation Impact Analysis memorandum. Prepared by The Watershed Company, Kirkland, WA. February 9, 2018.

F

Appendix F: Recreation-Related Study Area Policies

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APPENDIX F. RECREATION-RELATED STUDY AREA POLICIES BY JURISDICTION

Policy Title	Policy Text
City of Redmond	
Utilities Policy UT-9	Promote the efficiency of utility placement both in cost and timing through methods such as the following: Encourage joint use of utility corridors for utilities, recreation and appropriate non-motorized connections.
City of Bellevue	
Parks & Open Space System Plan Goals	Define and enhance neighborhood character by using open space as visual relief to separate and buffer between uses.
Parks and Open Space Policy PA-30	Protect and retain, in a natural state, significant trees and vegetation in publicly and privately-dedicated greenbelt areas.
Parks and Open Space Policy PA-37	Require a public review process for the conversion to non-recreational use of park lands and facilities.
Utilities Policy UT-68	Encourage the use of utility corridors as non-motorized trails. The city and utility company should coordinate the acquisition, use, and enhancement of utility corridors for pedestrian, bicycle and equestrian trails and for wildlife corridors and habitat.
Utilities Policy UT-69	Avoid, when reasonably possible, locating overhead lines in greenbelt and open spaces as identified in the Parks and Open Space System Plan.
Richards Valley Sub Area Plan Policy S-RV-11	Protect and preserve publicly owned land. *Discussion: This policy refers to land set aside for storm drainage and detention, the right-of-way along the Lake Hills Connector, and potential links in the trail and park system.*
Bridle Trails Sub Area Plan Policy S-BT-20	Work with utility companies to gain public non-motorized trail easements along power line corridors to complete the equestrian trail facilities plan.
Newcastle Sub Area Plan Policy S-NC-44	Encourage the use of utility and railroad easements and rights-of-way for hiking, biking, and equestrian trails wherever appropriate in the Subarea.
City of Newcastle	
Utilities Policy UT-P7	Where found to be safe, the City of Newcastle shall promote recreational use of utility corridors such as trails, sport courts, and similar facilities.
City of Renton	
Goal B	Create a connected system of parks, corridors, trails and natural areas that provides nearby and accessible opportunities for recreation and non-motorized transportation.
King County	
Objective 3.2	Invest in planning, design, and construction of new major trail corridors, the Eastside Rail Corridor and the Lake to Sound Trail.

Source: City of Bellevue, 2015; City of Newcastle, 2016; City of Redmond, 2015; City of Renton, 2011; and King County, 2016.

G

Appendix G: Supplemental Information: Historic Resources

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APPENDIX G. SUPPLEMENTAL INFORMATION: HISTORIC RESOURCES

Table G-1. Historic Register Resources along PSE's Proposed Alignment

Map #	Property Name	Address	Year Built	NRHP – Recom. Eligible	NRHP – Determ. Eligible	NRHP - Listed	WHR - Listed	WHB - Listed	Desig. KC Landmark
1	Sammamish-Lakeside-Talbot Hill transmission lines #1 and #2 and the Eastside transmission corridor	Redmond to Renton	1920s	Yes	No	No	No	No	No
2	Twin Valley Dairy	410 130th Place SE	1933	Yes	Yes	No	No	Yes	No
3	Somerset Neighborhood	Bellevue	1960s	Yes	No	No	No	No	No
4	Newcastle Cemetery	SW of 69th Way off 129th Ave SE	c.1870	Yes	No	No	Yes	No	Yes
5	Mt. Olivet Cemetery	100 Blaine Ave NE, Renton	c.1875	Yes	No	No	No	No	No

KC = King County; NRHP = National Register of Historic Places; WHBR = Washington Heritage Barn Register; WHR = Washington Heritage Register.

Consultation Record Summary

A copy of the June 21, 2017, consultation letter (one example attached) was sent to the following recipients:

- Rob Whitlam, State Archaeologist; Department of Archaeology & Historic Preservation; Olympia, WA
- Kim Dietz, Senior Planner/Historic Preservation Officer; City of Redmond, WA
- Cecile Hansen, Chairwoman; Duwamish Tribe; Seattle, WA
- Philippe D. LeTourneau; King County Historic Preservation Program; Seattle, WA
- Laura Murphy, Archaeologist, Cultural Resources; Muckleshoot Indian Tribe; Auburn, WA
- Steven Mullen-Moses, Director; Archaeology & Historic Preservation; Snoqualmie Tribe; Snoqualmie, WA
- Kerry Lyste, THPO; Stillaguamish Tribe; Arlington, WA
- Dennis Lewarch, THPO; Suquamish Tribe; Suquamish, WA
- Richard Young, Cultural Resources; Tulalip Tribes; Tulalip, WA

Each letter included two attachments: (1) Attachment A, GIS Model Topographic Mapbook; and (2) Attachment B, GIS Model Aerial Mapbook. These attachments contained location-specific archaeological site information that is exempt from public disclosure per RCW 42.56.300. Following this state regulation, both attachments have been redacted from publication in the Final EIS.

Also attached is a letter (dated 8/18/2017) with a notification about planned field work in the study area.

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Puget Sound Energy
P.O. Box 97034
Bellevue, WA 98009-9734
PSE.com

June 21, 2017

Rob Whitlam, State Archaeologist
Department of Archaeology & Historic Preservation
1110 Capitol Way S, Suite 30 | Olympia WA 98501

Re: Area of Potential Effects and Archaeological Inventory Plan for the Energize Eastside Project, King County, Washington

Dear Dr. Rob Whitlam:

Puget Sound Energy is planning to replace the older, lower capacity 115 kilovolt (kV) transmission system located between the Cities of Redmond, Bellevue, Newcastle, and Renton with a new, higher-capacity 230 kV system within the current transmission line corridor. The Project would upgrade an existing line and increase capacity with a new line largely within the existing corridor, rather than construct a new transmission line corridor. The majority (approximately 95 percent) of the existing 115 kV lines are strung on wooden H-frame structures; in a few locations (e.g., near substations or highway crossings), the existing lines are on other pole or structure types, such as single wood poles or steel monopoles. Other ground disturbance within the Project area include the construction of a new substation, as well as, temporary staging/laydown, stringing/wire set-up, and access route areas. See a more detailed project description below.

Fill impacts were delineated within or adjacent to the project location and a Section 10 permit from the U.S. Army Corps of Engineers will be required in the vicinity of some pole locations and the Richards Creek substation footprint. In order to fulfill requirements under Section 106 as required by the National Historic Preservation Act of 1966 (NHPA), Washington State Environmental Policy Act (SEPA), PSE, and Executive Order 05-05, the Energize Eastside project is undergoing environmental review, which includes preparation of a Washington State Environmental Policy Act (SEPA) Environmental Impact Statement (EIS). The City of Bellevue published the Phase 2 Draft EIS on May 8, 2017 and opened a comment period to provide the public with the opportunity to submit comments. Comments must be submitted by June 21, 2017. For more information on the EIS and to submit comments to be included as part of the EIS and the public record, please visit **EnergizeEastsideEIS.org**.

In order to fulfill requirements under Section 106 as required by the National Historic Preservation Act of 1966 (NHPA) Puget Sound Energy (PSE) is in the process of determining project impacts on historic properties listed in, or determined eligible for listing in, the National Register of Historic Places.

Project Description

PSE has retained Historical Research Associates (HRA) to conduct a cultural resources inventory for the Energize Eastside Project in King County, Washington. The proposed Project is located in Township 23 North, Range 5 East, Sections 4, 9, 16, 20, and 21; Township 24 North, Range 5 East, Sections 2, 3, 9, 10, 15, 16, 21, 28, and 33; and Township 25 North, Range 5 East, Sections 3, 10, 15, 22, 27, and 34, Kirkland, Mercer Island and Renton USGS Topographic Quadrangles, Willamette Meridian (Figure 1).

PSE's proposed Project includes the following components:

1. A new 230 kV overhead transmission line, connecting the Sammamish Substation in Redmond and the Talbot Substation in Renton, a distance of approximately 18 miles (mi); and

2. A new substation, Richards Creek, adjacent to the existing Lakeside Substation in Bellevue. The approximate area for the substation site is 8.5 acres in size. This will connect two bulk energy systems: one from the Sammamish Substation in Redmond to the proposed Richards Creek Substation in Bellevue, and one from Richards Creek Substation to the Talbot Hill Substation in Renton. The new substation will include a new 230 kV transformer and associated electrical equipment such as circuit breakers, electrical bus, and connections to the new transmission lines. The main function of the substation would be to house the transformer and related equipment needed to step down the 230 kV voltage (bulk power) from the new transmission lines to the 115 kV needed for use by the local distribution system.

3. New pole and adjacent work locations- A temporary work area with an approximate radius of 50 feet around the new pole location would be typical. This area would provide a safe working space for placing equipment, vehicles, and materials.

   Each steel pole will be installed either by direct embedment or placed on a drilled pier foundation. The type of foundation that will be used to support the poles will be dependent upon the structural loading, structural strength of the soil, and site accessibility. The hole for the transmission pole is typically initiated using a vactor truck, and if necessary, an auger will also be used to achieve the necessary depth. Typical hole diameter is approximately 18-inches greater than the diameter of the base of the pole. Generally, the depth of the hole will be 10 percent of the pole height plus 2 ft.

   In areas of soft soils, a steel casing may be used during drilling to hold the excavation open, after which the steel casing would be cut below grade and backfilled upon completion. For direct embed poles, the base section of the pole is installed in the hole and the annulus filled with select backfill.

   For poles that require drilled pier foundations, the hole is advanced in the same manner as that for the direct embed poles. Reinforced-steel anchor bolt cages are then installed in the excavation. These cages are inserted in the holes prior to pouring concrete and are designed to strengthen the structural integrity of the foundations and are delivered to the structure site via flatbed truck. The excavated holes containing the reinforcing anchor bolt cages would be filled with concrete. A crane is then used to set the fully framed structure by placing the poles in the excavated holes or on the drilled pier foundation

4. Temporary work and equipment storage areas include staging/laydown, stringing/wire set-up, and access route locations. These locations will involve, at most, minimal ground disturbance in the form of equipment set down or vehicles parked on the surface. Crews may prepare equipment in these locations or use the areas as parking lots. Minimal grading and vegetation removal may occur in some locations.

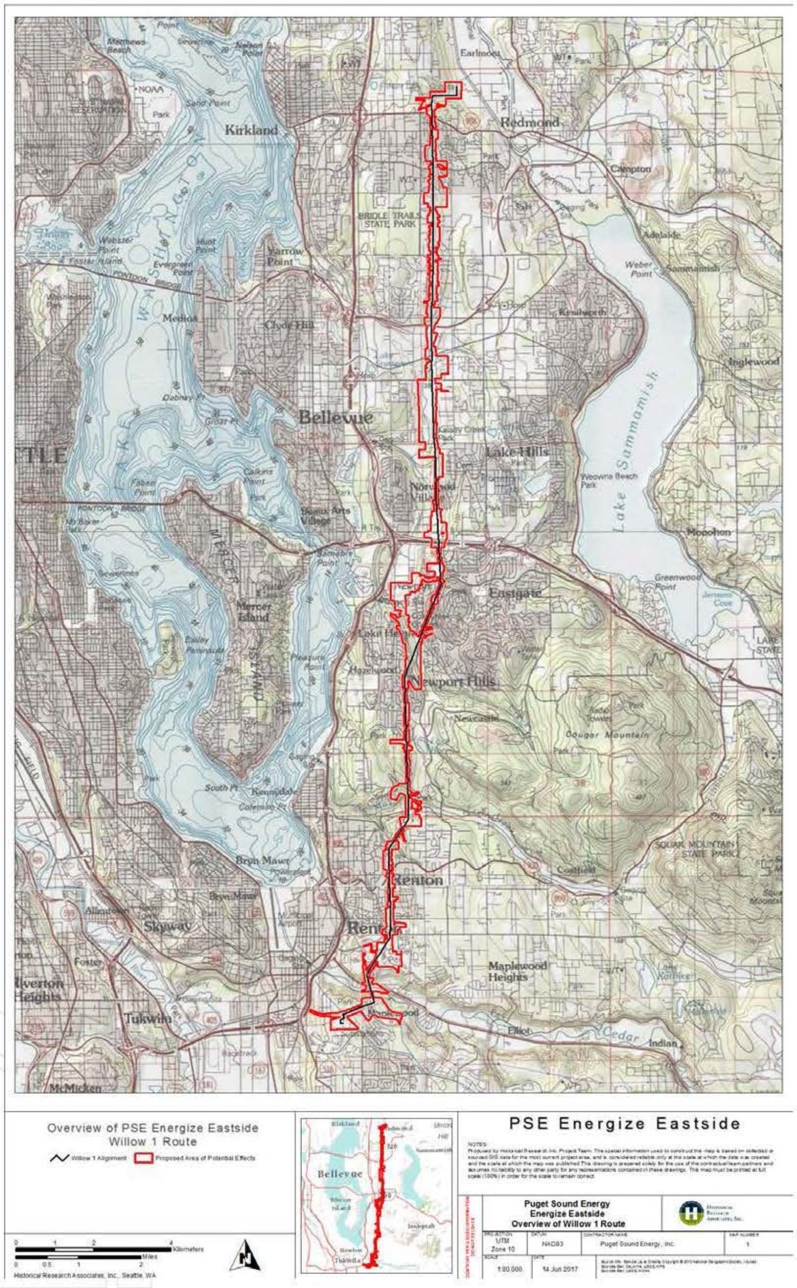

Figure 1. General location of the PSE Energize Eastside Project APE.

a. Staging/laydown areas will be utilized for general equipment storage and parking. Three staging/laydown areas have been proposed currently-two within parks (May Creek Park [Parcel # 3345100405] and Sammamish Valley Park [Parcel # 2726059016]) and one in an industrial storage area in Renton [Parcel # 1723059026]. Materials would be stored and/or vehicles would be driving on the surface. Minimal surface disturbance may occur at the park locations and could include grading and fill to widen entrances and access roads, or to stabilize the surface and add drainage. The industrial location is paved and would not have ground disturbance.

b. Stringing/wire set-up activities involve two locations, a reel area and a puller area. Typically, the two locations are approximately 11,000 feet (ft) apart, although they can be closer in difficult terrain or when the transmission line has a sharp corner. Large reels of wire are unloaded in one location (the reel area). Tensioner equipment would be set up at the reel area that helps keep the wire at the proper tension. The reel area can include wire set up (tensioner, reels unloading, rope attachment). A rope will be attached to the reel wire and pulled to the second location.

   Pulling the lines may be accomplished by attaching them to a specialized wire stringing vehicle. Following the initial stringing operation, pulling and sagging of the line would be required to achieve the correct tension of the transmission lines between support structures. After the new lines have been set, the existing poles are then removed. Pulling and tensioning sites are expected to be required approximately every 2 miles along the corridor. Equipment at sites required for pulling and tensioning activities would include tractors and trailers with spooled reels that hold the conductors and trucks with the tensioning equipment.

   Depending on topography, minor grading may be required at some sites to create level pads for equipment. Finally, the tension and sag of conductors and wires would be fine-tuned, stringing sheaves would be removed, and the conductors would be permanently attached to the insulators at the support structures.

c. Use of existing access routes and roadways is preferred. In locations where that is not feasible, new access routes will be established along the corridor.

Ground disturbance will occur within the current transmission line corridor, at existing substations, proposed stringing and wire set-up areas, access routes, and at approximately 212 proposed pole locations. The locations of some staging/laydown, stringing/ wire set-up, and access routes have yet to be determined and will be inventoried as feasible, once they have been designed.

The Project has the potential to impact both subsurface cultural resources and the viewshed of buildings, structures, and objects within the corridor, so the cultural resources inventory will include both archaeological and architectural surveys. An architectural survey is already underway. HRA and PSE consulted with Department of Archaeology and Historic Preservation (DAHP) Preservation Design Reviewer Russ Holter on the approach to that survey. The inventory study area for the architectural survey was one tax parcel out from the proposed transmission line corridor (Willow 1 route). The study area for archaeological survey includes the 100 ft wide Transmission Line Right-of-Way (ROW), centered on the proposed transmission line corridor centerline, as well as any proposed access routes, stringing and/or wire set-up areas that may extend outside of this corridor. Some segments of proposed access routes may extend outside of the proposed APE onto existing roadways. This memo outlines the proposed APE and archaeological survey field approach for the Project.

It is anticipated that the majority of new transmission poles will be replaced in the same location as existing poles. As part of the proposed Project, the existing, older wooden H-frame structures would be replaced primarily with a combination of steel monopoles and new steel H-frame structures. In most cases, the new poles would be taller than the existing H-frame structures. The average height of the existing H-frame structures is 60 ft (ranging from 39 to 115 ft); the average height of the proposed poles is approximately 90 ft (ranging from 80 to 125 ft) in the existing transmission line corridor. In most locations, the existing 115 kV transmission lines are strung on two adjacent H-frame structures (i.e., typically four poles total) at a single location; the project would consolidate these lines onto one or two pole structures. In most cases, the new poles would be installed in approximately the same locations along the existing corridor (i.e., within 25 ft up or down the line) as the existing poles; in some locations, the new poles could be moved farther along the line to avoid sensitive resources, such as wetlands or streams. The Project would result in fewer poles along the existing transmission line corridor, but the poles may be 35 ft taller than the existing structures, with higher poles and wire attaching points than at present. The current design includes approximately 212 new pole locations.

Final design for the specific pole locations will be determined based on site engineering, but are expected to be located within 25 ft of the existing H-frame structures in most areas along the existing transmission line corridor. Pole locations would generally be based on tensioning needs for the wire (including where turns are needed along the route), underground obstacles at pole foundation locations, and allowable structural heights, all while attempting to use as few poles as possible. PSE would also avoid placing poles in environmentally critical areas like wetlands and on unstable slopes to the greatest extent feasible.

The diameter of the poles depends on height, as well as loading, and would be greatest at the base. Typical (tangent) poles would be 2 to 4 ft in diameter at the base, while corner and termination poles may need to be 4 to 6 ft in diameter at the base depending on the angle and the terrain. Tangent poles are structures that are in a straight line with other poles. Termination poles and locations where the transmission line changes direction need to be larger than tangents to handle the asymmetrical weight and tension from the lines they are holding.

Depth of proposed pole excavation is approximately 10–30 ft below ground surface (bgs), depending on field conditions. PSE intends to remove the existing poles completely by pulling them straight out of the ground, which is expected to have minimal ground disturbance. The holes will be immediately backfilled with clean fill soils.

Excavations for proposed access routes and stringing and wire set-up areas may only involve surface grading or scraping. Excavations associated with the Richards Creek Substation may extend up to 79 ft bgs and would include the soldier pile wall piles, tie-backs, dead end cast pile foundations, a detention vault, and associated sheet pile shoring. Underground electrical grid systems at the substations extend up to 10 ft outside the substation fences.

Along portions of the route—namely those segments where the existing transmission line collocates with the Olympic Pipeline (OP)—the line may continue to be split between two shorter single-circuit poles. The OP is an underground petroleum pipeline system that is collocated with the existing PSE 115 kV transmission line corridor in portions of the project area. The OP is an approximately 300-mi-long interstate pipeline system that runs from Blaine, Washington, to Portland, Oregon, and transports gasoline, diesel, and jet fuel through four pipes—one 12-inch (in), one 14-in, one 16-in, and one 20-in in diameter. Only the 16 and 20-inch pipelines are located in the Project corridor. The existing transmission line corridor predates the OP by approximately three decades. In most of the segments, the OP system is located along either the east or west side of the PSE right-of-way (ROW), crisscrossing the ROW from east or west in numerous locations. In parts of the corridor (especially near Newcastle), however, the OP system is buried in the center of the ROW.

The proposed APE for this Project takes into account both direct effects (i.e., ground disturbance and staging areas for the erection of new poles and the removal of existing poles) and indirect effects (i.e., visual and aural effects). Ground-disturbing activities will be limited to the 100-ft-wide transmission line corridor ROW, as well as stringing and wire set-up areas and access routes.

Once determined, the APE will include what HRA has defined for the preliminary phases of the project as the Record Search Corridor. This corridor follows the schematic of the alternative segments provided by PSE, with the boundaries being one parcel of land out on either side of the center of each transmission line segment. If the parcel through which the transmission line segment runs is larger than the average (i.e., residential or smaller commercial) parcel, it may itself count as the entire Record Search Corridor. If the transmission line runs through a smaller (generally residential) parcel, the Record Search Corridor includes the parcels to each side.

The proposed APE follows the existing transmission corridor, located within a cleared utility ROW, along road ROWs, and within and on the boundary of privately owned residential parcels. The Willow 1 route, which uses the existing transmission corridor, has approximately 742 parcels adjacent to the proposed alignment, which were surveyed in early 2017 by HRA's architectural historians. PSE has rights-of-entry and/or easements into most of these parcels, which will also be part of the archaeological survey. The transmission line corridor extends from the Sammamish Substation near Kirkland south approximately 18 mi to the Talbot Hill Substation near Renton. A small part in the central portion also extends to the west. Locations of stringing and wire set-up areas and access routes are to be finalized, although some proposed locations are included in the attached mapbook. Within the APE, PSE proposes that the archaeological survey area be defined as the 100 ft corridor centered on the transmission line centerline, as well as the footprint for the proposed Richards Creek Substation, and any access routes, stringing and wire set-up areas.

Agency and Tribal Consultation

In April 2017, PSE prepared and submitted project notification letters to agencies, potentially interested parties, and Native American Tribes including: DAHP, King County Historic Preservation Program, and municipal governments. These entities were identified as having an interest in the APE, and PSE sought their input regarding concerns about potential impacts to places of traditional cultural use or other resources. The letters described the proposed project and provided topographic map and aerial photograph figures of the APE.

Work Plan

In preparation for the Project, HRA has conducted a series of archival research effort, to help PSE narrow down alignment options with regards to impacts to cultural resources. Once the preferred alignment was chosen, HRA proposed updating the records search and compiling a GIS model, along with ground truthing, to devise a field survey approach. This field survey approach is based on PSE's current design plan of the alignment, which is a work in progress, and engineering plans have not been finalized. The sections below detail HRA's approach for conducting the archaeological field survey for the project as it is currently planned.

Archival Research

Between 2013 and 2016, HRA conducted several archival record searches for pertinent archaeological information within a ½-mi research buffer of several proposed alternatives, including the Willow 1 route. HRA searched DAHP's online database, the Washington Information System for Architectural and Archaeological Records Data (WISAARD) for archaeological site records, cultural resource survey reports, and cemetery records. Research and survey methods used for each of the studies were recorded. HRA also consulted WISAARD to examine the research buffer in relation to the state's archaeological predictive model.

Online sources for historic-period maps were reviewed, including the General Land Office (GLO) survey maps; United States Geological Survey (USGS) topographic quadrangles; and the Anderson, Kroll, and Metsker Map Company plat maps. The research buffer was examined in relation to cultural features depicted on these maps, to ascertain the likelihood that precontact through historic-period resources will be encountered during construction activities in the Project.

HRA staff also consulted the King County Assessor's website, in conjunction with DAHP records, to confirm the ages of buildings, structures, and objects (BSO), as well as which ones have been previously recorded and/or evaluated.

Geotechnical manuscripts, online geological resources, and historical maps were analyzed by HRA in order to reconstruct the geological setting and the geomorphic history of the project. Alignment options were plotted on available surficial geology maps using ESRI ArcGIS software. Additionally, PSE provided HRA with geotechnical studies conducted by GeoEngineers for the Project. These studies indicate that subsurface conditions across most of the project limits consist of alluvium, recessional outwash, glacially consolidated deposits consisting of very dense glacial till, bedrock and soils derived from highly weathered bedrock. As much of the alignment is along developed properties, fill is also present.

GIS Modeling

HRA developed an archaeological predictive model to assist with planning the survey approach for the Project (Figure 2). This predictive model and associated background research was part of the planning effort for identifying culturally sensitive areas along the transmission line corridor and proposed Richards Creek Substation footprint.

In developing the model for this project, HRA employed Geographic Information System (GIS) techniques to identify and create digital variables covering a ½-mi boundary encompassing the research buffer (i.e., project model boundary) to help predict local archaeological sensitivity. An area larger than the archaeological survey area was chosen to cover any future project expansion or changes. The total area covered by the sensitivity analysis includes 13,435 acres from the northern boundary near the Sammamish Substation to just southeast of Renton, Washington (Attachments A and B).

This analysis is achieved using environmental variables that, when assessed in conjunction with one another, indicate the likelihood of potential site locations within the archaeological survey area. The model inputs are factors in the form of GIS thematic layers, geomorphic and other derivative layer variables. The current model variables include slope, hydrology, previously recorded resources, historical map research features, and surface geology. When combined, the GIS outputs are represented in a data layer which translates into physical maps showing areas with high, medium, and low potential for the discovery of cultural resources. This is calculated using a weighted-sum math calculation based on the project variable weight distribution overlap.

High Sensitivity

The GIS model indicates that the high sensitivity locations make up 3,440 acres or 26 percent of the total project area. These areas are near creeks, drainages, a cemetery, and features documented on historic-period maps. Of the proposed 212 new pole locations, 25 are within high sensitivity areas.

Medium Sensitivity

Pole locations in medium sensitivity areas span a variety of environments, from heavily vegetated existing corridor with rolling hills to relatively flat expanses in residential and commercial settings. The medium sensitivity areas cover 7,567 acres totaling 56 percent of the model. They make up areas between 5–10 degrees of slope and are typically farther from known resources and water. In our project area, this corresponds to many areas that are medium to high density with housing. Of the proposed 212 new pole locations, 114 are within medium sensitivity areas.

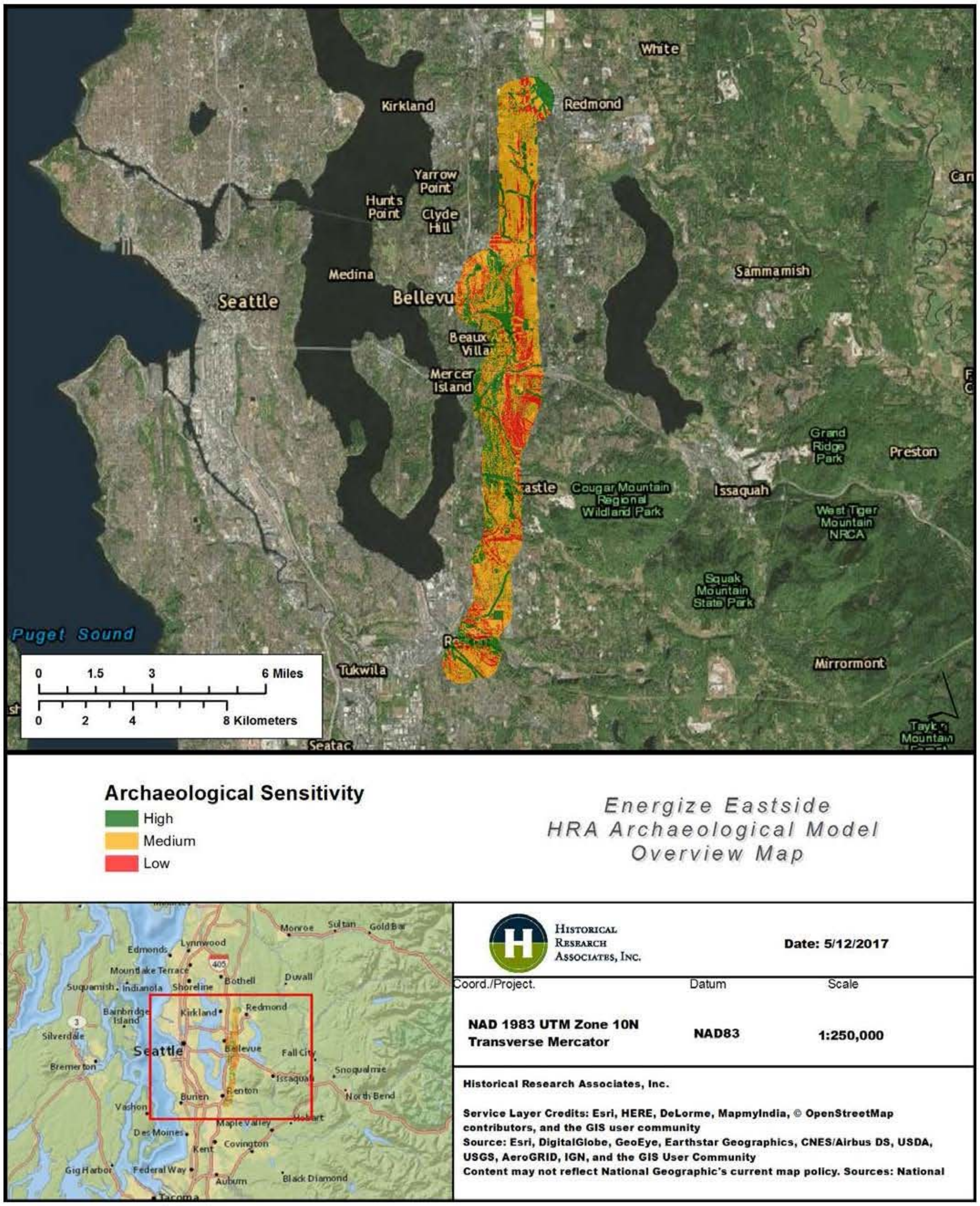

Figure 2. Overview of GIS model for archaeological sensitivity in the project.

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Low Sensitivity

The low sensitivity areas are locations with steep hillsides or those that were previously disturbed through landscape modifications (grading, paving, utilities, parking lots and medians, roadways, and residential and commercial buildings). In particular, the proposed Richards Creek Substation location is a partially cut away vacant, vegetated hillside. The low sensitivity areas equal 2,425 acres, totaling 18 percent of the model. Of the proposed 212 new pole locations, 73 are within low sensitivity areas.

Field Visit/Ground Truthing

On May 8 and 9, 2017, Jenny Dellert, MA, and Chrisanne Beckner, MS, conducted a field visit/ground truthing effort to help determine the strategy for the archaeological survey. The GIS modeling analysis was compared with field conditions in the project APE. Dellert and Beckner collected field notes and photographs of existing structures, including poles and substations, and overviews of the existing transmission line corridor. During the field visit, HRA compiled notes on the current field conditions with respect to the GIS modeling indications.

High Sensitivity

The GIS model indicates that the high sensitivity areas are near creeks, drainages, and a cemetery (Attachments A and B). However, in some of those areas, extensive grading, filling, and modifications for roadways, business parks, and existing utilities is evident. Additionally, one location with high sensitivity is within and adjacent to the Talbot Hill Substation. For safety reasons, no subsurface survey will occur in areas adjacent to the Talbot Hill Substation, due to the electrical grid that extends beyond the substation fence line. Of the high sensitivity locations, approximately 10 are within paved, previously disturbed, and/or inaccessible areas (such as the substations), and shovel probes (SPs) would not be feasible.

Medium Sensitivity

Pole locations in medium sensitivity areas span a variety of environments, such as a heavily vegetated corridor behind subdivisions and commercial lots and residential backyards (Attachments A and B). While the majority of the pole locations that are within areas of medium sensitivity may be feasible for SP excavation, approximately 16 are not, due to some pole locations being paved or within parking lot medians, or near underground utilities.

Low Sensitivity

The field visit confirmed HRA's modeling for low sensitivity areas had steep hillsides or previously disturbed through landscape modifications (grading, paving, utilities, parking lots and medians, roadways, and residential and commercial buildings). Many of the low sensitivity pole locations are near others with medium sensitivity where subsurface excavations are planned (Attachments A and B).

The proposed Richards Creek Substation location has a larger footprint and is in a location with a vacant, vegetated hillside that is partially cut away. Cultural material could be within the remaining portion of the hillside where excavation is planned. As such, HRA plans to conduct a subsurface survey at 15-meter (m) intervals within the proposed footprint of the Richards Creek Substation and associated access road, in areas where it is feasible to do so.

Utility Locates

PSE has contracted with APS and APSSM to survey and use ground penetrating radar (GPR) to relocate and provide a 3-dimensional (3-D) map of the OP. APS/APSS will also mark utilities within a 50 ft radius of the proposed pole replacement and new substation locations. The private utility locates will be conducted in areas that the public 811 service will not reach throughout the Project. HRA will coordinate with PSE and APS/APSSM regarding the private locates. Prior to archaeological fieldwork, HRA will arrange for 811 (public) utility locates to meet the requirements of Washington's Underground Utilities regulations (RCW 19.122). Field work will not be conducted until utility locates have been marked out.

Fieldwork

Pedestrian Transects

Using maps of the project alignment and design plans provided by PSE, HRA will conduct a 100 percent pedestrian survey within the within the 100-ft wide transmission line corridor, except for areas that are paved or inaccessible (i.e., property owners deny permission). Pedestrian transects will be spaced approximately 15 m apart. HRA will also conduct pedestrian survey along current unpaved access roads, new access route locations, staging areas, and other non-paved places outside of the corridor where ground disturbance may occur. During this survey, archaeologists will seek out and examine ground exposures (e.g., ditches, plowed areas). Ground visibility is expected to be poor in some portions of the transmission line corridor, due to heavy vegetation cover, which may conceal any archaeological materials present.

Shovel Probes

Shovel probes (SPs) shall measure 35–40 centimeters (cm) in diameter and will be excavated to undisturbed glacial materials or 100 cm, whichever is less, unless the water table or physical blockages intervene or buried utilities are present. In areas of ground disturbance with a high sensitivity for intact archaeological resources, HRA may excavate two or more SPs to further assess the potential for buried cultural materials, based on the discretion of the field director. Radial SPs will be excavated if archaeological resources are found, to help determine the site boundaries. Type and size of replacement poles (if not in-kind) may also increase the number of SPs excavated at each location. Larger areas of ground disturbance (e.g., stringing and wire set-up areas, access routes) may necessitate additional SPs.

Excavated sediment will be screened through ¼-in mesh. Sediment observed in each SP will be documented on standard HRA SP forms. Observations include but are not limited to: sediment grain size, presence of gravels, evidence of disturbance, and presence of cultural materials. Cultural materials found in each SP will be photographed using a digital camera. Each SP will be filled upon completion of documentation and its location will be noted using a GPS instrument.

As a safety precaution, HRA will not excavate within the existing substations or within a minimum buffer of 15–20 ft of the underground electrical grid system and will have a 10–15 ft buffer for the OP. Per OP requirements and PSE's request, HRA will coordinate with OP personnel prior to excavation near the pipeline.

High Sensitivity

Within the high sensitivity areas, there are approximately 25 new pole locations, 10 of which are within paved and/or inaccessible areas (such as the Talbot Substation). HRA proposes to excavate one SP at each of the remaining new pole locations within high sensitivity areas, where feasible. Additionally, other areas of ground disturbance such as access routes, which may be in high sensitivity locations, will also be probed. The size and locations of access routes and stringing and wire set-up areas have yet to be determined; therefore, HRA proposes to excavate SPs at 15-m intervals, where feasible.

Medium Sensitivity

Of the approximately 114 pole locations within medium sensitivity areas, approximately 16 are inaccessible due to substations, paving, and utilities, and are not be feasible to excavate. As such, HRA proposes to excavate one SP at each of the remaining new pole locations within medium sensitivity areas. Additionally, other areas of ground disturbance that may be in medium sensitivity locations, such as access routes and stringing and wire set-up areas, will also be probed. The size and locations of access routes and stringing and wire set-up areas have yet to be determined, therefore, HRA proposes to excavate SPs at 15-m intervals, where feasible, in these areas.

Low Sensitivity

No SPs will be excavated near new pole locations in low sensitivity areas. Many of these approximately 73 poles will be located on steep hillsides or in areas previously disturbed through landscape modifications (grading, paving, utilities, parking lots and medians, roadways, and residential and commercial buildings).

The proposed Richards Creek Substation is in an area of low sensitivity based on the GIS model; however, given the size of the planned ground disturbance, HRA plans to conduct a subsurface investigation here. The proposed footprint and access road for the Richards Creek Substation is approximately 8.5 acres, although some of this is a steeply sloped hillside. HRA proposes to excavate SPs at 15-m intervals within the proposed Richards Creek Substation and associated access road, where feasible based on field conditions.

Cultural Resources Inventory Forms

If archaeological materials are found, the location and the materials will be documented on a Washington Archaeological Site or Isolate Inventory form, as appropriate. Photographs will be taken to accompany the form and a sketch map will be prepared showing any intrasite resource patterns and the site in relation to the surrounding topography and developments. The location will be documented using a GPS instrument.

Cultural Resource Technical Report

HRA will prepare a Cultural Resources Technical Report summarizing the results of the architectural and archaeological inventories. The report will reflect professional standards for format and content as expressed in the guidelines prepared by DAHP and will include:

- A description of the project and applicable laws and regulations;
- A summary of the results of the background literature and records research;
- The methods used during the fieldwork and the results;
- A description of any cultural resources found;
- A summary assessment of potential effects to any identified resources based on our knowledge of the resource type, soil conditions, and extent to which the proposed project may affect the resource;
- Recommendations for completion of any additional cultural resources compliance obligations stemming from the results of our study;
- A summary of project procedures that should be followed in the event of an unanticipated discovery of buried cultural materials or human remains during construction; and
- References cited.

The report will include such tables, maps, photographs, and other graphics as are needed to depict the scope of the study and results. Forms for any recorded resources will be included in an appendix to the report.

PSE would appreciate your comments on the proposed APE and Archaeological Inventory Plan within 30 days of your receipt of this letter. If you have any questions or require more information, please contact me at elizabeth.dubreuil@pse.com or 425-462-3609.

We appreciate your attention to this matter.

Sincerely,

Elizabeth Dubreuil
Consulting Cultural Resource Scientist

Attachment A. GIS Model Topographic Mapbook

Attachment B. GIS Model Aerial Mapbook

HISTORICAL RESEARCH ASSOCIATES, INC.

August 18, 2017

Kim Dietz, Senior Planner/Historic Preservation Officer
City of Redmond
PO Box 97010, MS 4SPL | Redmond WA 98073-9710

Re: Fieldwork Notification: Cultural Resources Inventory for the PSE Energize Eastside Project, King County, Washington

Dear Ms. Dietz:

This notification is to inform you that the archaeological survey for the Puget Sound Energy (PSE) Energize Eastside Project (Project), King County, Washington will begin next week on Thursday, August 24th. The project will build a new substation and upgrade approximately 18 miles of existing transmission lines from Redmond to Renton. Combined with continued aggressive electric conservation, Energize Eastside will keep the lights on in our Eastside communities for years to come. For more details on the project and to view the interactive map, visit pse.com/energizeeastside.

Historical Research Associates, Inc. (HRA), was tasked by PSE to provide cultural resources services for the Project. The proposed Project is located in Township 23 North, Range 5 East, Sections 4, 9, 16, 20, and 21; Township 24 North, Range 5 East, Sections 2, 3, 9, 10, 15, 16, 21, 28, and 33; and Township 25 North, Range 5 East, Sections 3, 10, 15, 22, 27, and 34, Kirkland, Mercer Island, and Renton USGS Topographic Quadrangles, Willamette Meridian (Figure 1).

The archaeological survey schedule for the Project will generally be Monday-Friday, from approximately 8:00am to 5:00pm, and is anticipated to extend from August until October 2017. We invite you to visit the Project at any time during the survey should you wish to do so.

Please contact me at (206) 343-0226 ext. 26 (office), (360) 509-8526 (cell), or jdellert@hrassoc.com, at your earliest convenience if you have any questions, need additional information, or would like to be present during fieldwork. Also, feel free to contact Elizabeth Dubreuil, PSE Consulting Cultural Resource Scientist, at elizabeth.dubreuil@pse.com or (425) 462-3609.

Sincerely,
Jenny Dellert
Jenny Dellert
Project Archaeologist

Enclosure
Cc: Victoria Sharp, PSE; Elizabeth Dubreuil, PSE; Brad Strauch, PSE; Diann Strom, PSE

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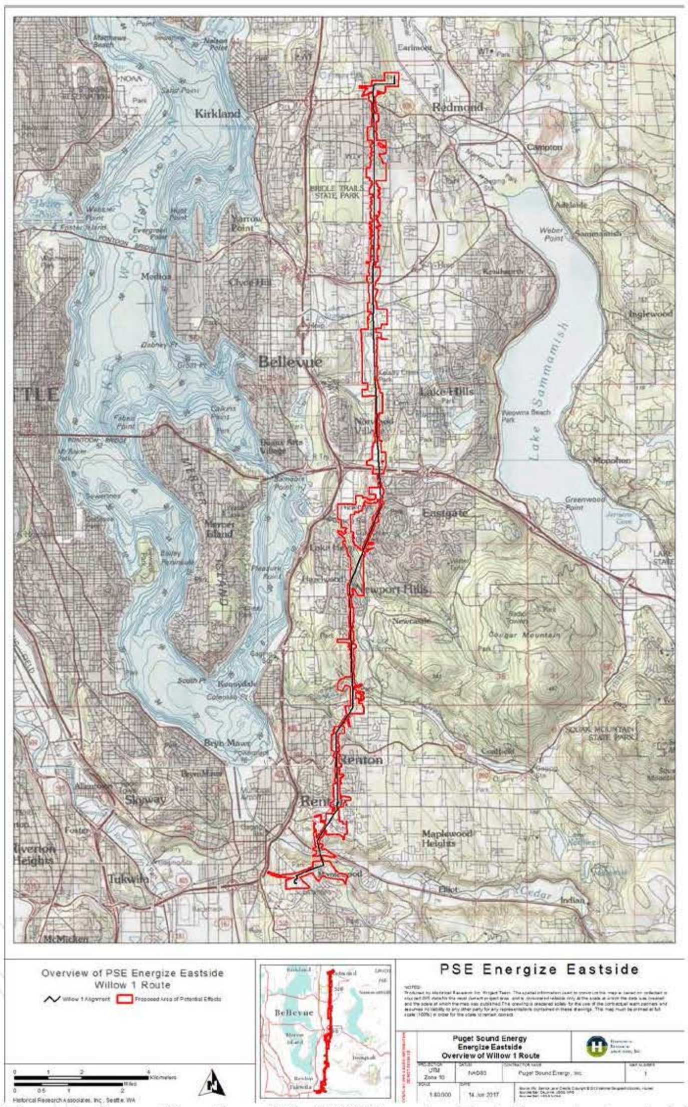

Figure 1. General location of the PSE Energize Eastside project and vicinity.

Appendix H:
Supplemental Information: EMF

energize
EASTSIDE
EIS

APPENDIX H. SUPPLEMENTAL INFORMATION: ELECTRIC AND MAGNETIC FIELDS

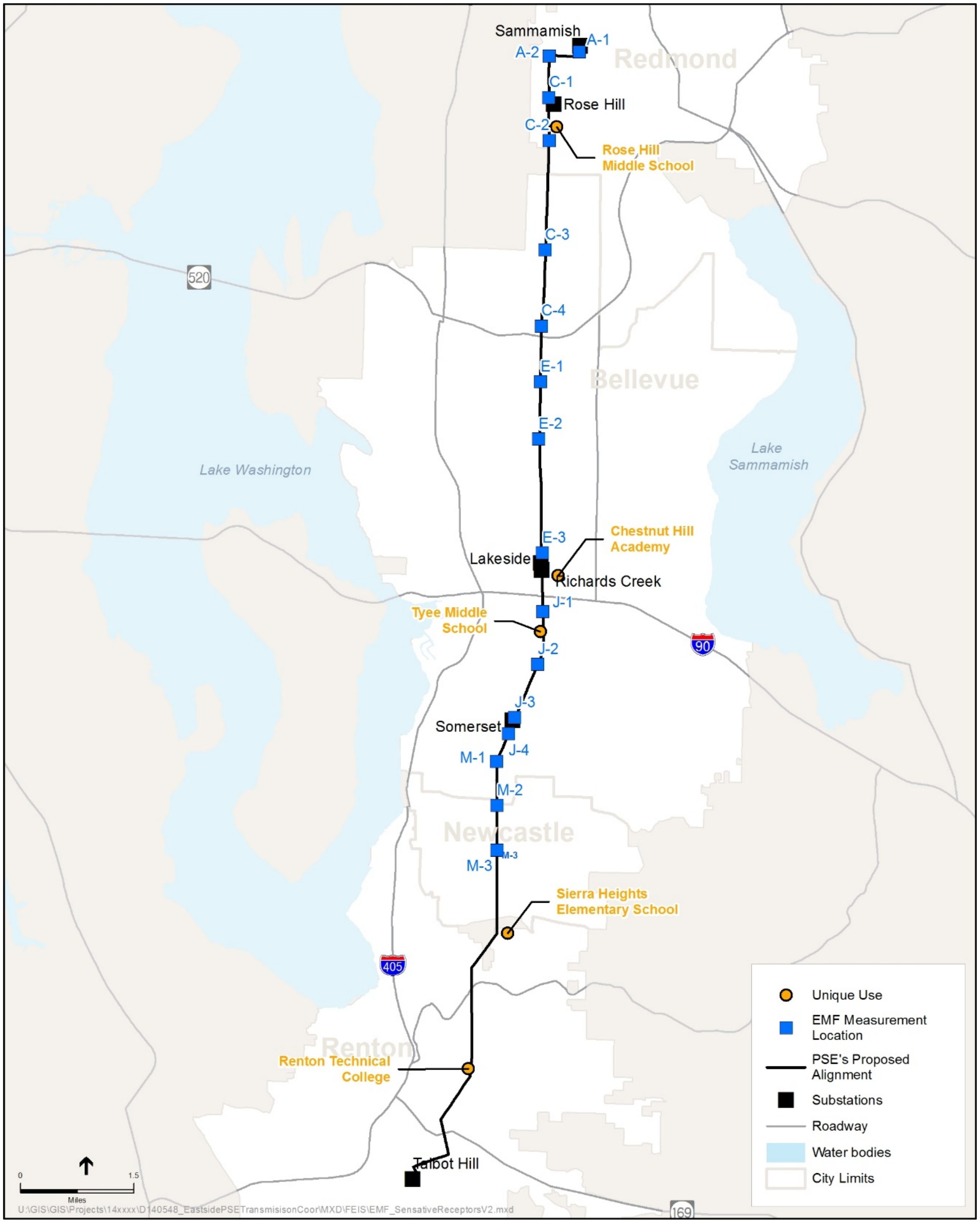

Figure H-1. Unique Uses in the EMF Study Area

Appendix I: Supplemental Information: Pipeline Safety

energize EASTSIDE EIS

APPENDIX I. SUPPLEMENTAL INFORMATION: PIPELINE SAFETY

APPENDIX I-1: PIPELINE INCIDENTS

The two pipeline incidents that led to the passage of the Pipeline Safety Improvement Act of 2002 and the current pipeline integrity management rules are as follows:

- **Bellingham, Washington, June 10, 1999.** According to the National Transportation Safety Board (NTSB) accident report, *"About 3:28 p.m., Pacific daylight time, on June 10, 1999, a 16-inch diameter steel pipeline owned by Olympic Pipe Line Company (Olympic) ruptured and released about 237,000 gallons of gasoline into a creek that flowed through Whatcom Falls Park in Bellingham, Washington. About one and one half hours after the rupture, the gasoline ignited and burned approximately one and one half miles along the creek. Two 10-year-old boys and an 18-year-old man died as a result of the accident. Eight additional injuries were documented. A single-family residence and the City of Bellingham's water treatment plant were severely damaged. As of January 2002, Olympic estimated that total property damages were at least $45 million.*

  The major safety issues identified during this investigation were excavations performed by IMCO General Construction, Inc., in the vicinity of Olympic's pipeline during a major construction project and the adequacy of Olympic Pipe Line Company's inspections thereof; the adequacy of Olympic Pipe Line Company's interpretation of the results of in-line inspections of its pipeline and its evaluation of all pipeline data available to it to effectively manage system integrity; the adequacy of Olympic Pipe Line Company's management of the construction and commissioning of the Bayview products terminal; the performance and security of Olympic Pipe Line Company's supervisory control and data acquisition system; and the adequacy of Federal regulations regarding the testing of relief valves used in the protection of pipeline systems." (NTSB, 2002).

- **Carlsbad, New Mexico, August 19, 2000. Per the National Transportation Safety Board accident report,** *"At 5:26 a.m., mountain daylight time, on Saturday, August 19, 2000, a 30-inch diameter natural gas transmission pipeline operated by El Paso Natural Gas Company ruptured adjacent to the Pecos River near Carlsbad, New Mexico. The released gas ignited and burned for 55 minutes. Twelve persons who were camping under a concrete-decked steel bridge that supported the pipeline across the river were killed and their three vehicles destroyed. Two nearby steel suspension bridges for gas pipelines crossing the river were extensively damaged. According to El Paso Natural Gas Company, property and other damages or losses totaled $998,296.*

  The major safety issues identified in this investigation were the design and construction of the pipeline, the adequacy of El Paso Natural Gas Company's internal corrosion control program, the adequacy of Federal safety regulations for natural gas pipelines, and the adequacy of Federal oversight of the pipeline operator." (NTSB, 2003).

References

NTSB (National Transportation Safety Board). 2002. Pipeline Rupture and Subsequent Fire in Bellingham, Washington, June 10, 1999. Pipeline Accident Report NTSB/PAR-02/02. Washington, D.C.

NTSB (National Transportation Safety Board). 2003. Pipeline Rupture and Subsequent Fire near Carlsbad, New Mexico, August 19, 2000. Pipeline Accident Report NTSB/PAR-03/01. Washington, D.C.

APPENDIX I-2: BP PIPELINES CONSTRUCTION REQUIREMENTS (2016 VERSION)

OLYMPIC PIPE LINE COMPANY / BP PIPELINES NA INC

GENERAL CONSTRUCTION & RIGHT OF WAY REQUIREMENTS

Olympic Pipe Line Company ("OPLC"), which is operated by BP Pipelines (North America) Inc. ("BP"), is committed to environmental stewardship and maintaining the safety of its employees, contractors and the general public. The pipelines BP/OPLC operates transport various liquids at high pressure, and do so very safely each and every day. There are however, potential hazards associated with construction or excavation work around pipelines. As a result of these potential hazards, and in compliance with the requirements imposed upon BP/OPLC as an industry regulated by the U.S. Department of Transportation and Office of Pipeline Safety, the following list of general requirements for working on the Pipeline rights-of-way has been compiled.

General Safety Requirements

- Washington and Oregon Underground Utility Locating Services "One Call" must be contacted at least 48 hours (2 business days following the placement of the call) before any construction and or excavation activities are initiated within the pipeline right of way so that OPLC may have a representative present to ensure that there are no conflicts with the pipeline. The **One Call number in Washington and Oregon is "811"** or, you may enter a ticket online at www.callbeforeyoudig.org. There is no cost to the third party contractor to use the One-Call Notification service. However, failure to utilize the One-Call service can be quite costly in terms of unnecessary risk for the contractor/excavator, their employees, innocent bystanders, personal property of other and the environment; as well as potential civil penalties and/or fines (Washington State RCW 19.122.030 and Oregon State OAR 952-001-0050.)

- To have the pipeline physically located and depth verified, please call OPLC's 3rd Party Supervisor Representative at **(312) 809-3235.**

- OPLC requires a representative/inspector on site when any work is being performed within ten feet (10') of the pipeline(s) or if the reach of mechanized equipment is capable of extending within ten feet (10') of the pipeline(s). Forty-eight (48) hours (2 working days) prior notice to OPLC is highly recommended for any work. Notice to OPLC does not relieve the contractor of any notification responsibility to the appropriate state One-Call System.

- OPLC requires submission of detailed construction plans and/or drawings for any work within the pipeline easement at least 10 business days in advance of construction for review and comment. Plans and drawings should be sent to Olympic Pipe Line Company, c/o BP Pipelines (N.A.) Inc., 30 S. Wacker Dr., Suite 900, Chicago, IL 60606.

- The contractor is responsible for having the pipeline location added to the construction drawings. The contractor is also responsible for taking all the necessary safety precautions and will be held responsible for any damages caused to the pipeline or property as a result of their work.

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Excavation Specific Requirements

- No excavation or construction activity will be permitted in the vicinity of the pipeline(s) until all appropriate communications have been made with OPLC's field projects and engineering personnel.
- There shall be no excavation or backfilling within the pipeline right of way for any reason without a representative from OPLC on-site stating permission.
- In some instances, excavation and other construction activities around certain pipelines may be conducted safely only when the pipeline operating pressure has been reduced. Contractors are therefore cautioned that excavation which exposes or significantly reduces the cover over a pipeline may have to be delayed until the reduced pressure is achieved.
- Vacuum excavation or hand digging is required within 24-inches of the pipeline.

General Construction Activities

- The contractor shall not be permitted to transport construction materials or equipment longitudinally over the pipeline.
- Any required relocation or encasement of the pipeline(s) will be at the developer's expense.
- Development grading should not remove any of the existing ground cover from; or add excessive fill over the pipeline(s). OPLC's prior approval to add fill is required.
- Where it is necessary for construction equipment (i.e. tractors, backhoes, dump trucks etc.) or equipment transporting construction materials to cross the pipeline to gain access to the job site, a crossing shall be constructed at a 90 degree angle to the pipeline. The contractor will be responsible for protecting the pipeline depending on depth, soil conditions and type of equipment for temporary or permanent crossings using either fill or steel sheeting. These methods must meet OPLC's requirements and have prior approval from our Engineering and Construction Department.
- No track type construction equipment shall be permitted to pivot or turn directly over the top of the pipeline.
- A scraper or pan type tractor shall not be used for removal of soil within ten feet (10') of the centerline of the pipeline. Rubber tire or small track type equipment is an acceptable alternative.
- A sheepsfoot roller shall not be used for compaction purposes within five feet (5') of the centerline of the pipeline.
- No vibratory rollers shall be used within three feet (3') of the centerline of the pipeline until the compacted cover over the pipeline has reached a depth of three and one-half feet (3 ½).

Parking Lots, Roads, Driveways, Fences and Structures

- No permanent structures may be constructed on the pipeline right of way.
- No roads or driveways shall run parallel to the pipeline within the pipeline right of way. Prior approval is required for a road or driveway to cross the pipeline right of way. The preferred angle of crossing is 90 degrees. In no instance shall the angle of the crossing be less than 45 degrees.
- A minimum of five and one-half feet (5-1/2') of cover is required for all road crossings, and three feet (3') for residential driveways; however a stress factor calculation will be performed by OPLC to determine the actual amount of cover required depending on soil conditions and other circumstances. This depth of cover requirement also pertains to logging roads and other temporary access roads.
- No fence shall be constructed to run parallel to the pipeline within the pipeline right of way. Prior approval is required for all fence construction crossing the pipeline right of way. Fence posts must maintain a minimum three feet (3') clearance off the side of the pipeline(s) when crossing the easement. The preferred angle of crossing is 90 degrees. In no instance shall the angle of the crossing be less than 45 degrees. Privacy fences may be allowed in some circumstances, but must be constructed to accommodate state and federal

requirements to allow the pipeline operator visual and/or physical access to the pipeline right of way. Such accommodation may include the installation of gates, or cyclone fencing across the right of way.

- Two feet (2') of vertical separation is required between the pipeline and any underground structure.
- Proposals for parking lot construction on the pipeline right of way are discouraged. Asphalt paving may be permitted as an exception under certain conditions with an agreement executed by the property owner and OPLC. The agreement grants OPLC the right to excavate within the pavement area for any pipeline maintenance that may be necessary in the future and acknowledges the property owner as the party responsible for the expense of pavement replacement. If a parking lot is permitted by OPLC a minimum of four feet (4') of cover will be required. However OPLC will evaluate each proposal on an individual basis, and may impose additional requirements.
- Concrete pavement is discouraged; and in most instances will not be allowed. Prior approval is required.
- A minimum of four feet (4') of cover is required for all drainage ditches.
- No structures such as manholes, catch basins, thrust blocks or fire hydrants shall be located over the pipeline. A minimum horizontal clearance of ten feet (10') is required between the structure and pipeline.

Foreign Line or Utility Crossings

- All foreign lines shall cross the pipeline right-of-way at, or as near to, a 90 degree angle as is feasible.
- In no instance shall the angle of the crossing be less than 45 degrees.
- In no instance shall the foreign line be placed parallel to the pipeline within the pipeline right-of-way.
- The foreign line shall cross under the pipeline with at least two feet (2') of vertical separation unless the pipeline is at a prohibitive depth. In such cases, OPLC personnel will review and evaluate the proposed crossing location to determine if it will be allowable for the foreign line to cross above.
- If the foreign line is a telecommunications cable, power cable or similar in nature, the foreign line shall be placed in Schedule 40 PVC conduit, or greater, for a linear distance extending ten feet (10') on either side of centerline of the pipeline. In the case of a power cable it shall be encased in red-dyed concrete for a linear distance of ten feet (10') on either side of centerline of pipeline.
- A utility with a cathodically protected foreign line which crosses or is placed adjacent to OPLC's pipeline(s) must install a test point and perform interference testing between the utility and OPLC. Please contact OPLC's Corrosion Technician at (425) 761-6975.
- Below ground warning tape shall be placed in the ditch line above the foreign line. The warning tape shall be placed approximately one foot (1') below the final surface grade/elevation. The warning tape shall extend for a linear distance of ten feet (10') on either side of the centerline of the pipeline.

Landscape and Vegetation

- No trees are allowed on the pipeline right of way. OPLC may permit the installation of limited landscaping and minor shrubbery plantings with a written communication. For major development, landscaping plans must first be submitted in writing to OPLC for review and approval. Any plantings that restrict efficient aerial inspection or limit access to the easement area will be considered an interference and must be addressed accordingly. Plants with intrusive root systems that could potentially grow to interfere with the pipeline are not permitted.

OPLC reserves the right to impose further stipulations or requirements consistent with each individual easement or situation. Should you anticipate any problems regarding these requirements please contact OPLC's 3rd Party Supervisor Representative at (312) 809-3235.

APPENDIX I-3: OLYMPIC DATA REQUEST AND RESPONSES (FOR ENERGIZE EASTSIDE EIS PIPELINE RISK ASSESSMENT)

EDM Services, Inc.

March 29, 2017
Energize Eastside – OPL Data Request

SYSTEM SAFETY AND RISK OF UPSET – OPL DATA REQUEST

LEAK DETECTION, ISOLATION, SHUTDOWN CONTROLS

Please provide a detailed description of the existing leak detection system, automated systems, shut-down system and other controls being proposed. Specifically,

- How does the leak detection system operate and function?
- What is the sensitivity of the leak detection alarms? For example, for a given size release flow rate, how long does it take for the release to be recognized and sound an alarm? How long is the communication and poling cycle to activate shut down via the SCADA system?
- Where are valves located on either side, and within the line segment where the proposed overhead high voltage power lines located? How are these valves actuated (e.g., manual valves, remotely actuated, automatic shut-down, etc.)?
- In the event of a release on this segment, please describe how the release would be identified and how the segment would be isolated.

Olympic Pipe Line Company's ("Olympic's") Pipeline Leak Detection System (PLDS) has been in service in the Olympic control center since the early 1990's making Olympic an early adopter of computerized leak detection. PLDS coverage includes all Olympic meter bound main and lateral pipelines.

PLDS is a real-time pipeline simulation that detects and locates leaks by comparing a modeled packing rate to the measured flow balance in a defined pipeline section. When the difference exceeds a defined loss threshold, the software declares a warning. If the condition persists, an alarm is declared. Alarms are communicated through the SCADA alarm and event system. Olympic's enterprise SCADA System covers 60 sites over its roughly 400 miles of main and lateral pipeline segments. PLDS is a separate software package but is integrated with the SCADA software.

Olympic's PLDS exceeds state and federal requirements for pipeline leak detection including WAC 480-75-300 ("Leak detection systems must be capable of detecting an eight percent of maximum flow leak within fifteen minutes or less").

Specific details regarding the precise type and location of Olympic's valves and related facilities within this segment is treated as confidential information not available for public disclosure due to potential security risks. See Northwest Gas Association v. WUTC, 141 Wn.App. 98, 168 P.3d 443 (2007), rev. denied, 163 Wn.2d 1049 (2008).

PIPELINE DESCRIPTION

Please provide a detailed description of the pipeline components along this corridor. For example,

Please provide a description of the supervisory control and data acquisition system (SCADA).

See above description.

Please describe the operating and emergency response procedures for the following situations: electrical power loss, loss of communications, leak response, fire response, explosion response, emergency shutdown, and any other situations deemed critical.

Olympic maintains a 24-hour Emergency Hotline (1-888-271-8880). Olympic is willing to make available for review at its offices its current manual for responding to emergencies involving its pipeline and facilities. The manual is based on the Northwest Area Contingency Plan, as approved by the Washington State Department of Ecology and the federal Pipeline and Hazardous Materials Safety Administration. Olympic also is willing to make available for review at its offices its Damage Prevention Program and Procedures.

Specific details regarding Olympic's emergency response procedures are treated as confidential information not available for public disclosure due to potential security risks. See Northwest Gas Association v. WUTC, 141 Wn.App. 98, 168 P.3d 443 (2007), rev. denied, 163 Wn.2d 1049 (2008).

What, if any, measures are used which exceed the minimum requirements of 49 CFR 195 to minimize the likelihood of leaks from the major causes (e.g., external corrosion, internal corrosion, 3rd party damage, operating error, design flaw, equipment failure, weld failure, etc.)?

Olympic exceeds regulatory requirements, to varying degrees, in the majority of its integrity management programs.

What risks do you foresee during the construction and operation of the proposed high voltage power lines within this pipeline corridor? What mitigation is proposed to address these risks, both during construction and operation?

Pipelines and AC power lines often share the same utility corridor and standard mitigation measures have been developed within the industry to minimize any risks associated with construction and joint operation within the corridor.

In any situation in which construction requires excavation in close proximity to the pipeline there are a number of measures to minimize the risk of physical damage to the pipeline. To address the potential risk of damage caused by third-party excavations the Washington legislature enacted the "one-call" locator service law (RCW ch. 19.122). Under the one-call program, anyone planning to excavate near an underground utility is required to provide advance notice of the excavation by calling a designated central number. The affected utility is then notified and required to monitor the excavation work to ensure no damage is done. Consistent with these requirements, if a project is within 100 feet of Olympic's pipeline, its Damage Prevention Team will meet with the construction team onsite at the start of the project and weekly thereafter to reinforce the importance of following established safety protocols. The Damage Prevention Team also will be on-site to monitor the excavation project any time equipment with the ability to reach within 10 feet of the pipeline is being used. While the relevant federal regulations generally require at least 12 inches of clearance between a pipeline and any underground structures,[1] Olympic's practice is to double the federal standard and ensure at least 24 inches of clearance.

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[1] The relevant regulation, 49 CFR 195.250 (Clearance between pipe and underground structures) provides that:

The risk of damage from imposed weight loading during construction can also be reduced through monitoring by Olympic's Damage Prevention Team, as well as engineering review of any planned equipment crossings prior to commencement of work.

There are also a number of proven practices and guidelines used by the industry to successfully mitigate potential AC interference-related-corrosion on pipelines. Olympic has a program to actively monitor and, where necessary, mitigate the impact of AC interference on its pipelines. As part of this program, AC interference is currently monitored in the segment of the pipeline at issue. AC grounding systems are commonly installed in connection with power transmission towers to safely dissipate any energy to ground and, as the project plans evolve, Olympic will undertake an engineering analysis to assess the necessity for installation of similar systems along the pipeline.

What is the wall thickness(s), pipe grade(s), diameter, etc. of this segment(s)?

The Allen to Renton 16" line typical dimensions are 0.312 wall thickness, API 5L X52 grade, with an outside diameter of 16". There are small sections of re-routes that may have an increased wall thickness or a higher grade.

The Allen to Renton 20" line typical dimensions are 0.250 wall thickness, API 5L X52 grade, with an outside diameter of 20". There are small sections of re-routes that may have an increased wall thickness or a higher grade.

When was the pipeline(s) originally constructed?

The Allen to Renton 16" line was constructed in 1965.

The Allen to Renton 20" line was constructed in 1972 to 1974.

How is this line(s) cathodically protected?

The lines are cathodically protected primarily with overlapping impressed current systems.

What type of external coating(s) is installed?

The majority of the Allen to Renton 16" and 20" pipelines are coated with coal tar enamel.

When was this line(s) last hydrostatically tested? What was the test pressure? When is the next hydrotest scheduled?

Allen to Renton 16" - 2001. Tested to 1806 psi.

Allen to Renton 20" - 1974. Tested to 1157 psi.

Any pipe installed underground must have at least 12 inches (305 millimeters) of clearance between the outside of the pipe and the extremity of any other underground structure, except that for drainage tile the minimum clearance may be less than 12 inches (305 millimeters) but not less than 2 inches (51 millimeters). However, where 12 inches (305 millimeters) of clearance is impracticable, the clearance may be reduced if adequate provisions are made for corrosion control.

There are no scheduled hydrotests since we use internal inspection tools to monitor the integrity of the pipeline.

When was this line(s) last internally inspected? What type of inspection tool(s) was employed? When is the next internal inspection scheduled?

The last inspections of the Allen to Renton 16" and 20" pipelines were in April of 2014 using a high resolution deformation and hi resolution magnetic flux leakage tool. The next planned inspection is in early 2019.

What is the normal (excluding line crossing and special features) depth of cover?

Typical depth of cover is 3' to 4'.

What percentage of the circumferential welds were radiographically inspected during original construction?

Inspections were conducted per industry requirements at the time of original construction. Radiographic inspection of circumferential welds was not industry practice at that time. Both pipeline segments were subjected to post construction hydrotests that were at least 1.25 times MOP.

Does this line segment contain any ERW pipe? If so, please provide year of manufacture and other data?

There is no ERW pipe installed within the segment at issue.

OPERATION

Please describe the normally operating parameters, including:

Please provide a list of the refined petroleum products normally transported through this pipeline(s).

Gasoline, diesel, and jet fuel.

How often is the pipeline(s) operational (e.g., percentage of the time)?

Over 95%

When in operation, what is the normal operating pressure?

Allen to Renton 16" - 500 to 800 psi

Allen to Renton 20" - 300 to 500 psi

What is the maximum operating pressure (MOP)?

Allen to Renton 16" - 1265 psi maximum discharge pressure from Woodinville Station.

Allen to Renton 20" - 928 psi maximum discharge pressure from Allen Station.

When the line is not operational, what is the pressure within this segment?

Allen to Renton 16" - 300 - 500 psi

Allen to Renton 20" - 300 - 500 psi

EMERGENCY RESPONSE

What is the anticipated range of response times to various locations along this pipeline segment?

Response times will vary depending not only on location, but also by type of event and traffic conditions. Access to the pipeline along the relevant segment is quite good, which can significantly reduce response times. Members of Olympic's Damage Prevention Team are located nearby at all times and are able to respond to certain types of events as quickly as traffic permits. During normal working hours, Olympic has qualified personnel located to the North and South of this segment, at its facilities in Woodinville and Renton, respectively. Outside of normal working hours, Olympic has on-call personnel who live in close proximity to this segment. Finally, Olympic has contracted with the National Response Corporation – Environmental Services (NRCES) to respond anywhere along its pipeline system within 2 hours.

Please describe the emergency response measures to be employed should a leak occur where the refined petroleum product could migrate beyond the corridor.

Olympic maintains a 24-hour Emergency Hotline (1-888-271-8880). Olympic is willing to make available for review at its offices its current manual for responding to emergencies involving its pipeline and facilities. The manual is based on the Northwest Area Contingency Plan, as approved by the Washington State Department of Ecology and the federal Pipeline and Hazardous Materials Safety Administration. Olympic also is willing to make available for review at its offices its Damage Prevention Program and Procedures.

Specific details regarding Olympic's emergency response procedures are treated as confidential information not available for public disclosure due to potential security risks. See Northwest Gas Association v. WUTC, 141 Wn.App. 98, 168 P.3d 443 (2007), rev. denied, 163 Wn.2d 1049 (2008).

Please describe the emergency response procedures to be employed should an evacuation become necessary.

In the event of an evacuation on the pipeline right-of-way, local first responders and the Olympic Pipeline team would set up exclusion zones. Door to door notifications would be made to impacted homeowners. Air monitoring would be utilized and documented throughout the entirety of the incident to ensure the exclusion zones are properly identified in accordance with the conditions of the day (wind speed, direction, etc.).

ALIGNMENT SHEETS

May need to request pipeline alignment drawings for the existing OPL pipeline(s) within the overhead power line corridor to support the quantitative risk assessment. If determined needed, we will provide a follow-up request specifying for which segments.

APPENDIX I-4: PSE ENERGIZE EASTSIDE CORRIDOR SAFETY FAQ SHEET

PSE PUGET SOUND ENERGY

energize**EASTSIDE**

corridor safety

September 2016

Safety is PSE's top priority

As the largest natural gas utility in Washington, we understand pipeline safety concerns and employ safe procedures when working near pipelines. PSE approaches every project – from the smallest natural gas service installation to the largest transmission line – with the same priority: the safety of our customers, the communities we work in, and our fellow co-workers.

For Energize Eastside, PSE will continue to follow all safety regulations to maintain safety in the corridor. This includes building and operating the project to meet strict federal standards that govern both pipeline and transmission line infrastructure.

PSE and Olympic's infrastructure have safely coexisted in the corridor for decades

The backbone of our transmission system on the Eastside shares a utility corridor with Olympic Pipe Line Company's (Olympic) underground petroleum pipelines. It's been this way for more than 40 years, and co-locating utilities is encouraged by many Eastside jurisdictions.

PSE and Olympic working together

Both PSE and Olympic have a mutual interest in the continued protection and safe operation of facilities in the shared utility corridor.

We have a long history of working closely together. This close coordination ensures mutual safety of our infrastructure and of neighbors adjacent to and near the corridor.

Focus on safety in design, construction and operations

Safety is critical to Energize Eastside's design. Newer technology and strict safety requirements allow PSE to build to the highest safety standards, which our design will meet or exceed. Our engineers are rigorously

In 2016, we coordinated with Olympic on the work plan and safe construction practices to replace two poles in Newcastle.

analyzing the design for Energize Eastside to ensure safe construction and operation of the line within the shared corridor.

We're working with DNV-GL, a leading national expert in pipeline safety, to assist with developing design parameters to help ensure the safe operation of the co-located utilities. As we get to construction, our engineers will work closely with Olympic to develop a project-specific safe construction plan. Construction will entail installation of new, longer-lasting equipment, and fewer poles that will typically be farther away from the pipeline than the poles are today.

Once construction ends, PSE and Olympic's safety coordination continues through day-to-day operations and ongoing communication.

Frequently Asked Questions

What steps will PSE and Olympic take during and after construction to keep me and my family safe?

Our engineers will work closely with Olympic on a safe construction plan that may include:

- Having an Olympic representative on-site to monitor construction activities near the pipeline

- Installing temporary fencing or other markers around the pipeline area
- Placing a temporary protective cover (e.g., steel plates) over the pipeline to mitigate excessive load from heavy equipment
- Using specialized equipment or hand-digging within close proximity to the pipeline

Having worked with Olympic for decades, PSE knows firsthand that Olympic employs stringent standard operating practices, including:

- Using a cathodic protection system to suppress corrosion
- Meeting with Olympic's Damage Prevention Team on site at the start of the project and weekly thereafter if a project is within 100 feet of the pipeline to reinforce established safety protocols
- Requiring a Damage Prevention Team to be on site during any excavation within 10 feet of the pipeline

Once construction ends, PSE and Olympic's safety coordination will continue through day-to-day operations. This includes ongoing communication to keep each other informed of activity in the corridor. Additionally, Olympic regularly inspects its pipeline and monitors its operation 24 hours a day.

Who regulates PSE and Olympic to ensure they are implementing safety procedures correctly?

Interstate pipelines, whether they transport natural gas or liquid petroleum products, are held to both state and federal safety regulations administered by the:

- Federal Energy Regulatory Commission
- US Department of Transportation's Pipeline and Hazardous Materials Safety Administration
- Washington State Department of Transportation
- Washington Utilities and Transportation Commission

Are there safeguards in place if extreme weather such as earthquakes or lightning affect the corridor?

As with all of our projects, our design will meet or exceed industry standards and address seismic activity, high winds, ice and lightning. For example, to protect against lightning, our designs call for grounding the poles and using shield wires to disperse current safely and to avoid affecting the pipelines.

Can you give more examples of PSE and Olympic working together?

- In 2007 and 2008, PSE worked with Olympic to replace more than 130 poles and reframe more than 200 poles in this corridor and others.
- In 2015, PSE successfully completed more than 50 geotechnical investigation borings within the existing corridor. Half of these geotechnical borings took place in the vicinity of the Olympic pipeline.
- In June 2016, we replaced two poles adjacent to the pipelines to address an imminent safety concern created by the construction of new apartments in Newcastle. We met onsite with Olympic's Damage Prevention Team to review construction activities to help ensure safe construction practices were followed.

Interested in learning more?

- Learn more about Energize Eastside and pipeline safety at **pse.com/energizeeastside**
- For information about Olympic's safety practices, visit the Pipeline and Community Safety page at **bp.com/en_us/bp-us/what-we-do/bp-pipelines/pipeline-and-community-safety.html**

Thank you for your interest in Energize Eastside.

pse.com/energizeeastside 1-800-548-2614 energizeeastside@pse.com

APPENDIX I-5: ENERGIZE EASTSIDE EIS PIPELINE SAFETY TECHNICAL REPORT (PREPARED BY EDM SERVICES)

[note – no revisions have been made to the version as presented in the Phase 2 Draft EIS; therefore, the full study is not reprinted here. See Appendix I-5 of the Phase 2 Draft EIS for the full study]

APPENDIX I-6: PIPELINE SAFETY REGULATIONS

Regulation	Summary
Federal	
Pipeline Safety Act of 1968 (49 United States Code [USC] Section 60101)	Granted authorization to the U.S. Department of Transportation to develop minimum safety standards for natural gas pipelines.
Hazardous Liquid Pipeline Safety Act of 1979 (Public Law 96-129)	Granted authorization to the U.S. Department of Transportation to develop minimum safety standards for oil and hazardous liquid pipelines.
49 CFR, Parts 190 through 199	U.S. Code sections that cover pipeline safety.
49 CFR Part 195	Transportation of Hazardous Liquids by Pipeline (the primary U.S. Code section addressing hazardous liquid pipeline safety).
Pipeline Safety, Regulatory Certainty, and Jobs Creation Act of 2011 (Public Law 112-90)	Increased the number of pipeline inspectors and mandated a variety of new safety measures. Required studies of pipeline safety.
Protecting Our Infrastructure of Pipelines and Enhancing Safety Act of 2016	Reauthorized the Pipeline Safety, Regulatory Certainty, and Jobs Creation Act of 2011; reaffirmed mandates of the 2011 act; and established new mandates.
Pipeline Safety Improvement Act of 2002 (CFR 192 Subpart O, Pipeline Integrity Management)	Strengthened federal pipeline safety programs, state oversight of pipeline operators, and public education regarding gas pipeline safety. Required gas pipeline operators to conduct a risk assessment and implement integrity management programs for pipelines in *high consequence areas*.
Oil Pollution Act of 1990 (49 CFR Part 194)	Expanded EPA's oversight of oil storage facilities and vessels. Required some oil storage facilities to prepare Facility Response Plans.
2006 Pipeline Inspection, Protection, Enforcement and Safety Act (Public Law 109-468)	Created state grant system to improve damage prevention programs, and established the national "Call Before You Dig" program. Required a review of the adequacy of federal pipeline safety regulations related to *internal corrosion* control.

Regulation	Summary
State	
WAC, Title 480, Chapter 480-75, Hazardous Liquid Pipelines	Adopted the federal hazardous liquids pipeline regulations.
Underground Utilities – Damage Prevention Law (RCW 19.122)	Established a comprehensive damage prevention program. Required pipeline companies, underground facility owners, and excavators to participate in protecting the public health and safety when excavating.
WAC 173-182 – Oil Spill Contingency Plan	Established covered vessel and facility oil spill contingency plan requirements, drill and equipment verification requirements, primary response contractor standards, and recordkeeping and compliance information.
Local	
Redmond Zoning Code (RZC) 21.26.040 Setback Requirements	Established minimum setback requirements from the hazardous pipeline corridors. Purpose is to minimize risk to public health, safety, and welfare due to hazardous liquid pipelines. No construction or expansion of structures is allowed in the pipeline corridor. No setback is required for utilities for areas along the hazardous liquid corridor, but the Director of Planning and Community Development (or their designee) may require a setback based on site-specific conditions.
Renton Municipal Code (RMC) 4-3-070 (Pipeline Notice)	Requires notice on title for development within 500 feet of liquid or gas pipelines.

J

Appendix J:
Phase 1 Comments and Responses

energize EASTSIDE EIS

APPENDIX J-1.
COMMENTS AND RESPONSES FOR THE PHASE 1 DRAFT EIS

Contents

Introduction

This appendix describes and responds to the comments received on the Phase 1 Draft EIS, which was published in January 2016. This appendix was prepared to satisfy SEPA requirements as specified in WAC 197-11-560. The following is a summary of public comments received on the Phase 1 Draft EIS and responses to those comments. The comments received covered a range of topics or themes, and reflect a variety of requests, perspectives, issues of concern, and ideas. The comment-response summary is organized around the key themes that emerged from the comments and includes responses to those key themes.

Many comments were statements of either support or opposition to the project or particular alternatives. Most comments expressed concern about or opposition to PSE's proposal, although some individuals and organizations did express support. Other than expressing opposition or support for the proposal, the comments generally fit into one or more of the following topics or themes:

- EIS process and content
- Project objectives
- Alternatives evaluated in the EIS
- Earth
- Air quality and greenhouse gases
- Water resources
- Plants and animals (including tree canopy and vegetation clearing)
- Energy
- Environmental health and public safety (particular focus on issues related to Olympic Pipeline system, as well as from electric and magnetic fields [EMF])
- Noise
- Land use
- Views and visual resources
- Economic issues (including property values and property taxes)
- Recreation
- Historic and cultural resources
- Transportation
- Public services
- Utilities

In addition to these topics, some comments were received that were beyond the scope of the EIS analysis, either because they were not related to potential impacts resulting from the project (such as requests that the Partner Cities compel utilities like PSE to adopt new technologies to reduce fossil fuel use), or because they relate to topics not addressed by SEPA (such as who owns PSE or profits from PSE's actions).

This summary and appendix were prepared in compliance with WAC 197-11-560, which states, in part: *"All substantive comments received on the draft statement shall be appended to the final statement or summarized, where comments are repetitive or voluminous, and the summary appended. If a summary of the comments is used, the names of the commenters shall be included (except for petitions)."*

Given the programmatic nature of the Phase 1 Draft EIS, responses to comments are presented in this appendix as a narrative summary (organized by topic), followed by reproductions of the comments received. In the narrative summary, comments and responses are organized by topic, with similar comments on a given topic grouped as "key themes." Each key theme is given an alpha-numeric designation (e.g., "ECON-1" for the first key theme associated with the economics topic). Following the narrative summary of comments and responses, this appendix includes reproduced copies of all comments received (including letters, emails, website forms, and testimony), with each individual comment coded and cross-referenced to the summary response in the narrative, using the alpha-numeric designation in the narrative summary. Although a separate response was not prepared for each individual comment, the EIS Consultant Team made a significant effort to capture all substantive issues raised in the comments and prepared the summary responses to address these concerns. As part of this process, the EIS Consultant Team reviewed every comment received, employing a database and separating the information received into over 1,400 individual comments. Recognizing that there is overlap between topics, there is some degree of intentional repetition in the responses, for clarity; in other instances, cross-references are provided. A similar process was used for responding to comments on the Phase 2 Draft EIS; however, responses to Phase 2 comments are presented for each individual comment received rather than using a narrative summary (see Appendix K).

In addition to the comment-response summary that follows, comments received on the Phase 1 Draft EIS helped shape the analysis as presented in the Phase 2 Draft EIS and the Final EIS, as well as PSE's refined design of the proposed project.

EIS Process and Content (Topic EIS)

This section describes and responds to the comments related to the overall adequacy of the material presented in the Phase 1 Draft EIS in the context of meeting requirements of the State Environmental Policy Act (SEPA) (as opposed to addressing the adequacy of resource-specific technical analysis, which are discussed in resource-topic summaries).

Key Theme EIS-1: Objectivity and overall adequacy of the Phase 1 Draft EIS

Comment Summary:

The comments under this theme included general criticism or concern regarding the objectivity of the Phase 1 Draft EIS based on technical material included within the Draft EIS, or based on the assessment of impacts. This group of comments includes specific statements that the Phase 1 Draft EIS did not include an independent evaluation of the need for the project and did not put forth viable alternatives to PSE's proposal, and therefore was not objective and/or displayed bias in favor of the applicant or applicant's proposal. Commenters also raised questions about the qualifications of the individuals preparing and reviewing the Draft EIS, whether the consultants had worked for PSE and therefore had conflicts of interest, and questioned whether the EIS Consultant Team and the Partner Cities had the proper technical experts available to write and review the Draft EIS.

One commenter stated that the EIS does not adequately quantify the benefits and disadvantages of delaying the proposal, but rather makes unsubstantiated qualitative generalizations.

Another theme among these comments was that the Phase 1 Draft EIS was inadequate in general, including statements that the Draft EIS minimized the project's environmental effects, included inaccurate or incomplete information, or simply that the Draft EIS had many deficiencies, such as unsupported opinions and summary conclusions.

Response:

The Phase 1 Draft EIS was prepared under the direction of Environmental Coordinator for the City of Bellevue (the Lead Agency), in consultation with the co-lead agencies, the Partner Cities of Kirkland, Newcastle, Redmond, and Renton. As the Lead Agency under SEPA, the City of Bellevue's responsibilities are to provide full disclosure of the expected environmental impacts of the Energize Eastside project and to objectively analyze those impacts, so that decision-makers have adequate environmental information for the permitting and decision-making process. The Partner Cities hired a consultant team comprised of qualified firms with extensive experience conducting independent analysis and preparing SEPA EISs. The EIS Consultant Team is comprised of subject matter experts that are qualified to analyze the elements of the environment that are included in the EIS. For specialized analysis related to electrical transmission and pipeline safety, the EIS Consultant Team has involved engineers, scientists, and scholars in appropriate fields. The EIS Consultant Team is working on the Partner Cities' behalf to evaluate the proposal according to the adopted SEPA policies in each Partner City's jurisdiction. No member of the team is currently working for PSE or has a personal or financial interest in the outcome of the project. For all firms working on the EIS Consultant Team, disclosures were made to the Partner Cities about any past work for PSE. The Partner Cities determined that this past work did not constitute a conflict of interest for reviewing this project. Other than these disclosures, no specific conflict of interest was identified by commenters.

Outside of the EIS process, the City of Bellevue also hired a consultant to independently evaluate the need for the project. As with the EIS Consultant Team, this consultant was not currently working for PSE nor do they have a personal or financial interest in the outcome of the project. Because the system is owned and operated by PSE, any such analysis requires cooperation from PSE, including the use of reports prepared by PSE or for PSE by other consulting firms contracting directly with them. All reports submitted by PSE were reviewed independently by experts in the respective fields of study.

As outlined in WAC 197-11-060 (3)(a), it is the responsibility of the Lead Agency to make certain that a proposal that is the subject of environmental review is properly defined. The process of defining the proposal includes a complete and impartial understanding of the proposal's objectives and technical requirements, in order to accurately identify feasible and reasonable project alternatives for consideration in the EIS. As noted in WAC 197-11-060(3)(a)(iii), proposals should be described in ways that encourage considering and comparing alternatives, and agencies are encouraged to describe proposals in terms of objectives rather than preferred solutions. Specific responses to questions about the need for the project are provided under the Project Objectives (Topic OBJ) section of this comment response appendix.

This EIS will not be used to validate or reject the need for the proposal. Rather, the EIS is intended to identify alternatives that could attain or approximate PSE's objectives at a lower environmental cost and disclose potential significant adverse environmental impacts associated with the alternatives identified.

The opinions of commenters concerning the completeness and adequacy of the Phase 1 Draft EIS are noted. The Partner Cities believe that the Draft EIS contains a reasonably thorough analysis of the potential environmental impacts of the project, as required by SEPA. As discussed in the Phase 1 Draft EIS, environmental information was compiled based primarily on literature reviews and communications with knowledgeable resource agencies. Assumptions made in the analysis were explained so that the reader could understand what was assumed and why, and any errors identified during review are addressed in the Errata in this Final EIS.

The Phase 1 Draft EIS provides a high-level, programmatic assessment of potential impacts of the project within the combined study area. The Phase 2 Draft EIS provides a more detailed, project-level analysis. Every attempt was made to use the most current data and information reasonably available prior to publication. In instances where updated data were released in time to be used for the Phase 2 Draft EIS analysis, the information was reviewed and incorporated into the Phase 2 documents.

The advantages and disadvantages of delaying the project are described qualitatively, in the context of the detailed information provided elsewhere in the EIS. SEPA does not require a quantitative analysis of these topics. Section 2.5 of the Phase 1 Draft EIS provides a high-level summary of the findings of that analysis, indicating that there are both advantages and disadvantages associated with delay.

Specific issues with the adequacy of the Phase 1 Draft EIS analysis that were raised in comments regarding bias, accuracy, or thoroughness are addressed below in the appropriate topic and key themes sections. The Partner Cities found the analysis to be unbiased, accurate, and thorough for the level appropriate for this stage of review. Where there were errors noted in comments or discovered after the Phase 1 Draft EIS was published, these have been noted in the Errata in both the Phase 2 Draft EIS and the Final EIS.

Key Theme EIS-2: SEPA process, including phased EIS and opportunities for meaningful public input

Comment Summary:

The comments under this theme addressed various aspects of the SEPA process for the project. Many commenters expressed criticism of the phased environmental review process. This group of comments includes specific statements that in order to conduct a true phased review, the Partner Cities would prepare a Phase 1 Final EIS following the comment period on the Phase 1 Draft EIS, and would use the analysis in the Phase 1 Final EIS to narrow the range of alternatives to be analyzed in Phase 2. Commenters also requested that permits for the project be processed after completion of each phase of the EIS.

Several commenters stated that the length of the document was overwhelming. One commenter noted that the document exceeds 150 pages when WAC 197-11-425(4) states in part: “The EIS text shall not exceed seventy-five pages; except for projects of unusual scope and complexity, where the EIS shall not exceed one hundred fifty pages.” The commenter requested that future iterations of the EIS be limited to no more than 150 pages, with detailed information in appendices. Several commenters requested that the Partner Cities extend the Draft EIS comment period to allow people more time to review the EIS and background documents before submitting comments.

Several commenters requested that the Partner Cities pause the EIS process and further review the need for this project, with several commenters mentioning the desire to have a Hearing Examiner review the project before the EIS process is finished. At least one commenter stated that the method of referencing throughout the Phase 1 Draft EIS was cumbersome and inadequate, and requested an extension of the comment period because of the difficulty of checking these references.

Some commenters stated that the Partner Cities should compel PSE to release requested information to the public, as well as other requests for the process to be more transparent.

Several commenters said the length of the SEPA process is frustrating for landowners who feel they cannot make major decisions about their properties until a final decision is made about the proposal. Other commenters stated that the process lacked opportunities for meaningful public input, suggesting that more direct coordination occur with property owners and others who would be affected, as well as the need to incorporate the perspectives of affected citizens into the decision-making process (e.g., the CAG).

Response:

The Partner Cities acknowledge the opinions of the commenters concerning the sufficiency of the Phase 1 Draft EIS and SEPA process. As described in Section 1.5 of the Phase 1 Draft EIS, the Phase 1 Draft EIS is the first phase of a two-phase Draft EIS process to evaluate the potential for significant environmental impacts. This approach is consistent with the requirements for Phased Review outlined in WAC 197-11-060 (5)(c). The Phase 1 Draft EIS analysis is a voluntary expansion of the EIS process to better inform decision-makers and the public about the environmental consequences of various approaches that could be taken to address PSE’s objectives. No regulatory decision or approval was or will be made, or is required, based on the Phase 1 Draft EIS other than the use of its conclusions to help form the scope for the Phase 2 Draft EIS. No action, as defined under SEPA, was taken on the Phase 1 Draft EIS. As such, the Partner Cities believe that a Phase 1 Final EIS was not required. The information presented in the Phase 1 Draft EIS did help narrow the scope of issues to be covered in the

Phase 2 Draft EIS, and to ensure that the decision-making process is transparent and consistent with the commitment made by the Partner Cities to the public.

The Phase 1 Draft EIS contains a reasonably thorough discussion of the potential environmental impacts of the range of programmatic options available to address PSE's identified objectives for the project. The Phase 1 Draft EIS, together with the Phase 2 Draft EIS, contribute to meaningful analysis of the project, reasonable alternatives to PSE's proposal, and its impacts, as required by SEPA.

The Partner Cities acknowledge that the Phase 1 Draft EIS exceeded 150 pages. This was due to the complexity of the information considered, the number and variety of alternatives evaluated, and the extent of the geographic area considered (in particular, the number of local jurisdictions that could potentially be affected by the project, each with its own policy and regulatory framework). The Partner Cities note that the length of the EIS is not uncommon when compared to other similarly complex EIS documents. The wide range of information included is also due to the range of impacts that the public requested be reviewed based on feedback during the scoping process. With the range of impacts being assessed and the number of alternatives evaluated, in order to meet the SEPA rule for length of the document, even greater portions of the analysis would have to be relegated to appendices, which also frustrated readers. The summary information provided in Chapter 1 is intended to provide information that can assist the public in its review. The Phase 2 Draft EIS considers a more focused project-level scope, and every effort was made to limit the Draft EIS text, with more detailed technical information provided in appendices.

The Partner Cities provided a 45-day public review and comment period for the Phase 1 Draft EIS, which is 15 days longer than the minimum required and consistent with SEPA regulations for allowing adequate time for Draft EIS review and comment. The Partner Cities provided timely and broad distribution of the Phase 1 Draft EIS, with noticing, web postings, and periodic updates to encourage public awareness of the Draft EIS and comment period. The Partner Cities also posted the Phase 1 Draft EIS on the agencies' websites and held five public meetings on the Phase 1 Draft EIS.

Concerning the request to pause the EIS process to further review the project need, the Partner Cities must evaluate PSE's proposal to construct 230 kV overhead transmission lines in a timely way. The Partner Cities do not have the authority under SEPA to make a determination that there is no need for a proposal or to change the applicant's objectives or proposal for purposes of review under SEPA (see the responses under Project Objectives). Rather, their role is to understand the proponent's objectives and evaluate reasonable alternatives that meet the proposal's objective at a lower environmental cost. The project will follow all requisite permitting processes in the applicable jurisdictions. A "permitting handout" (see Section 1.10) has been prepared that identifies the permit process associated with required land use decisions, as well as future opportunities for the public to comment, which can be viewed on the website maintained by the Partner Cities: www.Energize EastsideEIS.org.

The Partner Cities do not have the authority to compel PSE to release the modeling assumptions used in its utility planning process. It is up to PSE to manage the release and disclosure of modeling data.

The Partner Cities acknowledge that the SEPA EIS process can be lengthy. The time needed to review a proposal and prepare an EIS depends on the complexity of the project, the amount of information already available, and the need to complete additional analysis or studies. SEPA rules also require public comment periods, some of which have been extended with the applicant's agreement beyond the regulatory maximum, in order to ensure the public has time to provide input. As part of the process, the Partner Cities and EIS Consultant Team must have sufficient time to develop alternatives, conduct analysis, and prepare the EIS. The Partner Cities will use the information in the EIS when making decisions to approve, deny, or place conditions on any future application submitted by PSE. Agencies can review permit applications concurrent with the SEPA process but cannot make permitting decisions until after the Final EIS is issued. The Partner Cities conducted extensive outreach to solicit input during scoping and Draft EIS comment periods for the Phase 1 Draft EIS, as described in the *Summary Phase 1 EIS Public Scoping Meetings* and the *Summary Phase 1 Draft EIS Public Hearings,* available on the project website at www.EnergizeEastsideEIS.com.

Key Theme EIS-3: Completeness of the Draft EIS scope

Comment Summary:

The comments under this theme include a variety of issues related to the completeness of the Phase 1 Draft EIS scope. These comments included questions about the incorporation of scoping comments, requests for additional information on economic impacts, and requests for a comparison of alternatives through the lens of reliability vs. costs (both monetary and environmental impacts). Several commenters requested that the analysis weigh potential environmental impacts against PSE's objectives.

Comments related to the incorporation of scoping comments stated that the Phase 1 Draft EIS does not meaningfully consider all scoping comments. Commenters identified a number of scoping comments, including comments stating positions on specific alternatives that they assert were either not addressed, or addressed in a cursory fashion.

Some commenters stated that the Phase 1 Draft EIS needed more details related to design of the project, including specifications on pole width, placement, and height, as well as mitigation that would be pursued for the project to reduce site impacts.

Several commenters requested that the EIS include more cost information and more information on reliability improvements that the project would provide, and asserted that the Partner Cities have a "fiduciary duty" to do so.

Response:

Under SEPA, decision-makers in the permit process are not required to choose the alternative with the least impacts identified in an EIS. The EIS is intended to be a disclosure document providing decision-makers with information about potential impacts and options (within their jurisdiction and regulatory authority) that could reduce or eliminate some or all of the impacts of the project.

An EIS is not intended to be a cost-benefit analysis for a project; rather, an EIS is intended to provide environmental information to be considered alongside economic and other policy considerations in reviewing projects that could significantly impact the environment. An EIS can include economic information at the discretion of the Lead Agency, but economic information is not a required element under SEPA (WAC 197-11-448). Additional discussion of economic issues can be found under Key Theme ECON-1 through ECON-4. The Partner Cities' duties under SEPA are regulatory not fiduciary.

The scoping comments received for the Phase 1 Draft EIS were considered in determining the alternatives studied in the Phase 1 Draft EIS. The Partner Cities and EIS Consultant Team considered what technically viable alternatives should be included and what issues are important for the range of considerations in the Phase 1 Draft EIS. For example, Alternative 2 considered a number of components that were requested to be considered together as a way to generate a viable alternative to the construction of new transmission lines. The Phase 1 Draft EIS follows the SEPA direction (WAC 197-11-402) that an EIS should analyze only probable, significant adverse impacts and that the discussion of insignificant impacts is not required (and, if included, it should be brief). Accordingly, the Phase 1 Draft EIS does not address or only briefly addresses impacts that are speculative and not probable, or probable but insignificant.

Similarly, project-level specifics on pole design and siting are included in the Phase 2 Draft EIS analysis, including detailed mitigation information throughout, with more detailed and updated information presented in the Final EIS for PSE's Proposed Alignment.

The Energize Eastside project is being undertaken to meet PSE's objective to supply future electrical capacity that meets regulatory requirements for operation of the Eastside's electrical grid, as described in Section 1.3 of the Phase 1 and Phase 2 Draft EISs. Because the majority of power outages on the Eastside are related to the electrical distribution system and the Energize Eastside project will affect only the reliability of the transmission system, the project would have limited impact on overall electrical reliability. SEPA also does not require that an EIS discuss fiscal impacts or include a cost-benefit analysis (WAC 197-11-450). Therefore, the EIS does not include an analysis of the reliability versus costs that the project alternatives would have.

PSE's pursuit of emerging alternative technologies to supply capacity to the Eastside is outside the scope of the SEPA process insofar as it extends beyond the environmental analysis required for the EIS process. An integrated resource approach is included as part of the Phase 1 Draft EIS analysis and is summarized in Section 2.3.3 of the Phase 1 Draft EIS.

Key Theme EIS-4: Graphics and text

Comment Summary:

Several commenters pointed out edits or changes they would like to see in the document. Most of these commenters made requests to change the graphics in the document in some way, either because of an error they perceived (e.g., liquefaction areas labeled as seismic hazard areas on Figure 2-3), or that they were generally confusing. Some requested more or specific maps. PSE made two clarifications, stating that the gray area on Figure 1-1 is meant to show the customers potentially affected by rotating outages, and that the text in Chapter 1 should be updated to indicate that the SCL 230 kV line goes through the center of the Eastside. One commenter noted difficulties in using the project website and its commenting/emailing features, as well as inconsistent use of project terminology (such as the names of the alternatives).

Response:

Numerous graphics were reworked for the Phase 2 Draft EIS. The EIS Consultant Team and the Partner Cities worked to create graphics that would best represent what the EIS is intending to communicate.

The clarifications made by PSE and others are incorporated into the Errata for the Phase 1 Draft EIS (see Chapter 3 of the Final EIS).

Multiple opportunities to comment on the Draft EIS were provided in addition to the project website, including providing oral testimony at public hearings, sending letters by post to Bellevue City Hall, and emailing info@energizeeastsideeis.org. Every effort is made to conduct editorial review of EIS-related materials to ensure consistent use of terminology, including names of the alternatives.

Project Objectives (Topic OBJ)

This topic includes comments related to the overall project objectives as presented in Chapter 2 of the Phase 1 Draft EIS. Key themes include the objectives of the PSE proposal, disagreement with PSE's planning data and assumptions and how they define project need, and questions about ColumbiaGrid.

Key Theme OBJ-1: Objectives of proposal (to address reliability issues or to increase capacity for other purposes)

Comment Summary:

This group of comments includes questions about the overall objectives of PSE's proposal. Comments about specific planning data and assumptions are addressed below under Key Theme OBJ-2: Disagreement with PSE's planning data and assumptions and how they define project need.

Numerous commenters questioned the need for (and PSE's motives for) the project. These included specific comments requesting clarification of the need and whether it is related to growth and/or reliability/peak demand, as well as the size of the need and timing of the need. Several commenters expressed doubt that the demand is adequately justified by the studies examined by the EIS Consultant Team, and requested that each of the issues noted above be supported with more detail. Numerous commenters expressed doubt that the stated purpose was honest in depicting the intention of the project and questioned the true likelihood of a power outage. Some commenters stated that PSE is incentivized to build an expensive, oversized solution to the problem because it leads to higher returns on equity.

Commenters stated that PSE has provided inconsistent or confusing reasons to justify the project objectives (or the need for the project), and that Stantec (the consultant hired to review the PSE needs assessment to ensure it was conducted in accordance with industry standards) has a conflict of interest because they have worked for PSE in the past. One commenter suggested that PSE conflated separate issues related to transmission capacity deficiency (load growth) and peak demand assumptions. It was further suggested that these two issues have separate solutions, and that conflating these issues has limited the examination of viable alternatives in the Phase 1 Draft EIS. Commenters also questioned the different numbers that PSE has presented for their deficiency estimate, pointing to the 2014 CAG process, which forecast an overall need of 660 MW. The actual capacity used that year was 75 MW lower than the predicted number. The 2015 Supplemental Needs Assessment study shows a need deficiency of 74 MW by winter 2017-18 or summer of 2018. Commenters thought that the deficiency of 133 MW stated in the Phase 1 Draft EIS (by the end of the study period, summer 2024) conflicted with the actual need.

Several commenters made statements and raised questions about whether there is a direct relationship between Bonneville Power Administration (BPA) and PSE facilities, whether BPA and PSE have made arrangements to avoid cost allocation and NEPA requirements for the project, and whether PSE has appropriately defined the project purpose and objectives. Commenters suggested that by not including the Energize Eastside project in the regional transmission plan, PSE avoids FERC Order 1000 compliance and side-steps NEPA review.

Many comments focused on the economic motives for the project and other economic considerations they felt should be considered by the Lead Agency in determining the project objectives and alternatives for the Phase 1 Draft EIS. The following summarizes the most frequently provided comments relating to economic considerations.

- Commenters asserted that PSE has an additional objective to transmit and sell electrical power outside of PSE's service area (to Canada and California, referred to as "wheeling" power) that expands the project need and scope from PSE's stated project intent.
- Commenters questioned how much of the project's need is based on the ability to participate in additional power "wheeling" outside the region.
- Commenters asserted that the Phase 1 Draft EIS does not adequately address appropriate cost allocation for this project.
- Commenters suggested the project is for the benefit of a foreign-based investment (or hedge) fund in Australia and that PSE customers will pay and Eastside communities will suffer impacts.

One commenter questioned who has the authority to review the project objectives and need and whether it would be appropriate to move the Phase 1 Draft EIS to the Washington State Energy Facility Site Evaluation Council (EFSEC).

Some commenters questioned whether or not building the project could discourage growth and development on the Eastside, as stated in the Phase 1 Draft EIS, Section 2.5. Commenters who voiced support for the Energize Eastside project stated that relying on 60-year-old utility facilities was poor public policy and that the needs of the approximately 300,000 customers who would be served by the transmission corridor should be considered.

Response:

As described in the Phase 1 Draft EIS, an EIS is intended to evaluate the probable significant environmental impacts of a proposed project or program. The Phase 1 Draft EIS does not evaluate whether or not a project is needed. The EIS does take into account PSE's description of the need for the project in establishing the project objectives and what alternatives should be included. Also, an EIS is not a permit, although it is intended to be used by officials making decisions about whether to approve, deny, or conditionally approve permits for a project.

SEPA requires that the Lead Agency evaluate the proposal as described by the applicant. Therefore, the Phase 1 Draft EIS must evaluate PSE's proposal to construct 230 kV overhead transmission lines. The Lead Agency has limited authority to question an applicant's motives and cannot use SEPA authority to alter the objectives of an applicant for purposes of review under SEPA. The Lead Agency must ensure that the project is properly defined, and that the alternatives are based on reasonable assumptions developed using industry standard methods. The Partner Cities have done so by having qualified electric engineering professionals review planning methods and assumptions. For all firms working on the EIS Consultant Team, including Stantec, disclosures were made to the Partner Cities about any past work for PSE. The Partner Cities determined that this past work did not constitute a conflict of interest for reviewing this project, and furthermore, none of the EIS Consultant Team members are currently under contract with PSE.

As described in the Phase 1 Draft EIS, transmission of electrical power outside of PSE's service territory is not an objective of the project. However, as with all of PSE's transmission equipment, the project would be part of the regional electric power grid. As such, it is virtually impossible to prevent flows of electricity from or to other regions over PSE's transmission lines, and PSE has a regulatory responsibility to keep power moving through the grid in accordance with ColumbiaGrid commitments and federal guidelines. As such, PSE has included expected peak regional power flows in its planning model as required, and has not increased them beyond those recommended by ColumbiaGrid to justify the project.

In determining the capacity deficiency for 2024, PSE used best available data and industry-standard utility planning modeling. Comments regarding the extent of the need seemed to confuse the near-term need (2017-2018) with the long-term need (2024) and saw these as conflicting. As described in Chapter 1 of the Phase 1 Draft EIS, PSE expects the deficiency to grow over time. It is acknowledged that there was a difference between what PSE modeled for 2014 and the actual capacity used. This is because, for planning purposes, PSE is required to look at what its peak loads could be, if weather conditions and customers' projected demands materialize. Customer demand in particular is difficult to predict for the near term because major customers may project faster growth than actually occurs. As a result, differences between modeled predictions and the actual capacity used are to be expected in any planning exercise. It is acknowledged that, over the long term, energy efficiency, economic conditions, and other factors may reduce the actual loads, thus delaying the need for the project. Because of the time required to plan and build transmission infrastructure, electrical utilities typically must plan years in advance, making assumptions about consumer behavior that do not presume improvements in efficiency that have not yet been adopted by consumers.

Comments and questions regarding FERC Order 1000 cost allocation requirements and related NEPA review were previously raised in a complaint directed to FERC and were previously addressed by FERC (see "Letter Clarifying Bonneville Power Administration's role in Energize Eastside" and "Letter Clarifying ColumbiaGrid's role in Energize Eastside" within the documents section of the Phase 1 Draft EIS project website: www.EnergizeEastsideEIS.org).

This EIS is being prepared by the City of Bellevue as the Lead Agency on behalf of the Partner Cities because the project crosses all of the jurisdictions. The Partner Cities will use the Phase 1 Draft EIS to inform their permitting process, and they, as the permitting agencies, have the authority to review the documents produced for the EIS process. The City of Bellevue took on the role as the Lead Agency for the Energize Eastside EIS because it is the largest and potentially most affected city. The project is not required to be under EFSEC jurisdiction. The facilities subject to review by the EFSEC are found here: http://www.efsec.wa.gov/cert.shtml#Certification2. Electrical transmission lines other than those in a national interest transmission corridor (which Energize Eastside is not; USDOE, 2015) are only subject to EFSEC review if:

a) the applicant chooses to receive EFSEC certification;

b) the transmission lines are at least 115 kV; and

c) the transmission lines are located in a new corridor or located in more than one jurisdiction that has promulgated land use plans and zoning ordinances.

EFSEC review and certification would pre-empt all local SEPA and permit review. In this case, PSE has not requested EFSEC certification.

The Washington Utilities and Transportation Commission (WUTC) also has authority to examine whether the project is needed for purposes of establishing utility rates, but does not have a role in determining need or purpose in the context of SEPA. If the WUTC determined that the project was not needed, PSE would not be allowed to recover costs for the project in its utility rates.

In regard to comments on the economic motives for the project, the Phase 1 Draft EIS is not required to evaluate who would profit from a project. As discussed above, the EIS consultant team did review the planning model and found that PSE had used standard planning practices and had not modified any regional transmission planning assumptions beyond those recommended by ColumbiaGrid to justify the project through wheeling of additional power. The EIS is also not required to evaluate cost allocation.

Regarding the discussion in Section 2.5 of the Phase 1 Draft EIS Benefits and Disadvantages of Delaying the Proposal, electrical reliability has been an issue for Eastside cities for many years, as reflected in policies in the comprehensive plans of the Partner Cities and other Eastside cities. In comments received on the Phase 1 Draft EIS to date, businesses in the Eastside have indicated that energy reliability is critical to their business growth.

Key Theme OBJ-2: Disagreement with PSE's planning data and assumptions and how they define project need

Comment Summary:

One commenter asked how the City Council (Bellevue) established that the project is necessary. Several commenters requested further data and independent analysis to ascertain the validity of the first project objective, "Address PSE's identified deficiency in transmission capacity." These comments assert that the PSE Eastside Needs Assessment is based on flawed assumptions and is limiting the evaluation of viable alternatives. These comments further state that the independent studies cited in the Phase 1 Draft EIS were cursory and are not sufficient because they either did not run their own load flow studies, or they used load scenarios and assumptions provided by PSE, which commenters assert are flawed or inaccurate. These commenters requested access to unredacted data and additional independent studies to identify the base case scenario and assumptions used in the load flow analysis.

Commenters specifically took exception to the PSE assumption of simultaneous transformer failure during a winter peak load event, which was seen as not only unlikely by commenters, but a scenario that has not occurred in the past. Commenters also noted that there has been an overall drop in per-capita energy consumption and stated that conservation upgrades were not adequately incorporated into PSE's needs assessment. Several commenters spoke on factors that would lead to reduced electricity consumption for the demand models, such as a move toward natural gas for home and commercial heating needs, and the inclusion of projected energy conservation from outside the Energize Eastside area. Conversely, some commenters anticipate increased electric vehicle use as contributing to greater reliance on electricity in the future. A commenter also stated that the proposed PSE reliability projects listed in the 2014 Bellevue Reliability Overview should be implemented before a project like Energize Eastside is pursued. The commenter requested that these reliability projects be addressed in the EIS.

One commenter asserted that the Seventh Power Plan from the Northwest Power and Conservation Council found that the Energize Eastside project was not needed. Another commenter noted that PSE reduced the projected growth in its 2015 Integrated Resource Plan (IRP) as evidence that the project assumptions in 2014 were overstated. One commenter stated that PSE and ColumbiaGrid studies did not reflect the Remedial Action Schemes (RAS) and Schedule Adjustment Schemes that have been put in place for Northern Intertie schedules, and that any significant change (decrease) in electricity generation capacity, like the retirement of Colstrip Power Plant, must be included in the overall EIS for the Energize Eastside project.

Response:

This project is proposed by PSE and is not a City-funded project. The Bellevue City Council is not responsible for establishing whether the project is needed. In addition, the Lead Agency (in this case, the City of Bellevue) has limited authority to question an applicant's motives and cannot use SEPA authority to alter the objectives of an applicant for purposes of review under SEPA. The Phase 1 Draft EIS acknowledges that the project would provide more than adequate capacity to meet the projected need in the 10-year planning horizon. However, as discussed in the Phase 1 Draft EIS, there is no intermediate size of transmission facility between 115 kV and 230 kV capacity that would work within the regional grid. See Section 2.2.1.15 for discussion of 115 and 230 kV transmission lines. The Eastside Needs Assessment was reviewed by the EIS Consultant Team, which confirmed that it was conducted in accordance with industry standards for utility planning. Please see the Stantec memo referenced in the Phase 1 Draft EIS, which is available on the Energize Eastside EIS project website. The Partner Cities cannot compel PSE to release its modeling assumptions.

The growth rate within the Eastside has been and is expected to continue to be greater than the growth rate in PSE's overall service area. The growth rate used for the IRP relates to PSE's entire system, not just the Eastside. The IRP also focuses on overall power sources, not on transmission capacity. The Energize Eastside project is not in response to a shortage of electrical generation resources, although it is acknowledged in the Phase 1 Draft EIS that adding generation capacity within the Eastside could alleviate some of the transmission capacity deficiency. The Energize Eastside project has to do with a projected deficiency in transmission capacity resulting from growth in electrical demand that, due to federal regulatory requirements to protect the regional grid, could result in adverse effects on residents and businesses on the Eastside, as described in Chapter 1 of the Phase 1 Draft EIS.

In response to comments about the RAS, electrical generation could help address the transmission capacity deficiency if the generation facilities were constructed within the Eastside. Alternative 2 of the Phase 1 Draft EIS evaluates the addition of generation facilities within the Eastside.

Conservation efforts were reviewed for the Phase 1 Draft EIS and are summarized in a memo contained in Appendix A of the Phase 1 Draft EIS. The 119 MW number is an approximate level of conservation that is included in the IRP. The example shown in Figure 2-13 of the Phase 1 Draft EIS is intended to illustrate the approximate additional conservation that would be necessary within the Eastside to meet the project's objectives. Conservation outside of the Eastside area would contribute little toward meeting this objective. Similarly, producing additional electricity outside of the Eastside area would do little to affect the need for the project (Stantec, 2015). (Also see response to Lauckhart/Schiffman study finding #2 in Key Theme OBJ-3, below).

The Seventh Northwest Conservation and Electric Power Plan does not make reference to this project or say it is unnecessary.

Key Theme OBJ-3: Lauckhart/Schiffman Load Flow Study suggests project is not needed

Comment Summary:

Several commenters cited a load flow study completed by Richard Lauckhart and Roger Schiffman (and submitted with their comments), which rejects PSE's needs assessment for the project. Mr. Lauckhart and Mr. Schiffman used the industry-standard simulation software, GE PSLF, for their study, which is the same software that PSE used in the modeling to support its needs assessment. The

Lauckhart/Schiffman study, however, acknowledges that it is based on a database provided by FERC, because PSE declined to share its database and modeling assumptions. Commenters requested that the Partner Cities pause the EIS process and review the need for this project by either accepting the Lauckhart/Schiffman analysis or contracting for an independent study that includes an "honest, transparent and verifiable" load flow study.

Commenters pointed to five main findings of the Lauckhart/Schiffman study. Each of these main findings is listed in bold below, followed by a response intended to clarify the issue presented.

The responses were developed by the EIS Consultant Team after review of the Lauckhart/Schiffman analysis by Stantec and requests for additional information from PSE regarding its planning assumptions and results.

Lauckhart/Schiffman study finding #1: PSE modified data to increase transmission of electricity to Canada from 500 megawatts (MW) to 1,500 MW, which during winter peak loads creates instability in the regional grid. (The Lauckhart/Schiffman study authors assert this is an unrealistic level of electricity transmitted to Canada.)

Response:

PSE did modify the Western Electricity Coordinating Council (WECC) model to reflect this amount of peak energy flow to Canada. According to Stantec, modification of the WECC model is a commonly accepted practice, where an individual utility provider uses the model to evaluate its specific system.

PSE confirmed that the value for the energy flow to Canada (over the Northern Intertie) that is in the base case was set at 500 MW by WECC, as a starting place for planning studies. Planners are expected to adjust that value to reflect firm transmission commitments, as required by North American Electric Reliability Corporation (NERC) planning standard TPL-001-4 R1. PSE used the value set in its agreements with the regional planning authorities, specifically from the ColumbiaGrid Biennial Plan.

Neither the 500 MW nor the 1,500 MW numbers reflect the maximum flows that actually occur over the Northern Intertie during winter conditions. BPA data show that the maximum flow exceeds 2,000 MW at times. The 1,500 MW value is considered reasonable by ColumbiaGrid in its Biennial Plan for planning for heavy winter conditions, which is PSE's justification for making this modification in the model. According to Stantec, this is the type of adjustment that utility providers are expected to make when using the WECC model for system planning.

Furthermore, of the energy flowing over the Northern Intertie, only a small portion flows through the Eastside. The EIS Consultant Team asked PSE to clarify how much of the Northern Intertie flow was flowing through the substations on the Eastside where the capacity deficiency has been identified. PSE clarified that between 1 and 2 percent (15 and 30 MW) of the 1,500 MW flowing north over the Northern Intertie in the heavy winter model currently flows through the substations on the Eastside. The lower value is the amount of flow that would be expected under normal conditions (with all regional grid systems functioning). Stantec confirmed that this was consistent with their expectations, given the presence of higher capacity lines in the region that would have lower resistance than PSE's existing 115 kV lines, and therefore would be more likely to carry the load flowing north over the Intertie. If the Energize Eastside project were built, PSE indicated that according to the model, this flow would increase to 45 MW under normal conditions. PSE also clarified that the direction and strength of the flow of power can determine which substation would feed the Eastside (Sammamish or Talbot Hill). Under conditions where other portions of the regional grid are not fully functioning, the flow on the proposed lines could rise to as much as 120 MW. Stantec again confirmed that this was a reasonably expected outcome, because the new lines would have lower resistance than the existing lines. While increased flow through the Eastside to the Northern Intertie is an expected result of the upgraded capacity on the Eastside, the increase is not one of PSE's objectives for the Energize Eastside project, but simply a byproduct of the capacity increase.

Lauckhart/Schiffman study finding #2: PSE assumed that six local generation plants were out of service, adding 1,400 MW of demand for transmission. This assumption also causes problems for the regional grid. (The Lauckhart/Schiffman study authors questioned PSE's rationale for this assumption.)

Response:

It is acknowledged that failure of components of PSE's system simultaneously with a high demand period due to high or low temperatures is not a common event. As noted in the Phase 1 Draft EIS, however, having one component of its system down for planned maintenance is relatively common throughout the year. While the exact probability of such an event is not of concern under SEPA, it is acknowledged that it is possible that in any given year, it might not occur. NERC standards require PSE models to "stress the system" to ensure that PSE's system would operate without damaging other parts of the grid when such stresses occur. PSE ran the model with a group of plants "out of service" for the "low generation scenario" in testing its system. PSE also ran a "low-average generation" scenario with 1,000 MW of generation turned on, to determine if running generation would relieve the overloads seen with the low generation scenario. PSE found that, while the transmission line overloads seen with the low generation scenario were relieved by running generation, the transformer overloads were not relieved for the full 10-year planning period. In the "winter scenarios," adding 1,000 MW of Puget Sound area generation resulted in 15 MW of change in loading at the Talbot Hill substation, which is not enough to address the increased demand over the 10-year planning period.

Having these plants out of service was not the only stress that was modeled. PSE indicated that its studies identified up to 40 different contingencies that violated the NERC standards over the 5- to 10-year study period. In other words, while having the Puget Sound area generation plants out of service was one scenario that contributes to the transmission capacity deficiency PSE has identified, there are others that also could result in violations of the reliability standards, regardless of whether these generators were considered to be "on" or not. Stantec reviewed the results showing there were cases in which, even with these plants set as "on" in the model, there were still overloads in the Eastside, indicating that those overloads are a problem local to the Eastside (Stantec, 2015).

Lauckhart/Schiffman study finding #3: The study authors assert that even if the regional grid could sustain the level of demand under the condition set up by the first two findings, it is unlikely that regional grid coordinators would continue to deliver 1,500 MW to Canada while emergency conditions were occurring on the Eastside.

Response:

PSE indicates that it has a responsibility for planning its system according to NERC requirements. Operation of the system as it relates to the flows on the Northern Intertie is up to BPA and not within PSE's control. PSE used the load levels that were in the WECC model because those are the conditions that utility operators in the region agree that each utility's system should be capable of accommodating. Furthermore, less than 5 percent of the northward flow over the Intertie flows through the Eastside. Therefore, to use curtailments over the Intertie as a means to address congestion on the Eastside as suggested in the comment, flows over the Intertie would have to be reduced by approximately 20 times the amount of the deficit being experienced on the Eastside transmission system.

Lauckhart/Schiffman study finding #4: The WECC base case contains a default assumption that PSE may not have corrected. The ratings for critical transformers are based on "summer normal" conditions, but the simulation should use significantly higher "winter emergency" ratings. The study authors suggest the default value could cause PSE to underestimate system capacity and overstate urgency to build the project.

Response:

PSE used multiple WECC base cases for different study years and seasons, as confirmed by Stantec.

PSE has confirmed that they used all the correct ratings in the model, including adjusting for summer, winter, and emergency conditions as required for each scenario evaluated. Stantec confirmed that results are consistent with such adjustments being made, although they did not independently verify all settings in PSE's model. To do so would require extensive analysis, including verifying the capacity of every piece of equipment that PSE operates, and evaluating past and expected trends in energy usage by PSE customers, which was not considered necessary for purposes of SEPA review.

Lauckhart/Schiffman study finding #5: The base case shows a demand growth rate of 0.5 percent per year for the Eastside. This is much lower than the 2.4 percent growth rate that PSE cites as motivation for Energize Eastside.

Response:

WECC base cases are based on each utility's latest load forecast for the specific years being modeled. The WECC base case in 2012 did not have a specific growth rate from PSE for the Eastside because PSE only performed a system-wide forecast for 2012. The 0.5 percent growth rate cited by the Lauckhart/Schiffman report for the Eastside reflected average growth for PSE's entire system. The WECC base case did not include a specific rate for the Eastside. PSE subsequently determined that the load for the Eastside area studied in the Phase 1 Draft EIS is expected to grow at a faster rate than the rest of the PSE system. As described in the Phase 1 Draft EIS, PSE's analysis of growth expected for the Eastside was 2.4 percent. PSE used regional planning employment and population projections provided by the Puget Sound Regional Council and accounted for known growth expectations of its major customers.

PSE's Eastside Needs Assessment Report prepared by PSE, the Supplemental Eastside Needs Assessment Report prepared by Quanta Technology and PSE, and the Independent Technical Analysis prepared by Utility System Efficiencies, Inc. for the City of Bellevue confirms the project need. Stantec reviewed the analyses and found them to be in accord with standard industry practice for electrical system planning.

PSE also provided specific comments on the Energize Eastside Phase 1 Draft EIS (March 14, 2016), which are posted on the Partner Cities' project website at www.EnergizeEastsideEIS.org, as well as in this appendix (following the response to comment narrative).

Key Theme OBJ-4: ColumbiaGrid

Comment Summary:

Commenters voiced concern about the role of ColumbiaGrid in pursuing options that could accomplish the objectives of the Energize Eastside project through construction of transmission capacity elsewhere in the region.

Response:

ColumbiaGrid is made up of member organizations, each of which is responsible for delivering power within its service area. PSE alone is responsible for delivering power within PSE's service area. Therefore, other ColumbiaGrid members would not be responsible for building transmission capacity to address the need that PSE has identified for the Energize Eastside project.

Key Theme OBJ-5: Clarifications and Errata

The following errors are addressed in Chapter 3 of the Final EIS (Errata):

- The reason for rolling blackouts is that NERC requires utilities to prevent overloads of transmission components that could endanger the regional grid.
- The legend for Figure 1-1 should read "customers potentially affected by rotating outages."
- The reference to Figure 1-1 should have noted that the SCL transmission line reaches the center of the Eastside.
- HPFF would not be used in underground lines.
- SF6 is not used in transformers.
- An incorrect description of Appendix A in Chapter 1 of the Phase 1 Draft EIS.
- Table B-1 is updated with additional equipment.

See Chapter 3 of the Final EIS.

Alternatives Evaluated in the Phase 1 Draft EIS (Topic ALT)

This section describes and responds to the comments related to questions, concerns, and opinions about the alternatives evaluated in the Phase 1 Draft EIS. Alternative 1, Option A (new 230 kV transmission lines and substation) generated the most "against" comments, many more than any other alternative. Alternative 2 (integrated resource approach) generated a large number of "for" comments, more than any other alternative, followed by the No Action Alternative. A smaller number of comments expressed support for Alternative 1, Option A, followed by Option C (underground transmission lines). Few comments expressed support for Alternative 1, Options B and D (existing SCL transmission lines and underwater transmission lines, respectively), or Alternative 3 (new 115 kV transmission lines and transformers).

The largest proportion of these comments expressed a preference for or against one or more of the alternatives or options. The EIS is intended to be an impartial, factual document for use by the public and decision-makers. Comments strictly expressing support or opposition are not considered factors in the analysis of impacts presented in the EIS.

Comments expressing support or opposition to the various alternatives are first summarized below (without responses), for context. These comments are acknowledged here to provide the complete picture of comments received on the Phase 1 Draft EIS. To the extent that these comments also provided information on the reasons for support or opposition to an alternative or option, the most commonly cited reasons are summarized here.

No Action Alternative

Comments expressing opinions about the No Action Alternative were primarily in support of the alternative. A smaller number of commenters expressed opposition to the No Action Alternative.

The following is a sample of comments expressing support for the No Action Alternative:

- Best short-term solution; new technologies and innovations will be available in the future.
- Most sensible solution; the need for the project has not been demonstrated.
- Few negative impacts compared to the other alternatives.

Those opposed stated that delaying the project or taking "no action" would:

- Result in undesirable impacts to communities, including cities outside of the Eastside and their economies, should this alternative result in electrical fluctuations or blackouts.
- Impact the Eastside's niche as a technology center/technology leader.
- Affect the future development of business parks.
- Undermine the services provided by community colleges, universities, and medical centers.

Alternative 1: New Substation and 230 kV Transmission Lines

This alternative refers to PSE's proposal to resolve the stated transmission capacity deficiency. The types of lines considered for Alternative 1 were categorized into four options as follows: **Option A** – new overhead transmission lines in existing PSE corridors, new corridors, or public right-of-way;

Option B – use existing Seattle City Light (SCL) overhead transmission lines; **Option C** – underground transmission lines; and **Option D** – underwater transmission lines.

Alternative 1 – General Comments on New Substation and 230 kV Transmission Lines

Many of the commenters indicated opposition to Alternative 1 but did not refer to a specific option. The following is a sample of comments expressing opposition to any sort of transmission line solution:

- Transmission line is a solution that is vastly bigger than we need – it will have a capacity exceeding 1,000 MW when only 70 MW are required in the foreseeable future.
- Puts "all eggs in one basket" – ratepayers would finance an upfront cost of more than a quarter billion dollars to build a transmission line that has reliability and security risks.
- High costs to the community, but no justification for the project.

Option A (New Overhead Transmission Lines)

Most of the comments indicated opposition to Alternative 1, Option A. The following is a sample of comments expressing opposition:

- Antiquated solution.
- Places transmission lines too close to aging fuel pipelines.
- Risky, unsightly ("industrial blight"), inflexible and overly expensive, in both environmental and financial terms.
- Vulnerable to extreme weather, fires, landslides, terrorism, solar flares, pipeline accidents, and errors of human judgment.
- If only one power pole falls, a big piece of electricity supply would be out of service.
- Environmental impacts are unacceptable: loss of trees; loss of homes; community character impacts; impacts to property values, soil stability, and animal habitat; spreads invasive species; increased noise levels; view impacts; impacts to health from electric and magnetic field exposure.
- Unacceptable impacts; significant adverse impacts.
- Lack of flexibility and opportunity for innovation; not a sustainable solution.
- Does not meet goal to be "environmentally acceptable" to PSE and communities. Increasing capacity encourages customers to increase their demand for more electricity.

The following is a sample of comments expressing support:

- Reasonable use of land resources (use of existing PSE utility corridors).
- Most predictable and cost-effective option.
- Technically feasible.
- Proven infrastructure; low-risk.
- Solves the transmission capacity deficiency problem, meets mandatory federal standards, and has the greatest longevity.

Option B (Use Existing SCL Overhead Transmission Lines)

Several commenters expressed opposition, indicating that the option is not practical for financial or political reasons. Some commenters indicated support for Alternative 1, Option B, indicating the option is a reasonable use of land resources (use of existing SCL utility corridor). This included comments asserting that FERC 1000 gives the authority to require SCL to allow use of its corridor by PSE.

Options C and D (Underground or Underwater Transmission Lines)

A small number of commenters indicated support for Alternative 1, Option C or Option D, but generally did not give specific reasons for support other than these options avoid overhead transmission lines, and would avoid impacts to public safety and the environment including habitat for birds and wildlife. Commenters expressed opposition to Option C because they felt it would be too expensive and that a rate increase to pay for it would harm lower and middle class residents, and such rate increases may be deemed imprudent and rejected by state regulators. The Muckleshoot Indian Tribe expressed opposition to Option D based on shoreline impacts to Lake Washington and its salmon resources.

Alternative 2: Integrated Resource Approach

The focus of Alternative 2 is on energy conservation and use of technologies other than transmission lines to address the project objectives. Many commenters indicated support for Alternative 2, or components of it. Many commenters suggested that Alternative 2 needs to be further developed and reviewed by independent experts; these comments are summarized under *Key Theme ALT-1, Alternatives Considered in the Draft EIS.* Below is a summary of comments indicating support for Alternative 2:

- The smart technology solution.
- Safer and less costly alternative.
- More scalable, more reliable, and more cost effective.
- Promotes smart and sustainable growth, more energy-efficient, and less damaging to the environment.
- Lower vulnerability to damage from storms, fires, and terrorism.
- Could be built incrementally as need develops over time.
- Able to incorporate improved technology over time.
- Solutions are available that are more economical than transmission lines.

Comments in opposition generally stated that the alternative relies on unproven technology, is unreliable and risky, will jeopardize economic vitality on the Eastside and pose greater financial risk than the cost associated with upgrades to PSE's aging infrastructure, could potentially burden other utilities, result in noise impacts to Lake Tradition Plateau, and impact student learning and achievement should blackouts occur.

PSE commented that Alternative 2 includes elements that have limited feasibility and are not in their direct control, and therefore could not be reliably implemented or approved by NERC.

The City of Sammamish stated that, while further design and review of Alternative 1 should be pursued, they also requested that PSE continue its efforts in researching, designing, and utilizing

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emerging alternative technologies (such as those described in Alternative 2 of the Phase 1 Draft EIS) to account for a growing portion of its system capacity. (Sammamish also noted that they are a member of the King County Cities Climate Collaboration [K4C], and support the delivery of safe, reliable, and clean energy to members of their community.)

Alternative 3: New 115 kV Lines and Transformers

Under Alternative 3, new 115 kV transmission lines would be constructed in existing or new rights-of-way around a broad portion of the Eastside. Numerous commenters expressed opposition to this alternative. The following is a sample of comments expressing opposition:

- Would build three times as many transmission lines all over the Eastside; not a realistic option.
- Highly inefficient; a line this far from the high-density source of the loads does not make sense.
- Included only to make Alternative 1 look "less horrific."

PSE commented that Alternative 3 would result in impacts significantly greater than impacts identified for Alternative 1. PSE further commented that this alternative does not meet the longevity requirement stated in the project objectives.

Key Theme ALT-1: Alternatives considered in the Draft EIS

Comment Summary:

This theme incorporates comments relating to the definition or specification of alternatives evaluated in the Phase 1 Draft EIS. These comments include statements suggesting that more work should be done to refine or modify the alternatives. Several comments of this type requested further development and refinement of Alternative 2. Some commenters questioned the viability or reasonableness of certain alternatives or options.

Several commenters requested further definition of **Alternative 1, Option A** to understand potential transmission line routes. Others requested additional information on which existing transmission poles would be replaced, the timeline for replacement, potential pole heights, and construction equipment necessary to build the project. Commenters also requested confirmation that new transmission poles would be constructed at least 50 feet from the Olympic Pipeline system (citing BPA policy), while others thought the existing PSE easement in Newcastle would not be wide enough to safely support a new overhead line. Additional comments on pipeline safety or EMF issues related to Alternative 1 are summarized in the Pipeline Safety and EMF comment response sections of this appendix. Commenters questioned whether Alternative 1 would meet PSE's own objectives for timing and reliability. One commenter also questioned why the use of Corrective Action Plans (CAPs) can't be seen as a permanent solution.

Many of the commenters stated that **Alternative 2** was developed and defined based on outdated data and studies, and requested that the alternative be revisited using independent experts with experience with modern electrical grid technologies, including demand-side management and distributed energy resources. Several commenters referred to findings from a CENSE-sponsored third-party evaluation of Alternative 2, the EQL study, stating that the analysis shows PSE and the EIS consultants made significant errors in their evaluation of alternative technologies. (The EQL study was attached to comments submitted, and was prepared in response to the Phase 1 Draft EIS. It disputes PSE's economic analysis in its Integrated Resource Plan [IRP], claiming that if the cost of transmission were included, many more alternative "non-wire" technologies would be considered feasible means of supplying power. It also asserts that these technologies have matured sufficiently to be viable alternatives to the proposed 230 kV transmission line.) Several commenters mentioned Northwest Power and Conservation Council's Seventh Power Plan, and suggested that a carefully developed plan would be superior to Alternative 1, Option A in terms of cost, safety, and environmental protection.

In expressing support for Alternative 2, several commenters stated that this option would allow PSE to implement better technologies over time, and stressed that more time should be taken before a permanent option like Alternative 1 be pursued.

Among the comments were suggestions for the size and location of distributed generation facilities, asserting that these facilities could be sized for rare peak loads and not for daily 230 kV transmission. Similar comments suggested there are viable grid battery technologies that could address short-term emergency peak loads. One suggestion was made to rely on incentivized conservation that would provide financial benefits to the customer to ensure successful implementation of demand-side reductions, while another commenter stated that Alternative 2 does not account for market drivers for increased conservation and the impact of FERC Order 745 which addresses compensation for demand-side reductions in wholesale energy markets.

Several commenters proposed the use of batteries, demand-side reductions, distributed generation, local power generation facilities, and other new technologies, underground lines, underwater lines, and upgrades to existing systems, but did not specify how these proposed solutions differ, or are the same as, alternatives or options included in the Phase 1 Draft EIS. Other commenters expressed their support for a Public Utility District and conservation over the listed alternatives, while another commenter suggested the existing 115 kV transmission lines be converted from Alternating Current to Direct Current to increase capacity and reliability.

Some commenters suggested that **Alternative 3** and certain options under **Alternative 1** were "red herring" alternatives, put forward to make PSE's proposal (Alternative 1, Option A) look favorable by comparison. There were questions about how the transmission line under Alternative 3 would help ease downtown Bellevue's power needs, suggesting that a line far to the east of high-density loads does not make sense and is inefficient. Commenters questioned why Alternative 1, Options B, C, and D were included, asserting they would be either politically unacceptable or cost prohibitive due to state regulations, and would not be implemented. Commenters from the City of Sammamish provided a list of questions they wanted answered in Phase 2 if Alternative 3 is carried forward, including the miles of lines to be retrofitted or newly constructed, required clearance zone, and diversion of electrical capacity from existing substations and its effect on their performance.

One commenter suggested different transmission alternatives, including adding a new 230/115 kV transformer at the Lakeside substation and looping the existing SCL double-circuit 230 kV line through the Lakeside substation. The suggested route includes the line east along I-90 then north to the substation along the existing PSE right-of-way, and west near the Lake Hills Connector until the SCL lines are once again intercepted. The commenter suggested this alternative has significantly less environmental impact than 18 miles of new transmission lines. It was further suggested that PSE reevaluate the Lake Tradition Option and BPA's best technical solution by building a second Monroe-Echo Lake transmission line.

A different commenter asked whether the Phase 1 Draft EIS adequately explored the option of co-locating within the SCL corridor; this commenter asked whether PSE had considered how to make the co-location more appealing to SCL, or whether there was legal precedent for making use of the existing SCL corridor. They also asked if a change to city or state law would make this option more feasible.

Several commenters requested maps showing the specific locations where each alternative (or option) would have construction impacts.

PSE commented that the complexity of rebuilding the SCL line under Alternative 1, Option B is understated in the Phase 1 Draft EIS, emphasizing that taking the SCL line out of service and rebuilding in place has not been studied or agreed to by SCL. The comments further stated that the definition of Option B omits additional reconductoring that would be needed (outside the study area), and additional miles of new 230 kV line corridor that would be needed to connect the SCL line to the Sammamish substation and separately to the Lakeside substation. PSE commented that Option B would potentially require clearing the entire SCL corridor and possibly require acquisition of additional easement. Given these omitted elements, PSE commented that analysis of Option B either understates or overstates impacts, depending on the resource.

A commenter asserted that attributing impacts to the No Action Alternative was not consistent with SEPA. Instead, the No Action Alternative should be depicted as having no impacts on the environment to properly compare to the Energize Eastside project. Other commenters thought the No Action Alternative should include the Maple Valley-SnoKing reconductor project if deemed necessary by ColumbiaGrid.

Response:

The Phase 1 Draft EIS includes a programmatic-level analysis that reflects the level of detail at which alternatives were defined at the time the Phase 1 Draft EIS was prepared. The Phase 1 Draft EIS evaluates the high-level aspects of the project (see Chapter 1 of the Draft EIS for more information). While there were numerous comments regarding how the alternatives for this programmatic analysis could be refined, the Partner Cities do not intend to revise the Phase 1 Draft EIS and republish it. The Phase 1 Draft EIS served the purpose of building an understanding of the transmission capacity deficiency PSE has identified, PSE's objectives, and the environmental consequences associated with different approaches to meeting those objectives.

The project-level Phase 2 Draft EIS includes a more specific and detailed review of alternatives based on the analysis of Phase 1, and focuses on project design and construction. For example, as requested by commenters, more detailed information on pole placement and design is provided in the Phase 2 Draft EIS. The Phase 2 Draft EIS addresses the need for setbacks from the Olympic Pipeline system, as requested by commenters. Alternative 1, Options B, C, and D, and Alternatives 2 and 3 were not carried forward into the Phase 2 analysis for the reasons described in Section 2.2 of the Phase 2 Draft EIS. Therefore, the EIS acknowledges, but does not further address, concerns expressed by the Muckleshoot Indian Tribe about the potential effects of Alternative 1, Option D, on tribal fishing areas.

In response to comments stating that PSE should hold off on building Alternative 1 because of a lack of need for the project, all of these comments raise issues that were addressed in the discussion in the Phase 1 Draft EIS Chapters 1 and 2. As noted there, the EIS does not evaluate whether or not a project is needed, but takes need into account in considering the applicant's objectives. PSE identified a deficiency of 74 MW by the winter of 2017–2018 or summer of 2018. This finding is summarized in the 2015 Needs Assessment, and is also described in Section 1.3 of both the Phase 1 and Phase 2 Draft EISs. Additionally, see the discussion contained in the Project Objectives comment response section of this appendix.

The EIS acknowledges that the project would provide more than adequate capacity to meet the projected need in the 10-year planning horizon. However, as discussed in the Phase 1 Draft EIS, there is no intermediate size of transmission facility between 115 kV and 230 kV capacity that would work within the regional grid. See Section 2.2.1.15 of the Phase 1 Draft EIS for discussion of 115 and 230 kV transmission lines. The mere fact that the project would create more than adequate capacity for the next decade is not a reason for eliminating the alternative.

In selecting alternatives to be evaluated in an EIS, the Partner Cities are not obligated to consider every conceivable scenario. The SEPA Rules note that use of the word “reasonable” is intended to *limit* (emphasis added) the number and range of alternatives, as well as the amount of detailed analysis for each alternative. For the Phase 1 Draft EIS, an objective of the Partner Cities was to identify a set of alternatives (including the No Action Alternative) that would define the range of possible alternatives to meet PSE’s objectives. According to the SEPA handbook (3.3.2.1), “*SEPA requires the evaluation of the no-action alternative, which at times may be more environmentally costly than the proposal, or may not be considered "reasonable" by other criteria. Still, it provides a benchmark from which the other alternatives can be compared*.”

The EQL study cited in several letters was a critique of Alternative 2 in the Phase 1 Draft EIS. It is acknowledged in Chapter 2 of the Phase 1 Draft EIS that the mix of technologies in Alternative 2 was an example. The EQL study argued that both more conservation and more reliance on energy storage were possible. However, Alternative 2 was not carried forward in the Phase 2 Draft EIS, for reasons described in Section 2.2 of that document; therefore, variations on Alternative 2 were not analyzed.

The applicability of FERC Order 745 was not considered because the EIS is not required to take into account how projects or programs are funded.

All of the technologies suggested in the comment letters, including those described in the EQL study, were considered in the Phase 1 Draft EIS. In some cases, commenters suggested methods of addressing the problem that were not capable of meeting PSE’s objectives. These include use of an existing BPA transmission line, discounting flow of electricity to Canada through the Eastside grid, converting existing 115 kV lines from alternating current (AC) to direct current (DC), and asking ColumbiaGrid to build capacity outside of the Eastside area. As described in Chapter 2 of the Phase 1 Draft EIS, several of these solutions were found to overload either transmission lines or transformers and would therefore not meet PSE’s stated project objectives. These alternatives were not studied further in the Phase 1 Draft EIS.

As noted in Section 2.2 of the Phase 1 Draft EIS, converting the 115kV transmissions lines from AC to DC would add complexity to the system that would reduce operational flexibility, which could have adverse impacts to the reliability and the operating characteristics of PSE’s system. Comments comparing the connection of the grid serving the Quebec region using DC power to the situation on the Eastside ignore the fact that virtually the entire Quebec system is supplied by the DC connection, rather than having a small segment within the system being converted to DC for a short distance and then being converted back to AC.

Another solution that involved reconductoring the SCL Maple Valley – SnoKing 230 kV line with high-temperature conductors was also considered and described in Chapter 2 of the Phase 1 Draft EIS as not effective in addressing all relevant PSE equipment violations. Claims by commenters that ColumbiaGrid has documented options that would solve the problem that do not require PSE involvement are unsupported.

With regard to whether the project would meet PSE's standards for redundancy and reliability, commenters may not have understood that Alternative 1 proposes two supplies of 230 kV power to the proposed substation in the center of the Eastside—one from the north and one from the south. Either would be capable of supplying the substation, so that if one line goes down the other would still be in service. With regard to timing, it is acknowledged that the timing of the project has slipped, and that completion of Alternative 1 would likely not occur by winter 2017–2018. PSE now estimates that the earliest period when load shedding could be required is summer 2018. Timing of the construction of PSE's proposed alignment is discussed in Chapter 2 of the Final EIS. CAPs are not viewed by PSE as a permanent solution because they place customers at risk of power outages. See the discussion of CAPs in Chapter 1 of the Phase 1 Draft EIS.

With regard to Alternative 1 Option B, the Phase 1 Draft EIS was not a project-level analysis. It was intended to identify the types of impacts associated with various ways to address the project need. Because the SCL corridor was not carried forward, no additional analysis was conducted to determine whether the statements from PSE were correct or not. However, it is correct that the Phase 1 Draft EIS did not look in detail at how a connection would be made from the existing SCL line to the Talbot Hill and Sammamish substations.

With regard to PSE's statement that the Alternative 3 would have greater impacts than Alternative 1, the Phase 1 Draft EIS did find this was true with regard to some elements of the environment, while for other elements, impacts would be similar or less. The Phase 1 Draft EIS did not make an overall judgment as to which alternative would have the least or most environmental impacts. With regard to the statement that Alternative 3 would not meet the longevity objective, the longevity objective stated by PSE in the Supplemental Eastside Solutions Study (2015) was to meet the performance criteria "for 10 or more years after construction with up to 100% of the emergency limit for lines and transformers." It was understood when this alternative was being developed in cooperation with PSE that Alternative 3 would meet or approximate this objective.

Key Theme ALT-2: Comparative summary of impacts

Comment Summary:

This theme includes comments about the summary of impacts presented in the Phase 1 Draft EIS (Chapter 1), such as specific concerns about the ability to compare alternatives based on their impacts, a critique of the format used for summarizing impacts, and disagreement with specific conclusions in the summary.

Several commenters identified inaccurate conclusions made for Recreation in Table 1-3 for Alternative 2 (Minor to Significant), noting that the conclusion is misleading based on findings in the EIS. Other commenters requested clarification on the difference between conclusions of "significant" as presented in Tables 1-2 and 1-3 and "significant unavoidable adverse impacts" as presented in the summary sheets in Chapter 1 for key findings. Commenters requested that the environmental benefits of Alternative 2 be presented in the EIS. One commenter found the definitions of minor, moderate, and significant impacts to be so broad that they cannot be meaningfully used to evaluate alternatives and thought the conclusions were skewed toward minor impacts, suggesting that the alternatives were not analyzed at a sufficient level of detail or in a comparable manner.

Comments suggested that the comparison between Alternative 1 Option A and Alternative 1 Option C were incorrect and that construction impacts on recreation resources from undergrounding the transmission line could be much greater than an overhead line.

Response:

The SEPA Rules require that the EIS summary "shall include a summary of the proposal, impacts, alternatives, mitigation measures, and significant adverse impacts that cannot be mitigated" (WAC 197-11-440 [4]) and that the EIS should present "a comparison of the environmental impacts of the reasonable alternatives…." (WAC 197-11-440 [5] [vi]). Lead Agencies are granted leeway in how they choose to present and format information on the comparative impacts of the alternatives. The presentation of such information in the Phase 1 Draft EIS meets the requirements of the regulations, and the Partner Cities believe the summary content is suitably clear and organized. The Partner Cities note that Tables 1-2 and 1-3 in the Phase 1 Draft EIS are only a portion of the summary, and that greater detail is included in the Chapter 1 narrative summaries for each element. The tables display impacts in a way to facilitate side-by-side comparison of alternatives, but are not intended to be a stand-alone summary.

There was an error in Table 1-3, in the presentation of impacts for Recreation under Alternative 2. Impact conclusions should have been stated as Negligible to Minor, and a correction is issued in the Errata in this Final EIS (see Chapter 3).

As clarification, a "significant impact" is defined by WAC 197-11-794 as "a reasonable likelihood of more than a moderate adverse impact on environmental quality." Some significant impacts can be mitigated, while others cannot. Those that cannot be mitigated are considered "significant *unavoidable* adverse impacts." In each chapter, there is a discussion of what was considered a significant unavoidable adverse impact for the respective element of the environment. In the evaluation of impacts, including determinations regarding the significance of impacts, the EIS Consultant Team considered impacts that have a low likelihood of occurrence but would be severe if they occurred.

The Phase 1 Draft EIS analysis was prepared without benefit of a project design. The development of an overhead line is simpler than the design of an underground line. Furthermore, the discussion of overhead lines extends to development of a new corridor, which would have a much greater extent of construction impacts than use of the existing corridor. Because of the lack of design detail, some assumptions about undergrounding may have understated impacts relative to those from overhead lines. Had the underground line alternative been carried forward, additional design detail would have clarified whether the impacts would indeed have been greater.

Key Theme ALT-3: Minor clarifications

Comment Summary:

Several commenters stated concerns relating to pipeline safety, EMF, property acquisitions, home devaluation, and land use and housing impacts as justification for preferring various alternatives. Other commenters had concerns regarding project objectives. PSE provided a number of comments related to the definition of alternatives evaluated in the Phase 1 Draft EIS.

Response:

Pipeline safety, including discussion of the proposed shield wire, is addressed in Section 3.9 of the Phase 2 Draft EIS and the Pipeline Safety comment response section of this appendix.

Impacts related to EMF are covered in Section 3.8 of the Phase 2 Draft EIS. Please also see the EMF comment response section of this appendix.

No property acquisitions are anticipated for the project. Please refer to Section 3.1 of the Phase 2 Draft EIS and Key Theme LU-1 of the comment response section of this appendix.

Please see Key Theme ECON-1 of the comment responses for topics related to impacts to property value depreciation.

As described in the Phase 1 Draft EIS, an EIS is intended to evaluate the probable significant environmental impacts of a proposed project or program. The EIS does not evaluate whether or not a project is needed, although it does take into account the project objectives in establishing what alternatives should be included. Please see response to Key Theme OBJ-1.

Comments regarding the definitions of Alternative 1, Option A and the No Action Alternative are addressed through the more detailed definitions of these alternatives in Chapter 2 of the Phase 2 Draft EIS and Chapter 2 of the Final EIS. Alternative 1, Options B, C, and D, and Alternatives 2 and 3 were not carried forward into the Phase 2 analysis for the reasons described in Section 2.2 of the Phase 2 Draft EIS. The EIS acknowledges, but does not further address, clarifications on the definition of these alternatives made by PSE.

Regarding PSE's comment regarding the regulatory basis for vegetation clearing requirements, the Final EIS Section 4.4.4.1 states that the vegetation clearing requirements are based on NERC requirements.

Earth (Topic EARTH)

This section describes and responds to the comments received on the Phase 1 Draft EIS regarding earth resources. Primary themes included earthquake-related hazards, impacts from pole installation, hazards related to the Olympic Pipeline, mitigation measures, requests for more specific data, and project specifics that should be included in the Errata.

Key Theme EARTH-1: Earthquake-related hazards

Comment Summary:

Commenters raised concerns regarding the Seattle Fault line which the existing aging Olympic Pipelines and power lines cross in proximity to existing homes. Commenters stated that the Cascadia Subduction Zone which ties to the Seattle Fault is capable of earthquakes in excess of 9 on the Richter scale. Commenters pointed out that the Cascadia Subduction Zone occurs at intervals of 300 to 500 years, and the last major seismic event was 315 years ago. The Axial Seamount (underwater volcano) began eruptions on April 30, 2015 which could add to the pressure along the Cascadia Subduction Zone, and by extension, the Seattle Fault. Commenters requested an evaluation of how liquefaction that could occur within the Eastside could affect the project.

Response:

The Phase 1 Draft EIS (Section 3.3.3.4) states: "A fault is considered active when it has shown evidence of displacement within the last 11,000 years. An earthquake on the Seattle Fault poses the greatest risk to the Seattle urban region." The section states that there are three sources of earthquakes: the Cascadia subduction zone, the deep intraslab subduction zone, or shallow crustal faults. The closest active crustal source is the Seattle Fault Zone. Shallow quakes are the type expected on the Seattle Fault Zone, which can create more damage than deep quakes because of the proximity of buildings and infrastructure to the epicenter. The Phase 1 Draft EIS described the Seattle Fault, but did not specifically state that the existing 115 kV transmission line and Olympic Pipelines cross the Seattle Fault Zone. It is correct that a major earthquake of the magnitude expected on the Seattle Fault could cause pipeline rupture in certain areas on the Eastside (Earthquake Engineering Institute and Washington Military Department Emergency Management Division, 2005). See Errata, Chapter 3 of the Final EIS that clarifies this omission further. Nonetheless, as stated in the Phase 1 Draft EIS, the proposed project would not increase the probability of an earthquake to occur nor increase the amount of damage that would occur to the pipeline in an earthquake.

The EIS Consultant Team found no incidents of steel poles built to modern standards, or transmission lines falling as a result of earthquakes in the United States, including major quakes in California. Damage to equipment on the poles, such as insulators and disconnect switches, has occurred. In major California earthquakes, there have been instances of transformers and other substation equipment being shaken from their foundations and other substation equipment damage.

Regarding the presence of seismic hazards, including the extent of the Seattle Fault Zone and areas susceptible to liquefaction, the Final EIS includes an expanded discussion in Section 4.11, *Earth Resources*. This section also addresses regulatory requirements in greater detail than the Phase 1 Draft EIS. Just as the Phase 1 Draft EIS, the Final EIS concludes that compliance with existing regulations would result in less-than- significant impacts.

Key Theme EARTH-2: Impacts from taller poles and pole installation

Comment Summary:

Concerns were raised over the potential for taller poles to have a higher risk of destruction in a seismic event, including at the Somerset Recreation Center, stating that the current lines would fall within easement boundaries but the proposed lines would fall onto properties adjacent to the proposed routes. Commenters asked how the "fall-zone" of 130-ft tall monopoles is accounted for in the Right of Way, noting that many houses are closer than 130 feet to the monopole sites and earthquakes or high winds could cause poles to topple. Concerns were also raised about vibration from vertical boring for the pole placement, causing settlement damage to nearby house foundations.

Response:

As described in more detail under Key Theme Earth-1, transmission poles historically have not been toppled by earthquakes, regardless of height. Although Alternative 1, Option A, would introduce taller poles, design standards required for transmission poles are the same for any height pole, and would make it extremely unlikely that poles would fall during a seismic event. Systemwide, PSE confirmed that there have been no structure failures of steel transmission poles within their system due to geologic hazards including seismic events and failures of wood poles have been rare, involving extenuating circumstances like placement in a bog or being impacted by a landslide in a remote mountain setting (see Section 3.4 of the Phase 1 Draft EIS). Section 4.11 of the Final EIS provides additional discussion of seismic issues.

For a discussion of construction methods for removal of existing wooden poles and conductors and installation of new steel poles, see Section 2.3.2 of the Phase 1 Draft EIS. Further, as discussed in Section 3.6 of the Phase 1 Draft EIS, most construction processes do not generate enough vibration to be considered damaging because ground vibrations dissipate quickly with distance. Further detail on installation methods is included in the Final EIS.

Key Theme EARTH-3: Earthwork activities near Olympic Pipeline system

Comment Summary:

Commenters, including representatives from the Somerset Recreation Club, expressed concern with construction activities involving earthwork near the Olympic Pipeline Company pipelines and the potential for damaging vibrations and erosion.

Response:

As discussed in the Phase 1 Draft EIS, a significant adverse impact could occur during construction near petroleum pipelines; however, these potential hazards do not constitute a probable impact due to existing regulations and practices in place for pipeline safety. The project would be required to comply with all regulations regarding erosion-prone areas, such as steep slopes. The Olympic Pipeline Company has stringent construction requirements in the area of its pipelines and would continue close coordination with PSE and local jurisdictions for all construction activities located adjacent to these pipelines. A risk assessment that took into account the risks in the corridor was conducted as part of the Phase 2 Draft EIS. For further analysis of pipeline safety, see Sections 3.9 and 4.9 of the Phase 2 Draft EIS, and Sections 4.9 and 5.9 of the Final EIS.

Key Theme EARTH-4: Regulatory thresholds and mitigation measures

Comment Summary:

Commenters highlighted or questioned the level of regulatory thresholds required and Best Management Practices (BMPs) applicable for different phases of the proposed project within different jurisdictions; as well as pointed out that building codes are requirements not recommendations.

Commenters noted that mitigation for geology-related risks, including those at specific sites such as the Somerset Recreation Club, should be more site-specific, more project-related, and that anticipating mitigation without site-specific details is futile.

Mitigation measures were suggested by PSE for potential stormwater management impacts. PSE noted that they would comply with local agency requirements for flow control mitigation (including detention) to address stream bank erosion due to increased runoff from new impervious surfaces, stream flow velocities, and flooding. PSE also noted that they would follow the appropriate NESC design requirements; although seismic engineering would not be required for NESC compliance, it could be required as mitigation for this project.

Response:

BMPs are developed on a project-specific basis and determined by the local regulatory agency (see Section 3.6 of the Phase 1 Draft EIS). Building codes are indeed requirements (see Section 3.7.1.3 of the Phase 1 Draft EIS). However, as a correction, Chapter 3, *Errata*, in the Final EIS notes that the Washington State Building Code exempts electrical transmission equipment and structures in a utility right-of-way from its requirements. Section 4.11 of the Final EIS provides an expanded discussion of applicable standards.

The mitigation measures identified in Section 3.8 of the Phase 1 Draft EIS were prepared in the context of a programmatic-level of analysis. These mitigation measures are not specific to certain facilities, but would be applied where needed. These include measures that could be implemented during construction or operation of the project to reduce or minimize the potential for erosion, slope failure, unsuitable soils, or settling impacts for all alternatives that involve earthwork.

Stormwater runoff and associated erosion are evaluated in Chapter 5 of the Phase 1 Draft EIS and further analyzed in the Phase 2 Draft EIS (see Chapter 4.3). Use of appropriate stormwater management (detention) facilities to reduce stream flow velocities and flooding, as well as NESC seismic engineering design requirements have been included as mitigation in Section 3.8.1 of the Phase 1 Draft EIS, and carried forward into the Final EIS. Please see Section 4.11 of the Final EIS.

Key Theme EARTH-5: Request for more location-specific data

Comment Summary:

Commenters requested more information on specific pole placement locations. Additionally, more information detailing site plans or building plans was suggested in order to accurately analyze soil conditions.

Response:

The Phase 1 Draft EIS provides a programmatic evaluation of the potential impacts to earth resources. The Phase 2 Draft EIS provides a project-level assessment of elements of the environment where significant adverse impacts could occur. Because it was determined during Phase 1 that impacts to earth resources would be less than significant, it was not evaluated in the Phase 2 assessment. However, in response to the number of comments on the Phase 2 Draft EIS asking for additional information on seismic risks, the Final EIS includes an expanded discussion of the specific seismic risks in the study area for PSE's Proposed Alignment (see Section 4.11 of the Final EIS). While seismic risks are present in the study area and throughout the region, the project would not substantially affect those risks. Site-specific geological and soil conditions will be evaluated as PSE moves forward with the project design and moves into the permitting stage for the project. Revised pole location data are included in the Final EIS analysis (see Appendix A), and accessible on the EIS project website (www.energizeeastsideeis.org) for the public to review.

Additionally, Section 3.3.3 of the Phase 1 Draft EIS describes the potential to encounter geologic hazards, including steep slopes, erosion, landslides, seismic hazards (e.g., liquefaction), and other hazards such as soft soils. The Phase 1 Draft EIS evaluated the potential for adverse impacts in Sections 3.6 and 3.7. It determined that impacts under all alternatives would be minor with the implementation of BMPs, geotechnical recommendations, regulatory requirements, and industry standards.

Key Theme EARTH-6: Errata and minor clarifications

Comment Summary:

Following the release of the Phase 1 Draft EIS, PSE provided comments on coal mine hazards, role of the geotechnical engineer, reference to seismic requirements of the Washington State Building Code and local building code amendments, and description of the No Action Alternative.

Response:

Clarifications and errors were identified and rectified in the Errata regarding the presence and/or absence of abandoned coal mines; that a geotechnical engineer would provide the foundation design of the project facilities; and requirements of the Washington State Building Code and any local building code amendments. The No Action Alternative would entail pole replacement activities, which was mentioned in the Phase 1 Draft EIS and has been clarified in the Phase 2 Draft EIS and Final EIS.

Chapter 8 of the Phase 1 Draft EIS incorrectly states that: “state public utility commission has adopted seismic standards that utilities must follow, with structural requirements for poles that would be sufficient to resist anticipated earthquake ground motions.” PSE would meet the structural requirements set by the IBC, ASCE, and ACI, and this has been rectified in Chapter 3 of the Final EIS.

PSE also provided other minor clarifications that have not been included in the Errata, primarily because they relate to Phase 1 alternatives that are no longer being considered, they are minor clarifications (as opposed to factual errors), and they do not influence the results or conclusions of the analysis. The full letters are included at the end of Appendix J.

Greenhouse Gas Emissions (Topic GHG)

This section describes and responds to the comments received on the Phase 1 Draft EIS regarding air quality and greenhouse gases (GHG). Primary themes included the EIS scope, analysis, mitigation and conclusions regarding GHG, the tree clearing analysis and associated GHG effects, sustainable utilities and climate change, and the need under SEPA for air quality analysis.

Key Theme GHG-1: Phase 1 Draft EIS scope, analysis, mitigation, and conclusions

Comment Summary:

Several commenters stated that the EIS should fully assess, address, and mitigate carbon emission and sequestration issues for all alternatives. Several comments related to the carbon sequestration provided by trees and that these capabilities would not be replaced immediately by replanting young trees to compensate for the removal of 8,000 trees (under Alternative 1, Option A). At least one commenter stated that there should be no net reduction in carbon sequestration capacity as a result of the project, and that the Partner Cities should require carbon offsets for all incremental fossil fuel-based power that flows through the transmission line. Commenters were concerned over how mitigation was presented, and uncertain how GHG emissions would be mitigated to a level of no significance.

Some commenters requested further analysis of air quality impacts and GHG emissions related to the use of gas turbines under Alternative 2.

Commenters noted that the assertion that only the production of concrete, and not the production of steel, aluminum, and other metals, produces GHGs in significant quantities is incorrect.

Response:

The Phase 1 Draft EIS analyzes the implementation of vegetation replacement to reduce sequestration losses under Alternative 1, Option A, and Alternative 3 to a reasonable level for a programmatic analysis and comparison of alternatives (see Section 4.7). Alternative 1, Options B and C, would also involve vegetation clearing for alignments. Additionally, carbon credits could be purchased to offset operational emissions. Additional, alternative-specific mitigation measures are listed in Section 3.5.8 of the Phase 2 Draft EIS. These include measures such as replacing "trees removed for the project based on tree protection ordinances and critical areas regulations in each jurisdiction; some of these trees would likely be planted off-site or, in the case of the City of Newcastle, mitigated by paying into an in-lieu fee program." It should be noted that mitigation is not limited to the measures listed in the EIS, and additional mitigation could be required, including mitigation for carbon emissions from construction and operation. However, none of the jurisdictions have policies specifically calling for such mitigation, either for general development or specifically for electrical infrastructure.

The Phase 1 Draft EIS describes the potential GHG impacts associated with gas turbines in Sections 4.5.4.3.1, 4.6.4.2, 4.7, 4.8, and 4.9. The Phase 1 Draft EIS found that construction of gas turbines could result in direct GHG emissions. However, Alternative 2 was not carried forward for further consideration in the Phase 2 Draft EIS, because PSE determined that it did not meet the project objectives, in particular that it would not meet PSE's performance criterion for serving 10 years or more of growth after construction (electrical criterion #1 - see Chapter 1 Phase 1 Draft EIS). The Phase 2 Draft EIS describes alternatives not carried forward for additional analysis in Section 2.2.

The Phase 1 Draft EIS states that the primary material resources for Alternative 1 would be concrete for pier and transformer foundations, steel or laminated wood poles for towers, and conductors. Of these materials, concrete is likely the "most GHG-intensive to produce," accounting for cement production, aggregate production, water, and transport. It is correct that other materials also generate GHGs in production, transport, and installation, but for comparative purposes, the analysis used concrete only because it was the largest component. This analysis showed the relative order of magnitude of the potential impacts and allowed a determination regarding the potential significance of the impacts. Given the relatively small level of emissions from a worst-case assumption regarding project emissions for concrete foundations, it was concluded that the project would not result in significant emissions from manufacturing construction materials.

The Phase 2 Draft EIS evaluated the potential for lifecycle emissions at the project level in a similar manner to the Phase 1 Draft EIS, but with more accurate estimates of the number of poles. Potential GHG emissions for concrete foundations for all poles were estimated at 109 metric tons of CO2, based on an assumption that 180 poles would be constructed (see Section 4.5.2 of the Phase 2 Draft EIS). Similar to the programmatic analysis, this was not intended to be a full life-cycle GHG inventory, but to provide a relative comparison among alternatives. Similar to the Phase 1 Draft EIS analysis, it was concluded that the alternatives evaluated in the Phase 2 Draft EIS would not result in significant emissions from manufacturing construction materials.

Key Theme GHG-2: Tree clearing analysis and GHG effects

Comment Summary:

A number of commenters were concerned with the tree clearing analysis and associated GHG effects. Commenters also questioned the "worst-case scenario" analysis, which identified the potential need for further tree removal and/or clearing.

Response:

The Phase 1 Draft EIS examined the worst-case scenario for new overhead transmission lines, which assumed that the new corridor for a 230 kV line would be 120 to 150 feet wide (approximately 30 to 40 feet wider than a 115 kV line and the existing right-of-way corridor).

The Phase 1 Draft EIS analyzed tree removal and GHG effects as a worst-case scenario to provide a conservatively high assumption at the programmatic level, without survey-based tree count numbers or a defined route. It is true that use of the existing corridor would require less tree and vegetation removal because the existing footprint is already largely cleared. An updated vegetation removal assessment, including a more detailed discussion of clear zones and a tree inventory assessment, is provided in the Phase 2 Draft EIS (see Section 3.4). This analysis incorporated information from site-specific tree surveys and was used to provide an alternatives assessment for GHG emissions (see Section 3.5 of the Phase 2 Draft EIS, and Section 4.5 of the Final EIS).

Key Theme GHG-3: Sustainable utilities and climate change

Comment Summary:

Commenters expressed concern over GHG impacts when building energy infrastructure, noting that sustainability, renewables, and energy efficiency should be supported and carbon offsets should accompany projects to plan for climate change. Related to power that flows through the transmission line, commenters requested that the air quality and greenhouse gas impacts of coal-based electric generation be considered in the analysis. Other commenters suggested that utilities and utility companies should wean themselves off of burning fossil fuels.

Response:

GHG impacts associated with the proposal are evaluated programmatically in the Phase 1 Draft EIS (see Chapter 4) and at the project level in the Phase 2 Draft EIS (see Section 3.5). Both assessments found that there would be less-than-significant impacts to GHG levels from construction and operation of the project.

The project objectives are to address a deficiency in electrical transmission capacity during peak periods, not to increase power production, or to transmit power from new or different sources, so such impacts are not analyzed in the EIS. Whether or not a utility should be required to purchase or implement carbon-offsets is a city-specific regulatory issue and beyond the scope of this EIS analysis. Additionally, the willingness of utilities to adopt new technologies to reduce fossil fuel use is beyond the scope of this EIS. The EIS analyzes the potential impacts of the proposal (new transmission line) and alternatives, but it is not intended to analyze regional generation. Therefore, information and analysis on impacts of coal-based generation are not included because they are outside the scope of the EIS analysis.

Key Theme GHG-4: Need under SEPA for air quality analysis

Comment Summary:

Commenters identified the need to include an air quality analysis in the SEPA document, and why certain toxic pollutants such as mercury were exempted from analysis the Phase 1 Draft EIS analysis.

Response:

As stated in the SEPA Handbook, an EIS should focus on those elements of the environment that have the potential to be significantly impacted. It is true that power plants produce harmful pollutants. Existing regulations prohibit the release of pollutants such as mercury in levels that would be toxic, so for a programmatic analysis, it could be assumed that regulations would prevent such releases for any power plants that could be constructed, such as those described in Alternative 2. Construction of a new power plant, such as a peak generation facility, was not carried forward as an alternative in the Phase 2 Draft EIS analysis, as described in Section 2.2. The new substation and 230 kV transmission lines that would be constructed for the Energize Eastside project are proposed to address a deficiency in electrical transmission capacity during peak periods and improve the reliability of the Eastside's 230 kV electrical grid (see Chapter 1 of the Phase 1 Draft EIS). The project is not being constructed to increase power production; therefore, impacts associated with increased power production, such as mercury emissions and other air pollutants from existing power sources, were not evaluated as part of this EIS process.

Key Theme GHG-5: Clarifications and Errata

Comment Summary:

PSE stated that SF6 is not a highly toxic gas and does not have adverse impacts to human health.

Response:

Text in Chapter 8 was incorrect and has been rectified in Chapter 3 of the Final EIS to state that SF6 is not a highly toxic gas. However, SF6 is a contributor to GHG emissions and is further evaluated in that respect in the Phase 2 and Final EIS documents.

Water Resources (Topic WTR)

This section describes and responds to the comments received on the Phase 1 Draft EIS regarding water resources. Primary themes included water resources not identified in the Phase 1 Draft EIS, stormwater management, groundwater pollution, construction-related impacts, water quality and permitting, tribal treaty rights, and clarifications.

Key Theme WTR-1: Water resources not identified in the Phase 1 Draft (e.g., springs, streams, lakes, Coal Creek basin resources, etc.)

Comment Summary:

Commenters identified water resources they felt were not described in sufficient detail in the Phase 1 Draft EIS. One commenter noted the importance of the Water Resource Inventory Area (WRIA) 8, stating that the Coal Creek Natural Area is an integral part of Bellevue's parks and recreation system, and that the forest protects water quality and reduces erosion.

Commenters noted that Lake Boren was not included in the list of small lakes, natural springs along the proposed routes were not described, underground streams that percolate down College Hill toward Richard's Creek were not identified, and the rainwater that accumulates in PSE's easement between 135th Ave SE and Somerset Drive SE was not documented. Commenters stated that underground streams produce large quantities of mud within the study area; there are above and below ground catching ponds that retain water along PSE's easement between 135th Ave SE and Somerset Drive SE; and within the middle of the Olympus neighborhood (in Newcastle), the existing 115 kV transmission corridor is swampy most of the year. Commenters noted that such conditions could make the use of heavy equipment and siting power poles next to the pipelines difficult. Commenters also stated that PSE soil tests were not done in the area south of SE 84th Street in the Olympus neighborhood.

Response:

The Phase 1 Draft EIS provides a high-level, programmatic assessment of potential impacts to water resources within the combined study area, which encompasses portions of WRIA 8 (the Cedar-Sammamish River watershed) and WRIA 9 (the Duwamish-Green River watershed). All of the impacts described above were listed in the programmatic analysis. However, since a specific corridor was not yet identified during the Phase 1 analysis, existing critical areas GIS datasets were used to identify streams and wetlands, to generally understand the types of potential impacts that could occur. No field surveys were performed because the specific location of project elements had not been determined. It is acknowledged that those datasets may be incomplete.

The Phase 2 Draft EIS provides a more thorough, project-level assessment of the potential impacts of PSE's proposal. For example, the Phase 2 Draft EIS provides a detailed description of water resources within approximately 300 feet of the project (the area where water quality and critical areas permits would be required), making use of wetland and stream delineations performed for PSE by qualified professionals (The Watershed Company, 2016). The list of project-specific water resources is provided in Section 3.3.2 of the Phase 2 Draft EIS. This includes creeks and seasonal drainages that flow into Lake Boren (see Table 3.3-1) and streams and wetlands connected to Richards Creek. Section 3.3.2.3 of the Phase 2 Draft EIS notes that groundwater was found at or near the surface in the vicinity of the Richards Creek substation site.

The Phase 2 Draft EIS describes more specific methods to be used for construction, and how ground clearing could expose soils and increase erosion, but low vegetation would be allowed to grow and there would be no areas of exposed soil following construction. With the practices described, erosion and sedimentation would not increase, and no long-term impacts to water quality from erosion would occur (see Section 3.3.5.1 of the Phase 1 Draft EIS). The Phase 2 Draft EIS found that long-term impacts to water resources would be less-than-significant.

The Phase 1 Draft EIS notes that site-specific geotechnical information would be required to determine actual groundwater conditions (see Section 5.3.6). The Phase 2 Draft EIS reports the results of geotechnical studies conducted along the existing corridor and notes that groundwater was found at or near the surface on the Redmond Segment and in the vicinity of the Richards Creek substation site (see Section 3.3.2.3). It also describes potential impacts to shallow groundwater during construction (see Section 4.3.2.2) and notes that pump tests would be conducted prior to construction to determine specific impacts to groundwater. In areas where groundwater is near the surface or surface water is present, best management practices (BMPs) would be required to protect water quality (see Section 4.3.3, *Mitigation Measures*). Additionally, PSE must meet jurisdictional critical areas regulations.

Key Theme WTR-2: Stormwater management

Comment Summary:

Multiple commenters expressed concerns regarding stormwater management both during and after construction. Commenters stated that stormwater management is particularly important in steeper areas, that stormwater would no longer be absorbed as a result of the project, and there should be a plan for managing mosquitos in standing water. One commenter inquired why no maps or plans were provided for stormwater management. Another stated that underground lakes and reservoirs may be formed as a result of the project, leading to erosion and damage to buildings, pipelines, and transmission lines. Use of existing utility or road corridors was suggested so there would be less clearing, and less potential for impacts to water quality.

The Somerset Recreation Club noted that its facility has been impacted by stormwater runoff from the hill and roadway along Somerset Blvd. The club noted that the existing transmission line and pipelines could also have been impacted by stormwater runoff and suggested that an analysis be conducted before new poles are constructed.

Response:

The Phase 1 Draft EIS provides a high-level, programmatic assessment of potential impacts to water resources and therefore did not include the level of detail many commenters requested. A project-level assessment of potential impacts to water quality is provided in the Phase 2 Draft EIS. Impervious surface is the most common factor that reduces stormwater infiltration. However, the amount of new impervious surface would be minimal. In addition, once installed, poles would not affect groundwater infiltration or shallow groundwater flow (see Section 3.3.5.1 of the Phase 2 Draft EIS). During construction, contractors would be required to comply with the stormwater regulations of the Partner Cities, which are based on the standards set by Ecology's *Stormwater Management Manual for Western Washington* (see Table 5-1 of the Phase 1 Draft EIS and Section 3.3.6 of the Phase 2 Draft EIS). Compliance with these regulations would result in less-than-significant impacts on surface and groundwater (Section 3.3.5 of the Phase 2 Draft EIS).

The Phase 1 Draft EIS notes that tree canopy reduces stormwater runoff by intercepting and taking up water (see Section 6.3.3), and that clearing vegetation could increase runoff and erosion. The Phase 1 Draft EIS examined a range of options that included transmission lines constructed through new utility corridors that are currently vegetated. The Phase 2 Draft EIS examined specific corridors more closely and compared the impacts among options in Sections 3.3 and 3.4. Although permanently cleared areas would contribute to increased stormwater runoff, the Phase 2 Draft EIS found that impacts would be less-than-significant because PSE would comply with state and local stormwater permit requirements and would implement BMPs to control surface water runoff both during construction and over the long term. In the Final EIS, PSE's Proposed Alignment would be constructed within the existing corridor only, using the option that requires the least amount of tree removal.

Approximate pole locations were provided by PSE for the Phase 2 Draft EIS and are included in Appendix A of the Phase 2 Draft EIS. For the Phase 2 Draft EIS analysis, it was assumed that poles could be placed up to 25 feet away in any direction from the locations shown in Appendix A. The new steel poles will be designed and installed so that they would not be adversely impacted by stormwater runoff, nor would they affect stormwater runoff once they are installed. As described in the Final EIS, for the PSE's proposed alignment, approximately 60% of the poles would be directly embedded and would not require a concrete foundation. Directly embedded poles have a smaller impervious footprint than poles with concrete foundations.

Key Theme WTR-3: Groundwater pollution and diversion

Comment Summary:

One commenter asked why groundwater pollution from coal ash was not considered. Another stated that properties along 129th St SE in the Olympus neighborhood drain groundwater (which is presumed to mean that there are groundwater seeps where subsurface water emerges to the surface because of soil saturation, a common feature in the Puget Sound region). They added that some homes were flooded during their construction due to groundwater. The commenter was concerned that digging and placing the foundations for the steel poles could change the flow of groundwater, and that construction negligence could cause the groundwater to flood homes. In addition, commenters stated that there could be significant adverse effects to water resources depending on the magnitude of a pipeline rupture, citing Criteria for Pipelines Co-Existing with Electric Power Lines by Dr. Cheng.

Response:

Chapter 3 of the Phase 1 Draft EIS states that coal mines and other hazards are present throughout the combined study area. As stated in Section 3.7.3.1, specific geotechnical investigations would be required to define the underlying engineering properties and identify any geotechnical hazards (such as coal mining areas) that may be present. Geotechnical engineering methods, such as the use of engineered fill or foundation design, would ensure that the effects of any identified hazards are minimized and impacts during operation would be minor. If coal ash were present in the soil, it is unlikely it would contaminate the groundwater because of requirements for preventing pollution during construction. The Phase 2 Draft EIS notes that construction for pole installation would also require excavation for pole foundation or direct embedding that could encounter shallow groundwater. This could require dewatering to remove groundwater that seeps into excavated areas. The uncontrolled release of dewatering water could contaminate surface waters. Use of sediment tanks to settle soil particles and filter or treat water pumped from the excavations would prevent groundwater contamination. Because the area of excavation for each pole would be limited to approximately 8 feet in diameter, any dewatering would be minimal and impacts would be less-than-significant (see Section

4.3.2.2 of the Phase 2 Draft EIS). Once installed, poles would not affect groundwater infiltration or shallow groundwater flow (see Section 3.3.5.1). Pump tests would be conducted prior to construction to determine the potential for drawdown and settlement. Appropriate mitigation measures would be developed to minimize impacts and comply with water quality protection regulations, as well as the Cities' critical aquifer recharge area and dewatering regulations.

The Phase 1 Draft EIS states that the Olympic Pipeline system could be damaged during construction under Alternative 1, Option A, and could have significant adverse effects on groundwater quality and other surrounding water resources depending on the location, size, and length of time of the rupture (see Section 5.5.3.1.6). The Phase 1 Draft EIS explained that the likelihood of a pipeline rupture is still considered low due to measures employed to prevent such accidents and is not measurably different from risks associated with current pipeline operations. Potential impacts of pipeline damage on water resources are evaluated in further detail in Section 3.9.6 of the Phase 2 Draft EIS.

Key Theme WTR-4: Construction-related impacts

Comment Summary:

Commenters had questions about the construction impacts section and requested that additional analysis be conducted. One commenter stated that risk mitigation plans would need to be developed because construction would cause rerouting of natural springs, flooding, and other water-related runoff to structures. One commenter noted that trenching through wetlands has the potential to dewater/drain wetlands without appropriate BMPs. Another commenter noted the potential impact on water resources from heavy machinery and excavation during construction. Commenters also noted the finding that Alternative 2 would have a lower potential for impact to water resources than Alternative 1, Option A.

Response:

It would not be necessary to reroute springs under any of the alternatives considered for this project. Any temporary alterations to springs during construction would need to comply with applicable regulations and accompanying mitigation requirements. Temporary periods of turbidity or disturbance of contaminated sediments could occur during in-water work, potentially impacting the water quality of streams. The implementation of BMPs, and compliance with local and state permit requirements, would be required to reduce potential water quality impacts. This is covered in greater detail in Section 5.5.1.4 of the Phase 1 Draft EIS. Construction impacts to streams are further evaluated in Section 4.3 of the Phase 2 Draft EIS.

The Phase 1 Draft EIS states that although some trenching could be required for the installation of underground or underwater transmission lines, mitigation for impacts to wetlands, streams, or their buffers would be required by existing regulations. Impacts to wetlands, streams, or their buffers would be minor because it is expected that they could be avoided during project design and pole placement, and any impacts could be fully mitigated (see Section 5.6.3.2). Under the alternatives carried forward for the Phase 2 Draft EIS analysis, no trenching would be required.

The Phase 1 Draft EIS acknowledges that ground disturbance from heavy machinery and excavation for the installation of poles for new or rebuilt overhead transmission lines have the potential for minor to moderate impacts to wetlands, streams, and lakes (see Section 5.5.3.1.4). Equipment could be operated in a manner to avoid wetlands, streams, and their buffers, and new poles would also be located to avoid these areas, to the extent feasible. However, impacts to some wetlands, streams, and their buffers are likely to be unavoidable. Mitigation would be required to comply with applicable regulations, and impacts to water resources would less-than-significant due to requirements imposed by regulatory agencies. Table 4.3-1 of the Phase 2 Draft EIS states that heavy construction equipment could compact soils and reduce the rate of surface water infiltration and groundwater recharge at the Richards Creek substation site. It also notes that limiting the area of construction impact would minimize compaction. Section 4.3.2 of the Phase 2 Draft EIS states that excavation could encounter shallow groundwater and require dewatering. Pump tests would be conducted prior to construction to determine potential drawdown and appropriate mitigation. Most of the other substation facilities would be placed on concrete pads, requiring limited excavation.

It is true that Alternative 2 has a lower potential for construction impact to water resources than Alternative 1 because construction would be smaller in scale (see Section 5.4.4). However, it was determined that this alternative was not feasible. As a result, it was not evaluated further in the Phase 2 Draft EIS or the Final EIS. For more information, see Section 2.2.7 of the Phase 2 Draft EIS.

Key Theme WTR-5: Water quality and permitting

Comment Summary:

A commenter requested that the EIS Consultant Team assess project compliance with the following: Dredge and Fill Requirements (33 CFR Part 323) and Section 10 Permits for Work in Navigable Waters (33 CFR Part 322). Another commenter stated that the reference to FEMA and local floodplain management regulations in the Phase 1 Draft EIS does not address requirements resulting from the 2008 Biological Opinion on the National Flood Insurance Program (NFIP); the commenter noted that not all of the referenced codes may have been amended to account for the BiOp, but each City is responsible for demonstrating compliance under the BiOp. The commenter requested that the EIS be revised to reflect the NFIP's requirement to conserve/protect habitat conditions for threatened and endangered salmonids and essential fish habitat.

Response:

Table 5-1 in the Phase 1 Draft EIS states that any project that proposes discharging dredged or fill material into Waters of the United States must obtain a Section 404 permit. Case law and rule amendments have specifically defined Waters of the United States (40 CFR 230.3). Case-by-case analysis is required to confirm applicability of this law to surface waters such as rivers, streams, ditches, lakes, ponds, territorial seas, and wetlands. Any work in, over, or under navigable Waters of the United States requires a Section 10 permit. The purpose of Section 10 permitting is to prohibit the obstruction or alteration of these navigable waters. Some of the streams and the Cedar River are within FEMA-designated floodplains; however, any poles placed in the floodplain would not obstruct flood flows or alter drainage. The Phase 1 Draft EIS and the Phase 2 Draft EIS state that the project would comply with all applicable permits and regulations; this would include compliance with the Endangered Species Act as well the NFIP BiOp, for example. During the permitting process, PSE would be required to demonstrate that any proposed development activities in a floodplain do not result in an adverse effect on listed species or habitat. For example, the City of Bellevue demonstrates compliance with the BiOp on a permit-by-permit basis. In Redmond, subsequent land use permitting would need to submit a FEMA Habitat Assessment and Floodplain/Floodway Report to the local jurisdiction for BiOp compliance.

Key Theme WTR-6: Tribal treaty rights

Comment Summary:

The Muckleshoot Tribe commented that Table 5-1: (1) failed to note that the U.S. Army Corps of Engineers must ensure tribal treaty rights are protected as part of their authorizations under Section 10 and 404; and (2) did not note that there are likely aquatic lands in the project area owned by the Washington Department of Natural Resources (WDNR). The Muckleshoot Tribe stated that Alternative 1, Option D, has the potential to impact tribal fishing by limiting access to fishing sites within the entire construction area, from the Renton area all along the eastern Lake Washington shoreline up to the Kirkland area (Figure 2-1), and due to vessel movements and barge traffic. The Muckleshoot Tribe stated the construction area would likely be larger than described in the EIS if construction materials need to be transported via ships and barges coming from the Locks (page 2-31). The Tribe stated that vessel traffic could potentially cause gear damage and obstruction of other fish sites if vessels and barges need to be staged outside of the construction areas. In addition, the Tribe stated that lease agreements and permission would be needed from WDNR to allow an underwater cable to be located on State-owned Aquatic Lands.

The Tribe stated Alternative 1, Option D, would have to avoid WDNR owned aquatic lands in front of the Barbee Mill Plat because it was capped as part of the clean-up efforts and should not be disturbed. The Tribe stated that the impact assessment is incomplete because Option D would require a minimum of three landing points that include six vaults for each landing point. Roads would also be required to access these vaults. These facilities will result in permanent impacts to vegetation (at a minimum), and where they occur on the shoreline there is the potential to permanently eliminate shoreline buffers, potential filling of shoreline wetlands, or impacts to streams and their buffers that drain to Lake Washington.

Response:

These comments relate specifically to Alternative 1, Option D (Underwater Transmission Line) as presented in the Phase 1 Draft EIS, which provides a programmatic evaluation of the potential impacts associated with Option D. The comments are correct regarding U.S. Army Corps of Engineers ensuring protection of tribal treaty rights as part of their authorizations, and the need for WDNR leases. Further analysis was not conducted because the alternative was not carried forward to the Phase 2 analysis (see Section 2.2.3 of the Phase 2 Draft EIS).

Key Theme WTR-7: Clarifications

Comment Summary:

PSE stated that maintenance under the No Action Alternative would not be limited to conductor replacement, but would include regular pole replacement as well.

PSE also stated that Alternative 2 would require construction of facilities; therefore, as proposed, minor to moderate impacts to water resources could occur. PSE stated that the necessary ancillary utilities that are required for components of Alternative 2 have not been addressed, including natural gas, water, and sewer pipelines.

Response:

For the Phase 1 Draft EIS, the No Action Alternative was generally defined as PSE managing its system as it currently does. This includes maintenance programs that reduce the likelihood of equipment failure and stockpiling of additional equipment so repairs can be made as quickly as possible. Impacts associated with routine maintenance of the existing transmission lines (e.g., occasional replacement or repair of poles, wires, and related equipment) are assessed in more detail as part of Chapter 3, Long-Term (Operation) Impacts and Potential Mitigation of the Phase 2 Draft EIS.

Section 5.5.4 of the Phase 1 Draft EIS states that the types of impacts described for Alternative 1 would be similar for some of the components of Alternative 2. The energy storage and peak generation plant components of Alternative 2 could be similar to transformer/substation work since they would be located at or adjacent to existing substations. Overall, Alternative 2 has a lower potential for impact to water resources than Alternative 1 because construction, other than energy storage and peak generation plant components, would be smaller in scale (small projects on individual homes and businesses) than the transmission line construction. Groundwater, floodplains, and stormwater issues would be handled in the same way as described above for Alternative 1. As a result, impacts on water resources are anticipated to be minor. Section 16.6.4.5 of the Phase 1 Draft EIS states that for peak generation plant components, utilities would need to be extended at the site, and upgrades or extensions of natural gas or water distribution lines may be required to supply a generator at a particular location. However, such utility extensions, after permitting requirements and implementation of BMPs, are unlikely to result in anything above a minor impact to water resources.

Plants and Animals (Topic P&A)

This section describes and responds to the comments received on the Phase 1 Draft EIS regarding plants and animals. Primary themes included the types of habitat described and potential impacts, tree removal/vegetation clearing, impacts to fish and wildlife, impacts specifically to birds, and appropriate mitigation measures.

Key Theme P&A-1: Habitat

Comment Summary:

Commenters listed habitats within the Eastside that they felt were not adequately described in the Phase 1 Draft EIS. One commenter noted that landscaped areas of commercial properties can provide habitat, lakes and ponds can be used by amphibians and some mammals, and forests can be utilized by amphibians and reptiles. Another commenter noted that the Coal Creek Basin provides habitat for a diverse assemblage of fish and wildlife, including Chinook (a Federal Endangered Species) and coho (species of Local Importance: Bellevue Land Use Code 20.25H.150A), rainbow and cutthroat trout, coho, sockeye, and steelhead.

One commenter stated that the creation of a new transmission line would change the type of habitat, but would not completely remove habitat. It was noted that the use of existing corridors would reduce the amount of habitat conversion as compared to other alternatives considered in the EIS; however, the proposed route would include many environmentally sensitive areas. Some commenters asked how impacts to specific types of vegetation, such as hedgerows, were addressed. Comments relating to habitat also had to do with species displacement, with one commenter stating that animals avoid high voltage lines and would be affected by habitat fragmentation.

Response:

The Phase 1 Draft EIS states that urban habitat includes areas where commercial, industrial, or dense residential land uses dominate (see page 6-8 of the Phase 1 Draft EIS). Section 6.4.1 of the Phase 1 Draft EIS provides a programmatic overview of the general distribution of these habitat types within the different jurisdictions in the combined study area, and a short description of each habitat and species that typically use the habitat. The potential presence of amphibians and reptiles in the combined study area has been added to the Errata (see Chapter 3 of the Final EIS). Although the Phase 1 Draft EIS did not evaluate habitat and species on a basin level, it did note that Coal Creek Park Natural Area provides diverse fish and wildlife habitat. The Phase 2 Draft EIS provides a project-level assessment of impacts to habitat associated with Coal Creek Park Natural Area within 0.5 mile of the project alignment, and notes that Coal Creek supports Chinook salmon and steelhead (see Section 3.4.2.2 of the Phase 2 Draft EIS).

Altering habitat to the degree that species composition changes is characterized in the Phase 1 Draft EIS as habitat loss (removal), not conversion. The Phase 1 Draft EIS supports the statement that using existing corridors for the new transmission line would reduce the amount of habitat that would be converted. PSE's existing corridor provides habitat and migration corridors for area wildlife, as well as specific critical habitat areas (wetlands, streams, ponds, and their associated buffers) (see Section 3.4 of the Phase 2 Draft EIS). A project-level assessment of impacts to vegetation is provided in Section 3.4 of the Phase 2 Draft EIS, which focused primarily on species with state or Federal listing status within the project area. Specific impacts to hedgerows were not assessed; however, vegetation removal within the right-of-way is covered. While hedgerows do accommodate a number of species common to the project area, they are not considered a critical habitat type. Because vegetation management restrictions mainly affect trees, the only effect on hedgerows would be if they contained trees or if they were in locations where a pole needed to be placed. The Phase 2 Draft EIS states that the existing corridor provides important urban habitat, migration, and connectivity corridors for existing wildlife. There is no evidence that animals avoid high voltage lines beyond what would occur as the result of increased human presence (such as maintenance activities) and vegetation clearing. The use of the existing transmission corridor would result in a loss of some habitat due to additional tree removal (also discussed below), but would not measurably increase habitat fragmentation. However, alternatives or routes that use new corridors would result in greater habitat loss and increased fragmentation because they are in areas where a transmission corridor does not currently exist.

Key Theme P&A-2: Tree removal/vegetation clearing

Comment Summary:

Commenters cited the findings of the Phase 1 Draft EIS, and said that the amount of tree removal would be significant. One commenter suggested that no tree removal should be allowed. The Muckleshoot Tribe stated (in reference to Alternative 1, Option D) that the Phase 1 Draft EIS failed to adequately account for impacts associated with a permanent clear zone in the shoreline and would also preclude restoration actions where they were identified as part of the Shoreline Master Programs associated with each lakefront city. Another stated that vegetation removal would result in increased noise because trees provide a degree of noise abatement. Multiple commenters noted that the amount of tree removal would have cascading effects on views, water quality, and greenhouse gases.

PSE clarified that if the existing Sammamish-Lakeside-Talbot Hill 115 kV corridor is used, no additional right-of-way width would be required. PSE also asserted that the existing 40 percent tree canopy coverage noted in the Phase 1 Draft EIS is over-estimated.

Response:

The Phase 1 Draft EIS examined the worst-case scenario for new overhead transmission lines, which assumed that a new corridor for a 230 kV line would be 120 to 150 feet wide (approximately 30 to 40 feet wider than the existing 115 kV transmission line corridor). However, the Phase 1 Draft EIS notes that the severity of impacts would depend on the location of the project and adjacent habitat and species that use it. During the development of the Phase 1 Draft EIS, the width of clear zones was unknown because the height and form of the transmission poles had not been determined. The approximated width was based on a literature review and information available from PSE at the time of the analysis.

The 40 percent existing tree canopy coverage cited in the Phase 1 Draft EIS was based on the average tree coverage mapped in the project area jurisdictions. However, for the project-level, Phase 2 Draft EIS it was assumed that the existing Sammamish-Lakeside-Talbot Hill corridor would not have to be widened to accommodate the 230 kV line. Updated vegetation removal information, including a more detailed discussion of clear zones, is provided in the Phase 2 Draft EIS (see Section 3.4.1.3, PSE Vegetation Management Program) and in the Final EIS, Section 4.4.

It is correct that vegetation removal for a new corridor or substantial widening of an existing corridor could result in reduced noise attenuation. However, noise impacts are not expected to be significant because even dense forested vegetation must be greater than 20 meters (approximately 60 feet) in depth to have a noticeable effect on noise levels. The option-specific estimates for tree removal are incorporated into other resource analyses in the Phase 2 Draft EIS including scenic views and the aesthetic environment (Section 3.2), water (Section 3.3), and greenhouse gas (Section 3.5). The Phase 2 Draft EIS assessment did not estimate the amount of noise attenuation lost as a result of tree removal; however, vegetation removal is not anticipated to result in a significant noise impact for any of the alternatives evaluated in Phase 2, or for PSE's proposed alignment in the Final EIS. Tree removal and mitigation will be evaluated as part of the permitting process. PSE would be required to replace trees removed for the project based on tree protection ordinances and critical areas regulations in each affected city. Additional mitigation measures are proposed in Section 3.4.6 of the Phase 2 Draft EIS.

Key Theme P&A-3: Fish and wildlife

Comment Summary:

Concerns were raised about potential impacts to fish and wildlife, and how such impacts were evaluated. The Muckleshoot Tribe commented that the impacts to salmon and their prey in Lake Washington [Alternative 1, Option D (Underwater Transmission Line)] were not fully evaluated, and that fish exposure to contaminated sediments should have been considered. They also indicated that construction would need to occur during the allowable "fish window" (as determined by WDFW). A commenter stated that they were concerned about the pipeline failing during construction and impacting spawning salmon in the Cedar River.

One commenter stated that because high voltage transmission lines are 50 percent thicker than typical distribution lines and operate at much higher temperatures, they pose a threat to native and migratory bird species, flying insects, and other plant and animal species sensitive to heat and nighttime light emissions. They also stated that these high voltage lines produce ultra-violet (UV) flashes that affect the vision of mammals. They added that corona emissions produce audible sounds that are disruptive to animals. The commenter noted that EMF/corona have additional unknown impacts on plants and wildlife. Another stated that the Phase 1 Draft EIS understated the potential noise impacts to wildlife resulting from the operation of peaker plants, which the noise section described as exceeding noise regulations in some areas.

One commenter asked if impacts to *Bombus occidentalis* (bumblebees) were evaluated. The commenter also stated that there have been multiple reports of bobcats in the area, but noted that these sightings may have been of young Canadian lynx. A few commenters noted that the Phase 1 Draft EIS's list of species of local importance does not match the one provided in the City of Bellevue municipal code.

Response

Alternative 1, Option D (Underwater Transmission Line) was evaluated at a programmatic level. The alternative was not carried forward into the Phase 2 Draft EIS because the option was determined to not be a reasonable alternative to using the existing corridor (as proposed by PSE), as described in more detail in Section 2.2.3 of the Phase 2 Draft EIS. The Phase 1 Draft EIS, which was prepared as a programmatic analysis, does not address impacts to plants and animals from pipeline spills. Impacts to plants and animals as the result of a pipeline spill or fire are described in Section 3.9.6 of the Phase 2 Draft EIS, which was prepared as project-specific analysis.

Most of the project alignment occurs in areas that produce a variety of human-induced disturbances to animal species. Larger wire sizes for the 230 kV lines would be more visible to flying species, resulting in increased avoidance behavior, which is expected to reduce direct impacts from collision.

The new power poles would also reduce the amount of structures that could be used by avian species for roosting or nesting, include the latest technology to protect birds from electrocution, and increase the separation between wires. All of these are expected to reduce collision and electrocution rates compared to existing conditions.

EMF impacts to wildlife species are generally unknown or inconclusive, particularly for wild free-ranging animals, because most research has been conducted in laboratory settings (Doherty and Grubb Jr., 1998; Fernie and Reynolds, 2006; Tomás et al., 2012). In addition, most EMF impact studies have focused on human subjects. Arun (2015) assessed over 900 EMF studies and observed that only 3% focused on birds, and just 2% concerned other wildlife species. These studies also cover a wide range of EMF conditions, including those produced by communication cell towers and higher voltage transmission lines than those being evaluated for the proposed project. Laboratory studies have identified EMF effects on embryonic development, but reproductive success of wild birds is dependent on additional factors not present in a lab setting. Both positive and negative effects have been observed on individual avian species, and effects also vary substantially between species, with some experiencing negative effects on overall reproductive success and some having no apparent difference in success (Fernie et al., 2000; Fernie and Reynolds, 2006; Vaitkuviene and Dagys, 2014; Tomàs et al., 2012; Doherty and Grubb Jr., 1998). Although little or no direct information is available on potential effects of species known to be present in the project corridor, the studies provide an indication of the potential effects on wildlife species. Adverse impacts on wildlife species as a result of exposure to EMF are not anticipated to increase as a result of the proposed project because magnetic field levels associated with the proposed project are anticipated to be lower than field levels along the existing transmission line corridor. See the discussion in Section 3.8.5.1 of the Phase 2 Draft EIS for the reasons why the field levels are expected to be lower.

While powerlines are known to affect migration and behavioral activities of bees, transmission corridors are also identified as important conservation areas for bee populations (Bartomeus and Hill, 2015). The 230 kV lines would be higher above the ground, which would minimize potential impacts to low-flying insects and other ground-oriented species from increased light flashes or heat from the wires. While avoidance by mammals and ground-nesting birds of habitat in the vicinity of high-voltage power lines has been documented in remote areas, effects in urban areas are uncertain because of influence of light pollution from other sources (Tyler et al., 2014). These researchers suggest that in darkness birds and some other animals see power lines as lines of flickering UV corona light stretching across the terrain, rather than dim, passive structures, which would enhance avoidance behavior and reduce collision and electrocution rates. No evidence was found that air quality changes resulting from the ionization of pollutant particles by the corona discharge would affect wildlife. To the extent wildlife avoid power lines due to corona discharge, potential impacts suggested in the comments are unlikely because the concentration of these pollutant particles would decrease with distance from the source. The higher powerlines would also tend to minimize potential effects on ground-oriented species.

Noise impacts produced by corona discharge were found to be negligible (see Section 9.6.3.1.1 of the Phase 1 Draft EIS). The noise levels from the proposed transmission lines would be similar to the noise from existing lines.

Section 6.7.4 of the Phase 1 Draft EIS states that noise disturbance from peak generators located in or adjacent to wildlife habitats could be moderate to significant. The finding of moderate to significant impacts is not understated, given the findings in the noise section (see Section 9.6.4.1 of the Phase 1 Draft EIS).

The analysis focused primarily on species with state or federal listing status, which did not include *Bombus occidentalis* (bumblebee) and bobcats. As indicated above, the effects of powerlines on wildlife species are highly variable, both within and between species, and there is limited information to differentially identify specific impacts to many species that could occur in the project area. While lynx have a threatened status, the project area does not provide suitable habitat, and any occurrence would be infrequent and incidental. Therefore, detailed investigations were not conducted for this species during the EIS process. While powerlines are known to interfere with normal migration and behavioral activities of bees, transmission corridors are also identified as important conservation areas for bee populations (Bartomeus and Hill, 2015). Western big-eared bat, Keen's myotis, long-legged myotis, and long-eared myotis have been added to the Bellevue list (see Chapter 3 of the Final EIS), as requested. Chinook and coho are listed as species of Local Importance under Bellevue Land Use Code 20.25H.150A; Chinook salmon are a federally listed threatened species and coho are a species of State importance, both of which are listed in Appendix C, rather than in Section 6.4.2.

Key Theme P&A-4: Impacts to birds

Comment Summary:

Commenters expressed concern over how impacts to birds caused by overhead transmission lines were analyzed in the Phase 1 Draft EIS. One commenter said that birds would only be temporarily displaced. Another cited a National Audubon study that concluded that 175 million bird deaths occur per year from collision with or electrocutions from power lines. It was asserted that the Phase 1 Draft EIS overstates the impact of a new overhead 230 kV transmission line on avian species and understates the impact of constructing Alternative 3 (Distributed Generation). Specific locations of eagle nests were provided by multiple commenters, and it was noted that eagle nest buffer zones and great blue heron nest buffers would need to be considered and possibly avoided or monitored if construction is scheduled to occur within active nest buffers during the nesting season.

Response:

At the programmatic level, if it was unclear whether a species would be temporarily or permanently displaced, it was assumed they would be permanently displaced. Introduction of a new transmission line in an area previously without one would increase the likelihood of bird collision and electrocution. However, the alternatives evaluated in the Phase 2 Draft EIS would replace existing transmission lines with higher voltage transmission lines in most locations. The Phase 2 Draft EIS states that the project would reduce the electrocution and collision rates for avian species due to the increased separation between conductors and larger, more visible conductors (see Section 3.4.5.1). Eagle nest locations were considered during development of the Phase 2 Draft EIS, and potential impacts to birds are further described in Sections 3.4.1.4 and 3.4.3. PSE would continue to implement the PSE Avian Protection Program and mitigate for the direct loss of nesting and roosting habitat for protected species. For more information about the Avian Protection Program, see Section 3.4.1.4 of the Phase 2 Draft EIS.

Key Theme P&A-5: Mitigation

Comment Summary:

PSE stated that transmission lines can be configured and routed to minimize impacts to trees and habitat. Other commenters stated that no amount of mitigation can counter the impact of PSE's proposal.

Response:

The Phase 1 Draft EIS states that impacts on vegetation and habitat would be mitigated through site and facility design to minimize the need for vegetation and tree removal to the extent feasible. In addition, one of the mitigation measures proposed in Section 3.4.6 of the Phase 2 Draft EIS is to increase pole heights to allow greater separation between poles so that some poles can be moved outside of critical areas or associated buffers.

Key Theme P&A-6: Errata and minor clarifications

Following the release of the Phase 1 Draft EIS, PSE provided comments that clarified information or rectified misstatements. Items that were found to be in error are provided in detail in Chapter 3, Errata, of the Final EIS. Clarifications address the following topic: approximately 9 miles of additional 230 kV line would need to be reconductored north of the Sammamish substation as part of Alternative 1, Option C (SCL Corridor), which could include clearing associated with construction access. PSE (and other commenters) also provided numerous other minor clarifications that we have not included in the Errata because they relate to Phase 1 alternatives that are no longer being considered, they are minor clarifications (as opposed to factual errors), or they do not influence the results or conclusions of the analysis. The full letters are included as Appendix J-2 and therefore part of the record.

Energy (Topic EGY)

This section describes and responds to the comments received on the Phase 1 Draft EIS regarding energy. Primary themes included the energy use of peaker plants; the potential for Alternative 1 to increase demand for electricity; and the need for utilities to adopt measures that reflect sustainability, conservation, and efficiency. Please note that some of these comments and associated issues also relate to the project objectives; see the additional description provided for Topic OBJ.

Key Theme EGY-1: Energy use of peaker plants

Comment Summary:

PSE stated that if 20-MW peaker plants are used to solve the transmission deficiency problem, 20 such peaker plants would be needed. A public commenter disagreed with the finding of the Phase 1 Draft EIS that Alternative 2 would lead to generation of non-renewable power.

Response:

The Phase 1 Draft EIS notes that PSE suggested that twenty 20-MW generators would be necessary to meet the project objectives (see Section 2.3.3.1). PSE determined that use of peaker plants should be eliminated from consideration because they would produce noise that would be incompatible with the predominately residential surroundings. As noted in the Phase 1 Draft EIS, noise would be an important consideration in siting such facilities. However, the EIS Consultant Team determined that these proven technologies could possibly be sited in some locations and be compatible with adjacent uses, addressing a portion of the identified need. Therefore, use of three 20-MW peaker plants was considered for Alternative 2. As stated in Section 2.3.3 of the Phase 1 Draft EIS, Alternative 2 was developed based on the assumption that a mix of measures would be necessary to accomplish conservation savings.

The Phase 1 Draft EIS states that Alternative 2 would not substantially change the overall mix of resources used by PSE to deliver power to its customers, but would lead to more local (Eastside) use of resources for power generation, some of which would likely be fossil fuel-based and therefore not renewable. The distributed generation component and peaker plants would rely on non-renewable resources (fossil fuels such as diesel or natural gas) to operate. However, it was determined that since those energy sources are currently in good supply and the project would require only brief periods of operation, the components would have a negligible adverse impact on energy resources (see Sections 7.6.4.3 and 7.6.4.5 of the Phase 1 Draft EIS).

Key Theme EGY-2: Alternative 1 would result in increased demand for energy and would therefore require more fossil fuel use

Comment Summary:

Commenters stated that Alternative 1 would increase the demand for electricity and that more analysis should have been conducted on the cascading impacts resulting from PSE's Colstrip plant. One commenter stated that Alternative 1 would enable the construction of up to 1000 MW of new generation.

Response:

The Phase 1 Draft EIS acknowledges that the project would provide more than adequate capacity to meet the projected transmission need in the Eastside for the 10-year planning horizon. However, as described in the Phase 1 Draft EIS, there is no intermediate size of transmission facility between 115 kV and 230 kV that would work within the regional grid and meet PSE's stated objectives. See Section 2.2.1.15 of the Phase 1 Draft EIS for a more detailed discussion of 115 and 230 kV transmission lines within the regional grid. The project is not being constructed to increase power production, and there is no indication in its IRP that PSE plans to increase reliance on or transmission from the Colstrip plant. Therefore, impacts associated with increased power production, such as increased operations at the Colstrip plant, were not evaluated as part of this EIS process.

Key Theme EGY-3: The need for Utilities to adopt measures that reflect sustainability, conservation, and efficiency

Comment Summary:

Commenters stated that utilities are protecting their profits at the expense of progressive energy policy reform and implementation of renewable energy sources. They asked if utilities are influencing energy policy in a sustainable direction and are willing to adapt to new business models that are more inclusive of renewable energy sources.

Response:

It is outside the scope of this EIS to speculate PSE's motives. Consistency of the project with adopted energy policies was conducted for the Phase 1 EIS analysis (see Chapter 7). For more information about PSE's conservation program, see Appendix A of the Phase 1 Draft EIS.

Pipeline Safety (Topic PLS)

This section describes and responds to the comments received on the Phase 1 Draft EIS regarding pipeline safety, specifically related to locating transmission lines adjacent to the fuel pipeline operated by the Olympic Pipe Line Company (Olympic). Comments stressed the risks of catastrophic explosions and leaks, both during and after construction. Primary themes included risk of explosions and leaks caused by construction; explosions, fires, or leaks caused by natural forces; pipeline corrosion caused by electrical interference from power lines; evaluation of worst-case scenario involving pipeline rupture and fire; non-compliance with safety regulations; and engagement of Olympic in the EIS process.

The Partner Cities acknowledge that public safety is of paramount concern. The Partner Cities and the EIS Consultant Team contacted Olympic during the development of the Phase 1 Draft EIS, and made additional inquiries during the project-specific phase of the EIS. The EIS Consultant Team examined the studies cited by commenters. The discussion, analysis, and characterization of public safety was refined in the Phase 2 Draft EIS, with greater focus on project-level details, including the preparation of a probabilistic pipeline risk assessment (risk assessment) that evaluated the probability of a pipeline rupture occurring as a result of the construction and operation of overhead transmission lines. EDM Services, a company specializing in pipeline safety risk assessments, conducted the assessment.

Key Theme PLS-1: Risk of catastrophic explosions and leaks caused by construction

Comment Summary:

Commenters asserted that the Phase 1 Draft EIS did not adequately address construction-related risks. Concern was expressed that there is a high risk of damaging the pipeline during excavation because the pipeline is in a shared right-of-way that is narrow and, therefore, separation of the transmission line from the pipeline is difficult, the pipeline is not buried deeply, and the pipeline is old (approximately 40 years old) and potentially vulnerable to breakage due to vibration or other construction-related effects.

To mitigate these potential impacts, commenters recommended that the liquid fuel lines be depressurized during construction of tower foundations and erection of towers and cable.

Response:

When accidents do occur along pipelines, they often occur because of a failure to properly locate buried utilities prior to construction, or failure to follow proper procedures during construction, as was the case in the incidents in Texas (2010) and Bellingham (1999) often cited in comments. These risks are acknowledged in the Phase 1 Draft EIS. In response to public comments such as these, the risks are analyzed more closely in Sections 3.9 and 4.9 (Environmental Health –Pipeline Safety) of the Phase 2 Draft EIS.

In the case of PSE's and Olympic's shared corridor, PSE and Olympic have worked together in the corridor for 40 years, and communicate regularly to coordinate activities related to pole replacement and other maintenance work. In addition to State Damage Prevention Law (RCW 19.122) compliance, Olympic has a list of requirements for all work proposed near the pipeline (see Appendix I of the Phase 2 Draft EIS). These include specific notification and monitoring requirements, requirements related to excavation near the pipelines, and transport of construction materials or equipment over the pipelines. As company practice, if a project is within 100 feet of the pipeline, Olympic's Damage Prevention Team will meet with the construction crew on-site at the beginning of the project and weekly thereafter.

If excavation has the potential to be within 10 feet of the pipeline, the Damage Prevention Team would be continuously on-site to monitor excavation.

Section 4.9.3 of the Phase 2 Draft EIS describes potential pipeline safety risks related to construction activities. As described above, with PSE's awareness of the pipelines within the corridor, Washington State's Damage Prevention Law and "one-call" locator service, and Olympic's procedures to prevent third party damage described in Section 4.9.4 of the Phase 2 Draft EIS, the increased risk posed to the pipelines during construction is relatively low. Even with conservatively high assumptions of additional risk factors resulting from the project, the results of the risk assessment completed for the Phase 2 Draft EIS indicate that there would be a very small increase in total risk during construction. With the implementation of measures to mitigate potential construction risks described in Section 4.9.4, these risks would be even lower.

Vibration from construction equipment is also addressed in Section 4.9.3 of the Phase 2 Draft EIS. PSE would work with Olympic to confirm that potential vibration associated with proposed excavation methods for pole installation that include the use of vacuum trucks and auger drills would avoid damaging the pipelines. For additional information on mitigation measures related to preventing construction incidents, see Section 4.9.4 of the Phase 2 Draft EIS.

Regarding the mitigation suggestion of depressurizing the pipelines during construction of the project, PSE has limited authority to influence specific mitigation measures undertaken by Olympic related to pipeline operation or monitoring. PSE, as project applicant, has responsibilities (some of which may be imposed by jurisdictions with permit authority) to coordinate and cooperate with Olympic. For more information on PSE and Olympic's roles and responsibilities in the corridor, see Section 3.9.7 of the Phase 2 Draft EIS.

Key Theme PLS-2: Risk of catastrophic explosions, fires, or leaks caused by natural forces, such as earthquakes, windstorms, and lightning

Comment Summary:

Commenters asserted that the Phase 1 Draft EIS did not adequately address pipeline safety risks associated with natural forces, such as earthquakes, windstorms and lightning. Commenters stated that small punctures or weaknesses in the pipeline caused by arcing may result in leaks that are hard to detect and could be catastrophic if they are ignited. The lack of detection of a leak that contributed to the large pipeline fire in Bellingham in 1999 was often given as an example for this concern. Commenters asserted the risk of a similar scenario occurring as a result of the Energize Eastside project. Commenters cited several mechanisms that could lead to arcing from the power lines to the pipeline that could cause a leak and/or a fire. These include seismic activity that could cause the powerlines to break or fall at the same time that the pipeline would also be vulnerable to breaking; a powerline knocked down during a windstorm causing an arc to the pipeline; or lightning striking on a transmission line or pole and arcing to the pipeline. Commenters also voiced concern that galloping lines could produce extensive power outages and an explosion.

Response:

The Phase 1 Draft EIS evaluated pipeline safety at a programmatic level and acknowledges the potential for significant impacts related to proximity to the Olympic Pipeline system. Note that operational risks related to natural forces were broadly analyzed as described in Sections 8.6.1.3, 8.6.2.3, 8.6.3.1.3, and 16.7 of the Phase 1 Draft EIS. Seismic risks are acknowledged in these sections. Please also see the Earth comment summary for additional information on seismic risks.

The Phase 1 Draft EIS and the Phase 2 Draft EIS both acknowledge that earthquakes and lightning strikes or wires downed by extreme weather events present risks of fault conditions or arcing from the transmission lines to the pipelines. As part of the risk assessment completed for Phase 2 Draft EIS, natural forces (e.g., lightning strikes, seismicity, and extreme weather) were considered as potential causes of pipeline damage (see Section 3.9.3.3). The risk assessment took into account historical incident rates for natural force-caused pipeline incidents on similar systems nationwide, and current risks in the corridor in consideration of fuel type/flammability, pipe parameters, safety features, and other factors.

The project is not expected to increase risks of accidental releases due to seismic activity, or other natural forces. Potential seismic risks exist under current conditions with the co-located transmission lines and pipelines, which are not expected to increase with the project. PSE's was asked about records of downed transmission lines, and PSE indicated that their records show falling trees and cross-arm failure were the causes. The project is not likely to increase trees falling on the lines, and the proposed steel structures are expected to be stronger than the existing wooden ones and less prone to failure.

Section 3.9.7.1 of the Phase 2 Draft EIS describes the design and safety guidelines that PSE follows when designing their transmission lines. The National Electrical Safety Code (NESC) contains the provisions necessary for public safety under specific conditions, including electrical grounding, protection from lightning strikes, extreme weather (including extreme wind), and seismic hazards. PSE would use these in developing final design for the transmission line. PSE noted that Chapter 8 of the Phase 1 Draft EIS incorrectly states that NESC guidelines direct PSE how to shield lines with lightning protection. This has been rectified in the Errata; see Chapter 3 of the Final EIS. PSE also clarified that for 230 kV substations, lightning protection is provided via a static mast with shield wires that are connected to the substation ground grid. The comment from PSE that all substation transformers are protected with surge arresters to limit damage done during a lightning strike is noted.

Additional information on seismic risks in the corridor and how these risks are accounted for is provided in the Final EIS, Section 4.11. The potential for galloping conductors (i.e., galloping lines) is calculated during design of transmission lines, and dampers are added to the line to dampen out vibrations, preventing the conductors from galloping.

Key Theme PLS-3: Risk of pipeline corrosion caused by electrical interference from power lines

Comment Summary:

Several commenters asserted that locating transmission lines in the same area as fuel pipelines is much riskier than described in the Phase 1 Draft EIS. Commenters cited a study by DNV GL, "Criteria for Pipelines Co-Existing with Electric Power Lines" that considers several criteria to establish risk level (e.g., separation distance, HVAC power line current, co-location length, and co-location angle). These commenters asserted that, based on these four criteria, the Energize Eastside project would be considered "high risk" per industry standards. Others referred to comments made by Dr. Frank Cheng, "Safety of Co-location of Electric Power Lines and Pipelines" on corrosion risks associated with 230 kV lines. One commenter asked who is responsible for the upgrade of sacrificial metals that protect the pipeline against corrosion caused by the electrical fields from the high voltage power line.

Several commenters pointed to BPA's policy of not locating transmission lines within a certain distance (50 feet) of a buried pipeline running parallel to a transmission line. Other commenters pointed to other separation distances recommended by companies, utilities, or by model code ordinances. These commenters asserted that design and engineering alone are not enough, that physical separation is the better way to mitigate the risk.

PSE comments on the Phase 1 Draft EIS indicated that if an existing utility corridor is used, PSE would commission an appropriate engineering analysis of soil conditions as they relate to conductivity and corrosiveness of underground utilities. Results would be used to determine appropriate grounding and cathodic-protection needed. PSE also commented that the EIS should further acknowledge that PSE and Olympic would evaluate the construction and operational parameters related to the replacement of the two existing 115 kV lines with both a 230 kV and a 115 kV line. The evaluation would include electrical interaction potential, cathodic protection, and proximity.

Response:

These comments were considered in the development of the Phase 2 Draft EIS (Sections 3.9 and 4.9), which considers electrical interference risks related to corrosion, fault conditions, arcing, and construction risks as part of the risk assessment. PSE did develop the analysis mentioned in its comments. As described in Section 3.9.1.4, PSE retained DNV GL (the author of the report "Criteria for Pipelines Co-Existing with Electric Power Lines") to develop a detailed analysis of risks and recommendations for the Energize Eastside project. This study ("A Detailed Approach to Assess AC Interference Levels Between the Energize Eastside Transmission Line Project and the Existing Olympic Pipelines, OLP16 & OPL20"), referred to in the EIS as the AC Interference Study, was used in preparing the analysis for the Phase 2 Draft EIS. The study included recommendations related to design of pole locations, layout, and configuration to mitigate potential electrical interference-related impacts on the pipelines (see Section 3.9.7.2). As noted in the comments, several reference guidance documents have presented general parameters for locating transmission lines and pipelines in shared corridors. These limits used to determine when an engineering assessment, such as the one prepared by DNV GL for the project, may be required, and do not themselves indicate that there will be a safety issue. The DNV GL analysis provided PSE with a detailed assessment of the design available at the time of their report, considering the many specific variables of this particular collocated pipeline/transmission line segment. The results, conclusions, and recommendations of the report are intended to be used as the basis for a more detailed engineering by PSE. The Phase 2 Draft EIS analysis went a step further and developed additional recommendations for analysis of the potential for AC interference once final pole locations are developed and again after the project is constructed and operational (Stantec 2017).

Even with the conservatively high assumptions for risk factors associated with the project that were used in the risk assessment completed for the Phase 2 Draft EIS, the results of the assessment indicated there would be a small increase in total risk during operation. With the implementation of measures to mitigate potential risks described in Sections 3.9.7, these risks would be even lower. Both the DNV GL report and the analysis completed by Stantec for the Phase 2 Draft EIS concluded that the pipeline and proposed transmission line could coexist safely with proper engineering and safety precautions by PSE and Olympic. Per federal law, Olympic is responsible for the maintenance and safe operation of the pipeline; therefore, beyond PSE employing reasonable measures in the design and construction of the transmission line and providing information to Olympic, the responsibility for protecting the pipeline from corrosion lies with Olympic.

Key Theme PLS-4: Evaluation of worst-case scenario involving pipeline rupture and fire

Comment Summary:

Several commenters requested that the EIS include a worst-case analysis involving a pipeline rupture and ignition of fuel occurring in the most densely populated area of the proposed new transmission lines. Among these comments was also the assertion that PSE cannot guarantee with certainty that there would be no human error or equipment failure that could result in a severe rupture of the fuel lines and potential ignition of flammable fuel. Because the impacts of a severe rupture and fuel ignition could be catastrophic in the densely populated neighborhoods near the pipeline easement, commenters maintained that impacts should be regarded as significant regardless of the likelihood of occurrence.

Response:

To address these concerns, Section 3.9 of the Phase 2 Draft EIS analyzed pipeline safety assuming a "worst-case" scenario. The Phase 2 Draft EIS (Sections 3.9 and 4.9) also provided additional pipeline safety analysis, which included a risk assessment that considers electrical interference risks related to corrosion, fault conditions, arcing, and construction risks. The risk assessment took into account current risks in the corridor in consideration of fuel type/flammability, pipe parameters, safety features, and other factors. Using baseline data and modeling, the assessment estimated the probability of a potential leak or fire resulting from the project.

In addition to characteristics of the pipeline and pipeline product, the presence of ignition sources and the specific release setting (topography and nearby population density) are obvious factors affecting the potential for major impacts to the public from a pipeline release. For a buried pipeline transporting refined petroleum product, the greatest risk to the public is posed by pool fires, as described in the Phase 2 Draft EIS. Depending on the local terrain, pipeline contents may flow for some distance away from the location of the release. If an ignition source is present, the accumulated pool could catch fire. EDM Services used data specific to the Olympic Pipeline system, including an estimated maximum release volume based on pipe size, pressure, and other factors, to model a release and subsequent pool fire size, as described in Section 3.9.4 and shown on Figure 3.9-7 of the Phase 2 Draft EIS. Section 4.9 of the Final EIS describes the variable conditions that could contribute to the severity and extent of a pool fire resulting from a pipeline release, including a summary of conditions in each segment.

To estimate a "worst-case" or maximum release volume, the risk assessment used U.S. Hazardous Liquid Pipeline Release data, filtered to include only refined petroleum product releases in order to be as directly applicable to the Olympic Pipeline system as possible, and normalized the data to the pipe diameter of the Olympic pipelines. The risk assessment used the average of the largest spill size range (6,000 to 12,000 barrels) to arrive at an average "maximum" spill size of 8,861 barrels (or 372,162 gallons). Information on maximum release volume and probabilities of a potential leak and fire was used in conjunction with a representative "maximum" population density along the corridor to estimate risk to the public (in terms of potential fatalities) using different risk measures described in Section 3.9.5.1 of the Phase 2 Draft EIS. See also the Pipeline Safety Technical Report in Appendix I of the Phase 2 Draft EIS for more information.

It is correct that some amount of risk is always inherent with transmission lines and pipeline systems and that PSE cannot state with certainty that there would be no human error or equipment failure that could result in a severe rupture of the fuel lines and potential ignition of flammable fuel. The Phase 2 Draft EIS addresses this by presenting an estimate of the probability of the worst-case scenario occurring, including before the project is built, while it is being constructed, and during operation. The pipeline safety risk assessment considered national incident data on similar pipeline systems in order to estimate the probability of pipeline failures, both under existing conditions (115 kV transmission lines) and with new 230 kV transmission lines. In many cases, and in particular for pipeline damage caused by construction activities, incidents in the national database occurred as a result of failure to follow proper procedures. Even with the conservatively high risk assumptions used in the risk assessment, and in consideration of rates of pipeline incidents from all causes of damage, the results indicated there would be a very small increase in total risk with the project. With implementation of the mitigation measures described in Section 3.9.7 of the Phase 2 Draft EIS, conditions related to potential for fault damage on the pipeline due to coating stress and arc distances would likely improve over the existing operational baseline risk (see Section 3.9.5.4). The Phase 2 Draft EIS does not dispute the fact that the potential public safety impacts could be significant in the unlikely event a pipeline incident were to occur as a result of electrical interference or construction damage.

Regarding the assertion that impacts should be considered significant regardless of the likelihood of occurrence, the Phase 1 Draft EIS evaluated pipeline safety at a programmatic level and acknowledges the potential for significant impacts related to proximity to the Olympic Pipeline system. As described above, the focus of the risk assessment in the Phase 2 Draft EIS was estimating the change in risk that would occur with PSE's proposal (compared to existing conditions). In this context, project-related risks were determined to be less-than-significant based on thresholds for significance described in Sections 3.9.51 and 4.9.1.1 of the Phase 2 Draft EIS.

Key Theme PLS-5: Risk of non-compliance with safety regulations that apply to Olympic and PSE

Comment Summary:

Several commenters stated that Olympic is currently under a Final Order by the Office of Pipeline Safety to rectify deficiencies in its corrosion control program. The commenters pointed to an inspection conducted in August 2014 that led to the Final Order, noting that the condition has gone uncorrected for 18 months, and the company has a further 18 months to complete corrective action (asserting that this time period overlaps with PSE's proposed construction). Several commenters stated that PSE has a poor record of complying with regulations and safety standards and cannot be trusted to construct or operate the transmission lines safely.

Response:

Further information on PSE's responsibilities and requirements in relation to this project are included in Section 3.9.7.1 of the Phase 2 Draft EIS. For PSE, national and state standards, codes, and regulations and reference guidelines govern the design, installation, and operation of transmission lines and associated equipment. In addition to these standards, codes, regulations, and guidelines, Section 3.9.7.2 lists additional measures that PSE has indicated it will use, and measures the EIS Consultant Team has proposed as mitigation to provide additional safety assurances. The Partner Cities will use the Final EIS to support any permit decisions required. The Partner Cities, in issuing permits, can decide that additional conditions are required, such as reporting of compliance efforts by PSE.

Given that for portions of the corridor, construction of a 230 kV transmission line poses potential risks of interaction with or disruption to the Olympic Pipeline system, particular attention to these risks is necessary. Additional information on PSE's responsibilities within the shared corridor is included in the Phase 2 Draft EIS. Extensive coordination with Olympic would be required during project design and construction to avoid disruption to the line. As described in Section 3.9.7.1 of the Phase 2 Draft EIS, PSE and Olympic have coordinated regarding the project since 2012, and both have indicated they would continue their coordination through final design, construction, and ongoing operation of both utilities. Over the course of these ongoing discussions, the project plans have evolved to minimize the potential for impacts. PSE plans to integrate, where applicable, the results and recommendation of DNV GL's AC Interference Study (2016) to the design of pole locations, layout, and configuration in order to mitigate potential electrical interference-related impacts on the pipelines. Because Olympic, as pipeline operator, is responsible for the safety of their pipelines in compliance with federal safety requirements, Olympic has a responsibility and interest in working closely with PSE on the project. This includes reviewing and providing input on design, performing and evaluating field measurements and modeling data in order to determine specific measures needed to minimize electrical interference on the pipelines, and working with PSE on construction and access plans. Actions PSE can take, as project proponent, to facilitate Olympic's design review, design input, and implementation of measures that necessarily must be performed by the pipeline operator (e.g., cathodic protection) are the focus of mitigation measures included in Sections 3.9.7 and 4.9.4 of the Phase 2 Draft EIS.

In response to comments on Olympic's past violations, additional information available on the Washington Utilities and Trade Commission (UTC) website was provided in the Phase 2 Draft EIS. In the inspection reports summarized in Table 3.9-4, several violations and areas of concern were noted. These inspections included a review by UTC of Olympic's records, operation and maintenance, emergency response, and field inspection of pipeline facilities. Violations included late reporting and defects at test sites. As described in Section 3.9.5.1 of the Phase 2 Draft EIS, to estimate the probability of pipeline failures, historical data on pipeline incidents/spills that have occurred on similar systems are most commonly used. However, this historical incident/spill data do not include information on these similar systems' violations record. The EIS Consultant Team is, therefore, not able to state if Olympic has less, the same, or more reported violations of safety rules compared to other pipeline companies in any given reporting period for incidents/spills.

Key Theme PLS-6: Engagement of Olympic in the EIS process

Comment Summary:

Several commenters requested that Olympic be extensively engaged and consulted as part of the EIS process to ensure that accurate information is included and all relevant information is available for decision-makers. Others requested specific information on Olympic's pipelines in the corridor (e.g., valves). These comments also requested a full description of the "operating plan" for the pipelines to understand how safety risks would be mitigated. Other commenters requested that the EIS include a "truly independent assessment" of both PSE's and Olympic's findings, calculations, and recommendations.

Response:

The Partner Cities and the EIS Consultant Team contacted Olympic during the development of the Phase 1 Draft EIS, and made additional inquiries during the project-specific phase of the EIS. Certain information (such as valve locations and operation) was not provided by Olympic for use in the Phase 2 Draft EIS. In the risk assessment field, it is not uncommon for certain pipeline information to be unavailable from the pipeline operator due to proprietary or security reasons. As project applicant, PSE does not have the ability to require Olympic to publicly release information.

Electric and Magnetic Fields and Corona Ions (Topic EMF)

This section describes and responds to the comments received on the Phase 1 Draft EIS regarding the potential environmental health effects of electric and magnetic fields (EMF) and corona ions produced by PSE's project. Primary themes included health effects from EMF, health effects from corona ions, proximity of the project to potentially sensitive populations, and a potential increase in magnetic fields within the existing PSE corridor.

Key Theme EMF-1: Potential health effects from electric and magnetic fields

Comment Summary:

Commenters voiced concern that EMF could cause health effects, citing past research and published studies, specifically concerning the potential for childhood leukemia, co-carcinogenesis, neurodegenerative diseases, lymphatic and hematopoietic cancers, bone marrow cancer in children, brain cancer in adults, impacts to mental health, damage to human DNA, miscarriages, interference with electrocardiograms (EKGs),interference with cardiac pacemakers, sleep disturbance, low birth weight, psychological effects, melatonin secretion disruption, and disruption to cortisol rhythms; as well as individual health issues believed to be correlated to existing EMF exposure, such as Bell's Palsy.

Response:

Extensive health studies have not found a causal link between adverse health effects and EMF from electrical transmission lines (see Section 8.6.1.4 of the Phase 1 Draft EIS). However, while it does not appear that EMF from the project would pose an environmental health hazard, it was described in the Phase 1 Draft EIS due to public concerns raised during EIS scoping. Citations of past research identified by commenters were reviewed by Dr. Asher Sheppard, a consultant with the EIS Consultant Team who has a scientific background in evaluating human health effects from electrical transmission lines, to determine whether the findings presented by the cited studies would change the conclusion provided in the Phase 1 Draft EIS. The additional study includes the Lewczuk et al. (2014) paper on circadian rhythms. The potential health effects that were evaluated by the other studies cited by commenters had already been part of Dr. Sheppard's literature review per his November 25, 2015 memorandum to ESA, cited in the Phase 1 Draft EIS. Dr. Sheppard determined that the conclusion in the Phase 1 Draft EIS is still accurate.]

The 2011 IARC and WHO citation provided by a commenter regarding low frequency magnetic field generated by electrical devices as possibly being a carcinogenic to humans is not a study on EMF from electrical transmission lines. It evaluates the possible association between the types of exposure from radiofrequency electromagnetic fields from the use of wireless phones. Wireless phones are held very close to a person, while transmission lines are designed to be great distances. Wireless phones also generate EMF on different frequencies and power levels than transmission lines. In addition, the 2011 IARC and WHO citation addressing sleep disturbances and circadian rhythms provided by an individual commenter is part of a larger publication that summarizes research on the hypothesis that the disruption of melatonin secretion is a factor for carcinogenic effects of electric, magnetic, or electromagnetic fields. The overall conclusion of this paper was that the hypothesis is not supported by the epidemiological and experimental data.

The following health concerns linked to EMF are part of an ongoing area of research: childhood leukemia, co-carcinogenesis, neurodegenerative diseases, and interference with implanted medical devices (see further discussion in Section 8.3.5.1.4 of the Phase 1 Draft EIS). Other health concerns such as Parkinson's disease, Alzheimer disease, motor neuron disease, and reproductive functions have been specifically evaluated as part of past research studies and have informed the conclusion that there are no causal links between adverse health effects and EMF from electrical transmission lines. An EIS document can only evaluate known risks and provide an impartial evaluation of potential adverse environmental impacts associated with a proposed project and project alternatives. Therefore, research is ongoing in regard to EMF and health effects; existing research does not identify a direct relationship between the EMF exposure that could be produced by PSE's project and health effects.

Key Theme EMF-2: Potential health effects from corona ions

Comment Summary:

Commenters, including representatives from Eastside Audubon, voiced concern that high voltage transmission lines release corona discharge, and that such discharge is linked to an increase in air pollution because the discharge attaches to pollutants that are known carcinogens, such as car exhaust, which then increase the risk in lymphatic and hematopoietic cancers to recipients through inhalation. Representatives of the Somerset Recreation Club (SRC) were concerned with corona ions adhering to airborne pollutants near the SRC pool area and tennis courts, and then being inhaled by SRC members. Commenters also cited specific studies that evaluated the potential for corona ions on human health.

Response:

Based on reviewed and available publications, there is no scientific consensus that corona ionization poses a health risk; therefore, the Phase 1 Draft EIS concluded that there were no probable significant impacts (see Section 8.6.1.4 of the Phase 1 Draft EIS). Available studies and research, including those in Section 8.3.6 of the Phase 1 Draft EIS are considered inconclusive and do not suggest a probable health impact associated with corona ionization, either during the construction or the operation of PSE's proposed project.

Citations of past and recent research identified by commenters that were specifically cited in the Phase 1 Draft EIS were reviewed by Dr. Asher Sheppard to determine whether the findings presented by the cited studies would change the conclusion provided in the Phase 1 Draft EIS. These additional studies cited by commenters include 12 reports, plus classification of EMF as a possible carcinogen by the International Agency for Research on Cancer. Other studies cited by commenters had already been reviewed by Dr. Sheppard per his November 25, 2015 memorandum to ESA, cited in the Phase 1 Draft EIS. In most cases the studies were superseded by more recent studies. In some cases, the studies cited do not support the commenters' suggestions that the project would cause adverse health effects. Dr. Sheppard determined that the conclusion in the Phase 1 Draft is still accurate (Sheppard 2017).

Key Theme EMF-3: Populations particularly susceptible to electric and magnetic fields

Comment Summary:

Commenters voiced concern that children in homes and nearby schools, parks, and daycare facilities (including Chestnut Hill Academy, Somerset Elementary School, Tyee Middle School, and Newport High School) would be particularly susceptible to health effects from exposure to EMF. Others cited concern along trails under the power lines. Additionally, commenters requested consideration of a cumulative exposure: at school, home and work where children spend time.

Response:

Exposure to magnetic fields in homes, schools, parks, and daycare facilities is acknowledged in the Phase 2 Draft EIS (see Section 3.8.2), and such unique uses were identified within the study area of the proposed project. As noted in the Phase 1 Draft EIS, there are no known health effects from EMF expected as a result of the project. The calculated magnetic fields levels would be well below the lowest reference guideline, even assuming 24-hour exposure, which is unlikely because the modeled electrical loads would only occur during peak load periods, not all day. These exposure levels would apply to the unique uses considered in the study area, which are also near the existing 115 kV corridor. See Section 3.8.5.1 of the Phase 2 Draft EIS for more detail.

Key Theme EMF-4: Potential for increase in magnetic fields

Comment Summary:

Commenters voiced concern that the upgraded lines would generate higher levels of electric and magnetic fields, and therefore the exposure by the public would increase. Commenters also questioned whether there was a relationship between the distance from homes to electrical wires and whether that distance would increase or decrease the strength of electric and magnetic fields. Commenters suggested hiring experts to review the scientific evidence used to inform the Phase 1 Draft EIS discussion of “electromagnetic” [sic] interference and the analysis of the proximity of lines to homes and people, and the health effects and risks. Commenters also questioned whether underground transmission lines would be a viable option in reducing potential EMF exposure. Commenters asked if an expansion of the Lakeside Substation would increase EMF at Chestnut Hill Academy would have an impact on the safety of children. One commenter asked whether harmonics were considered in the evaluation of EMF from the project.

Response:

The Phase 2 Draft EIS analyzed the changes in magnetic fields that would occur as a result of PSE’s proposal. PSE retained Power Engineers to measure and calculate existing magnetic fields at locations along the transmission line corridor and calculate future magnetic field levels associated with the proposed project. The EIS Consultant Team reviewed this analysis to confirm that the calculations were correct (Enertech, 2016). The magnetic field levels associated with the proposed project are anticipated to be lower than existing field levels along the existing transmission line corridor. See the discussion in Section 3.8.5.1 of the Phase 2 Draft EIS for the reasons why the field levels are expected to be lower. Statements that were cited in the Phase 1 Draft EIS regarding existing scientific research on adverse health impacts from EMF exposure were statements made by Dr. Asher Sheppard’s research, per his November 25, 2015 memorandum to ESA (Sheppard, 2015).

Magnetic field levels associated with underground transmission lines are generally higher directly over the transmission line than under an overhead line. However, magnetic fields from underground transmission lines drop in value in shorter distances than with aboveground transmission lines. See pages 8-15 and 8-16 of the Phase 1 Draft EIS for a detailed description comparing magnetic fields associated with aboveground and belowground transmission lines.

As stated in Section 3.8.3 of the Phase 2 Draft EIS, magnetic fields from electrical equipment at the Richards Creek substation were not evaluated because they would be lower than the magnetic fields associated with the overhead transmission lines entering or leaving the substation.

Harmonic frequencies are more prevalent on lower-voltage distribution lines. Because this project relates to 230 kV and 115 kV transmission lines, there should be little, if any, harmonics present. Therefore, harmonics were not taken into account when calculating EMF for this analysis.

Noise (Topic NOI)

This section describes and responds to the comments received on the Phase 1 Draft EIS regarding noise impacts. Primary themes included noise associated with corona discharge, construction and operational noise, and regulation of noise, as well as minor clarifications. Many commenters voiced concern over alternatives that are no longer being considered because they would not meet PSE's project objectives.

Key Theme NOI-1: Noise from corona discharge

Comment Summary:

Commenters voiced concern that an increase in voltage would increase corona noise from the transmission lines. They were concerned that corona noise would be constant and at a level that would interfere with normal activities, particularly during wet weather conditions, and be considered a nuisance, causing the stress levels to nearby residents to increase. A representative from the Somerset Recreation Club (SRC) facility stated that SRC members often comment on the "noise issue."

Commenters were concerned that corona noise would add to the existing noise in an urban environment, specifically on top of the noise experienced from nearby interstates (I-405 and I-90).

Response:

Corona noise was analyzed as a part of the Phase 1 Draft EIS, Section 9.3. The potential impacts of corona noise for the proposed 230 kV transmission lines were found to be relatively low for nearby residential environments. Based on an analysis in the Pacific Northwest conducted by the Oregon Department of Energy, the maximum corona noise of a 230 kV line outside at ground level is approximately 29 dBA, which is approximately 10 dBA below the federal housing interior noise goal. While corona noise from the project may be audible in very quiet areas, it is expected to be virtually the same as existing corona noise levels. As stated on the Phase 1 Draft EIS, corona noise is generally a concern for transmission lines operating at 345 kV or above. Corona noise from the transmission lines is expected to remain well below the limits required by local noise regulations, and below levels that would warrant mitigation.

Key Theme NOI-2: Construction and operational noise

Comment Summary:

Commenters expressed concerns that noise from construction equipment had not been analyzed or the significance of such noise had been understated. Commenters were also concerned about unchecked noise during operation. Commenters questioned how noise would be regulated once the project is built and whether or not there would be recourse for potential noise impacts after construction. A PSE representative commented that ambient noise at the Westminster substation site from SR 520 would likely exceed transformer noise, and that construction of peak generation plants would likely have off-site construction impacts to extend utilities such as gas, water, and transmission lines to the plants.

Response:

The Phase 1 Draft EIS was analyzed at a programmatic level; impacts regarding construction equipment were identified, but because of the short duration of construction, and the restrictions imposed by noise regulations, construction impacts were not expected to be significant. Construction noise is regulated at the local level, based on noise regulations of the respective local code requirements (see Table 9-3 of the Phase 1 Draft EIS). As such, the respective local jurisdictions would enforce construction noise regulations based on their individual noise code requirements. Operational noise would also be regulated at the local level, both through permit review and also through enforcement of local codes after the project is operational. Comments from a PSE representative correctly pointed out that substations are not exempt from local noise regulations, but are also not subject to the 10 dBA reduction (WAC 197-60-040(2)(b).

It is likely that ambient noise at the Westminster substation site from SR 520 would exceed transformer noise, although no site-specific studies were done for the Phase 1 Draft EIS. Noise was not further analyzed in the Phase 2 Draft EIS because significant and unavoidable noise impacts were not identified in the Phase 1 Draft EIS.

Key Theme NOI-3: Applicable noise regulations and significance thresholds

Comment Summary:

Representatives from the Somerset Recreation Club (SRC) noted that "Noise" is an environmental health issue and belongs under that category for the SEPA EIS.

A PSE representative was concerned with the regulatory noise thresholds, noting that a significance threshold of a 5 dBA allowance is arbitrary and not based on regulation.

Response:

While noise is listed in SEPA as one of several possible environmental health issues, per WAC 197-11-430, the format of a SEPA EIS is determined by the Lead Agency and can be modified if the presentation of the environmental analysis can be made clearer by doing so. The Partner Cities determined that a separate heading for Noise was appropriate in this instance.

Per WAC 197-11-794 significance involves context and intensity, magnitude and duration, and is determined by the Lead Agency. For the Phase 1 Draft EIS, the City of Bellevue (along with the other Partner Cities) determined that a project would have a significant impact if it would generate operational noise that would conflict with local ordinances or would increase ambient noise levels by 5dBA or greater at a sensitive land use, because much of the study area has relatively low ambient noise levels where a 5 dBA increase would represent a significant change in ambient noise.

The allowance of up to a 5 dBA ambient noise level increase is based on a perceivable difference: where a change in the existing environment of at least 5 dBA would cause a human response (see Section 9.1 of the Phase 1 Draft EIS for further discussion). This is based on established criteria (see Caltrans 2013 study in the Chapter 17, *References*). Noise regulations are also based on the Washington Administrative Code (WAC), which informs the noise regulations at the local level (see Section 9.2 of the Phase 1 Draft EIS).

It is recognized that specific locations may have exceptionally low or high noise levels where such a threshold may not apply. (see Section 9.3 of the Phase 1 Draft EIS).

Key Theme NOI-4: Minor clarifications and Errata

Comment Summary:

PSE provided comments on the noise impact analysis in Phase 1 Draft EIS that clarified but did not influence the result or conclusions of the noise analysis. They include a comment from a PSE representative stating that the Peak Generation Plant component (Section 9.6.4.1 of the Phase 1 Draft EIS) meets the “significant” impact threshold, not the moderate threshold identified.

Response:

Clarifications and errors identified by commenters were reviewed and are included as appropriate in Chapter 3, Errata, of the Final EIS. These include concurrence on the probable significance of noise from peak generation plants, and on the applicability of noise regulations to substations. PSE and other commenters also provided other minor clarifications that have not been included in the Errata, primarily because they relate to Phase 1 alternatives that are no longer being considered, they are minor clarifications (as opposed to factual errors), and they do not influence the results or conclusions of the analysis. The full letters are included in Appendix J, following this narrative summary.

Land Use and Housing (Topic LU)

This section describes and responds to the comments received on the Phase 1 Draft EIS regarding land use and housing. Primary themes included concerns over property condemnation, PSE easement widths, whether the project is an Essential Public Facility, site-specific impacts to neighborhoods, and construction versus operation of the transmission lines.

Key Theme LU-1: Property condemnation

Comment Summary:

Commenters voiced concern that the project would require the condemnation and demolition of numerous houses, and stated that the removal of any houses should be considered a significant impact and should preclude construction of the project. Commenters also expressed a desire to know how PSE would determine the compensation for land owners if houses or land were acquired through eminent domain. Commenters also urged that the project make use of existing corridors to the greatest extent possible. The commenters expressed concern for how the neighborhood character would be impacted by the removal of houses.

Commenters voiced concern that the Energize Eastside project would not be properly mitigated for, specifically in terms of displacements. They asked how the City of Bellevue, as the Lead Agency for the project, planned to assist in the relocation of any displaced residents or businesses from the Partner Cities and how the residents would be compensated.

PSE provided clarification that they would not need to purchase land around the Lakeside substation (to be known as the Richards Creek substation) as they already own the property south of the site, and this property would be adequate for the expansion anticipated at this site. Additionally, PSE stated that if the existing Sammamish-Lakeside-Talbot Hill 115 kV corridor is used, the replacement 230 kV and 115 kV lines could be constructed and operated within the existing easement and would not require additional property acquisitions.

Response:

During the Phase 1 programmatic evaluation, project alignments were not definitively identified. As a result, the EIS Consultant Team did not know if property acquisition would be required. The analysis therefore identified this as a possible result of the project.

For the Phase 2 Draft EIS, locations of the various project segments and options have been identified, and no houses or businesses would be condemned or demolished under any of the options, including those where poles may be located outside the existing corridor (Bypass Options and Bellevue South Options). Where the project would be located within the existing corridor, no new easements or property acquisition would be needed (despite co-location with the Olympic Pipeline). In segments or options where the project would diverge from the existing corridor, new easements would be required, but this would only result in some accessory structures (e.g., garages and sheds) being moved or demolished. Because there would be no property acquisitions for the project, neighborhood character will not be impacted by the condemnation of land within existing neighborhoods. PSE's Proposed Alignment in the Final EIS would be located entirely within the existing corridor and can be developed without need for displacement of houses or businesses. Please see the project description in Chapter 2 of the Final EIS.

Mitigation measures are provided in the Phase 1 Draft EIS to address potential displacements. These mitigation measures are broadly summarized because the Phase 1 Draft EIS is a programmatic-level analysis and was prepared when the potential for property acquisition was considered a possibility. In regards to compensation for any property acquired for the project (although no acquisitions are proposed in the Phase 2 Draft EIS), any acquisitions by PSE would be governed by rules of eminent domain, including notice and fair compensation requirements.

The clarifications from PSE were incorporated into the Phase 2 Draft EIS. Specifically, once the project alternatives were established, land use and housing impacts were analyzed with the assumption that the project would not require any condemnation of existing housing or land.

Key Theme LU-2: Easement width required for safety

Comment Summary:

Commenters voiced concern that the right-of-way easement would need to be expanded because of the need to provide safe distance from the Olympic Pipeline in areas where the transmission lines would be co-located with the pipeline, and thus would require condemnation of property along the transmission line corridor. The commenters also expressed worry over the adequacy of the proposed corridor width for safety purposes, because the Olympic Pipeline system transports hazardous liquids, and commenters thought that the transmission lines should be separated from the pipelines.

PSE provided clarification that if the existing Sammamish-Lakeside-Talbot Hill 115 kV corridor is used (as with PSE's Proposed Alignment presented in this Final EIS), the replacement 230 kV and 115 kV lines could be constructed and operated within the existing easement area and would not require additional property acquisitions or easements. For concerns about co-location with the Olympic Pipeline, PSE noted that there are already two 115 kV transmission lines within the corridor.

Response:

During the Phase 1 programmatic evaluation, project alignments were not definitively identified, nor were the pole configurations. As a result, the EIS Consultant Team did not know if property acquisition would be required. The analysis therefore identified this as a possible result of the project, and made reasonable worst-case estimates of required width based on 115 kV and 230 kV corridors in other parts of the country and without regard to setbacks from co-located pipelines. It is correct that if standard corridor widths were added to the 50-foot separation that BPA generally advised for locating transmission lines from any co-located pipeline, the corridor width would be greater than described in the Phase 1 Draft EIS, and numerous homes would need to be removed. The separation required from the pipelines and from adjacent structures is dependent on a number of factors, including soils, pole heights and spacing, pole and circuit design, and other factors. The programmatic analysis provided by the Phase 1 Draft EIS provides a reasonable assessment of the potential impacts given the lack of design details.

As summarized in the response to comments in Key Theme LU-1: Property Condemnation, no houses or businesses would be condemned or demolished under any of the segments or options analyzed in the Phase 2 Draft EIS. The easement corridor would not need to be widened to accommodate the 230 kV transmission lines.

For commenters concerned about the safety of co-locating the transmission lines within a corridor that has hazardous liquid pipeline, see Section 3.9 of the Phase 2 Draft EIS for a discussion on pipeline safety which concluded that the likelihood of a pipeline rupture and fire would remain low if the project is built, and there would be no substantial change in risk from existing conditions.

With regards to structures in the vicinity of high-capacity transmission lines, PSE would be required to comply with NESC guidelines, which are summarized in Section 3.1.1.1 of the Phase 2 Draft EIS.

Key Theme LU-3: Essential public facility

Comment Summary:

Commenters voiced concern that the project would be permitted as an Essential Public Facility (EPF) in the jurisdictions through which it would be constructed. They felt that the Energize Eastside project did not meet the definition of an EPF under the Growth Management Act, and should follow the standard permitting procedures and requirements.

Response:

The proposed project will follow the conditional use, shoreline conditional use, shoreline substantial development, and critical areas permit processes, depending on which alternative is selected, as required by in the Cities of Bellevue, Newcastle, and Renton, and King County. The City of Redmond previously indicated that an EPF permit would be required, but has subsequently determined that it is not, and that a conditional use permit would be required instead. Other municipalities have permit processes that define the project as an electric utility, and these permit processes would apply regardless of whether or not the project is defined as an EPF. Municipalities determine the permit types required for the project application submittal consistent with their procedural standards and applicable land use processes. Applicable zoning regulations, policies, and shoreline regulations are contained in Appendix B of the Phase 2 Draft EIS.

Key Theme LU-4: Greater impacts in denser residential or natural areas

Comment Summary:

Commenters voiced concern that the project would have more pronounced land use impacts in specific neighborhoods, like Somerset and Olympus, due to higher residential densities in these neighborhoods, as well as in designated natural areas such as the Coal Creek Natural Area. Impacts cited include displacement of residences, visual "blight" that could affect the quality and livability of these communities, and "overburdening" natural areas with utility infrastructure. A commenter from CENSE and a Somerset Recreation Club representative expressed concern that the project would adversely impact a proposed renovation to the club facility, although no specifics about the impacts were provided.

Response:

The Phase 1 Draft EIS addressed impacts to communities within the project area at a programmatic level. It is acknowledged that where densities are higher, more people are likely to be impacted should impacts occur. The potential impacts of condemnation and displacement are discussed in the Phase 1 Draft EIS and in the responses to comments above. Visual impacts described programmatically in the Phase 1 Draft EIS included the effect on neighborhood character if a new or widened corridor was needed and required the removal of homes. The Phase 1 Draft EIS did not address specific neighborhood issues because it was not known which neighborhoods would be affected. Greater detail was added for the Phase 2 Draft EIS, both to the design of the alternatives and to the analysis of impacts.

For the Phase 2 Draft EIS analysis, specific alignments were chosen for the alternatives, allowing an examination of impacts to the specific neighborhoods that would be crossed by the 230 kV transmission lines. As described in the responses above and in the Phase 2 Draft EIS, none of the alternatives considered in Phase 2 would require the condemnation or removal of homes in any neighborhood, including Somerset and Olympus. For all alternatives, the transmission lines would be placed predominantly within a right-of-way that already includes 115 kV lines, and a hazardous liquids pipeline in some portions of the corridor. Land uses within the corridor would be the same after the project is built as they are today. For PSE's proposed alignment in the Final EIS, the entire project would be within the existing corridor.

Regarding conflicts with the potential impacts on the planned renovation of the Somerset Recreation Club facilities, since no specific conflicts were mentioned, a response is not provided here. However, the project-specific Phase 2 Draft EIS provides additional detail about PSE's proposal and may have addressed the concerns about the perceived conflicts.

Visual impacts would vary among the communities that the project would traverse. These are described in the Phase 2 Draft EIS, Section 3.2. Design and siting factors that would decrease the visual impact to specific communities (e.g., Somerset and Olympus) would be a part of the mitigation considered through the permit process, including the decision whether to underground the transmission lines in areas where the applicable plans discourage aerial facilities.

Key Theme LU-5: Errata and minor clarifications

Comment Summary:

Commenters voiced concern that Alterative 1 Option A was determined to have negligible impacts on Land Use and Housing. One commenter expressed confusion as to why the communities of Beaux Arts, Hunts Point, and Yarrow Point were included in the analysis in Table 10-2 of the Phase 1 Draft EIS. A few commenters were either concerned over the cumulative effects of the Energize Eastside project combined with the nearby SCL transmissions lines, or expressed their desire to have the two projects co-located in the same corridor.

PSE clarified that it avoids placing transmission lines over homes; however, it asserted that occupied structures have been constructed under the existing transmission lines. PSE also stated that the Newcastle Use Restriction information in Table 10-2 was incorrect. Utility facilities would be allowed in mixed use, urban residential, and neighborhood business zoning districts.

In addition, commenters noted that Figure 10-5 mislabeled the Issaquah Highlands, the area surrounding the Lake Tradition substation, and the parklands on Cougar Mountain and Squak Mountain as vacant land.

PSE also stated that King County, Redmond, and Kirkland codes prohibit new high consequence land uses within proximity to the existing corridor, but that transmission lines are an existing use within the corridor and are not a new land use.

Response:

The "negligible" statement in the Phase 1 Draft EIS relates to short-term/construction. For long-term (operation) impacts on land use, the Phase 1 Draft EIS states that impacts "could range from minor to significant depending on specific location" (page 10-24). The Phase 1 Draft EIS found that <u>construction</u>

impacts from the action alternatives to all communities in the study area were negligible because appropriate access to properties from the public rights-of-way would be maintained.

Table 10-2 was included in the Phase 1 Draft EIS to show the zoning districts and shoreline environment designations that would potentially prohibit all or portions of Alternative 1. Since the communities of Beaux Arts Village, Hunts Point, and Yarrow Point are all within the study area for Alternative 1, their policies prohibiting all or portions of the alternative were included in the table. The Phase 2 Draft EIS identified alignments for the alternatives, which did not traverse these neighborhoods. Therefore, the Phase 2 Draft EIS did not include these policies in the Land Use analysis. Co-location with the existing SCL 230 kV transmission line corridor was analyzed in the Phase 1 Draft EIS as Alternative 1, Option B in the resource sections. See Section 2.3.2.3 for a description of this alternative in the Phase 1 Draft EIS document.

Chapter 3 of the Final EIS, *Errata*, includes a statement that up to three non-residential structures appear to be constructed under the existing 115 kV transmission lines, and notes the errors in Figure 10-5 and Table 10-2. It also removes the following sentence "This option would have some of the same zoning consistency issues as Option A (Table 10-2) including potential for co-location with a high consequence land use, since it also crosses the OPL Company (OPLC) pipeline in places and is parallel to it in other locations."

Views and Visual Resources (Topic VR)

This section describes and responds to the comments received on the Phase 1 Draft EIS regarding views and visual resources. Primary themes included the extent of the study area, methodology used, tree removal, inconsistency of the project with existing neighborhood character, and project specifics that should be included in the Errata. Comments were also received on how the project might impact private views, and as a result property values. These comments are addressed under Economics.

Key Theme VR-1: Study area and key viewpoints

Comment Summary:

Commenters voiced concern that the 130-foot power poles would be seen for miles and would impact viewers in locations not discussed in the Phase 1 Draft EIS. These include viewers in neighborhoods and downtowns, drivers on I-405 and I-90, boaters on Lake Washington, visitors of the Newcastle Golf Course, residents of East Mercer Island, and travelers on planes landing at SeaTac. It was also suggested that the visual impacts would be greater than 100 lots per mile.

Representatives of CENSE and the Somerset Recreation Club asked why the Somerset community and the Somerset Recreation Club were not included as key viewpoints. Commenters also disputed the area identified as having scenic views on Figure 11-3 (showing King County Assessor's data regarding properties with views). One commenter stated that Newcastle has views of Mt. Rainier, and another noted that there are many private views located in the Somerset area.

PSE requested to know which roadways were integrated into the visual study, and stated that establishment or expansion of trails provided by new transmission lines would potentially result in new viewpoints that should be evaluated as beneficial impacts associated with Alternatives 1 and 3.

Response:

A refined study area was not provided for the Phase 1 Draft EIS because project-specific information, such as pole height and location, was unknown. Impacts to individual communities were not identified at the programmatic level because, in general, the exact locations of the various alternatives were unknown. A greater level of detail is provided in the Phase 2 Draft EIS (see Section 3.2).

For the Phase 2 Draft EIS, a GIS analysis was conducted to determine where the project would be visible based on the height and location of the proposal, the surrounding topography, and the presence of vegetation and buildings (see the Phase 2 Draft EIS, Appendix C). The Phase 2 study extends roughly 0.25 mile from the edge of the proposed corridor, but excludes all areas west of Interstate 405, which provides substantial visual separation from all alternatives. The project would be visible at greater distances; however, significant visual impacts are not expected given the project's scale relative to its largely mixed urban context.

Visual impacts to boaters on Lake Washington, visitors of the Newcastle Golf Courses, residents of East Mercer Island, and viewers from planes landing at SeaTac airport are not anticipated. Although I-90 is within the refined study area, significant impacts are not anticipated because viewer focus on and view duration of the project would be minimal (see Section 3.2.3.3 of the Phase 2 Draft EIS).

Section 11.6.3.5.3 of the Phase 1 Draft EIS states that an overhead transmission line would cross or abut approximately 100 lots per mile in a typical single-family subdivision with 4 lots per acre. This would vary depending on the number of schools, parks, and commercial uses present along the corridor, which tend to have larger lots, and on the residential density which could be higher in some portions of the Eastside. This estimate was to provide a rough idea of the number of residential viewers who would be the most impacted by the project, not to provide a refined study area.

Roadways are considered to be viewpoints programmatically in the Phase 1 Draft EIS (see Sections 11.3.3 and 11.6.3). Specific roadway corridors, such as the Mountains to Sound Greenway National Scenic Byway and scenic roadways protected in city and subarea plans and policies, were evaluated in the Phase 2 Draft EIS (see Section 3.2). Future use of the transmission line for any purpose beyond that of a utility corridor was not considered. While some communities may support the use of a transmission corridor as a trail, it would be speculative to assume that a new transmission line corridor would be used as a trail. In addition, the focus of this assessment was to determine where existing scenic views would be obscured.

The Phase 1 Draft EIS lists public viewpoints provided at parks, trails, and public open spaces (see Section 11.3.3). However, because the Somerset Recreation Club is privately owned, it was not included. For the Phase 2 Draft EIS, all recreation areas within the study area (parks, trails, outdoor recreation facilities) were assessed regardless of their ownership, and impacts to the Somerset Recreation Club were evaluated (see Section 3.2.5.8). Private views for the Somerset neighborhood were identified in Figure 11-12 of the Phase 1 Draft EIS.

Figure 11-13 of the Phase 1 Draft EIS is a property view score map showing areas that the King County Assessor identified as having better quality views. This map was not intended to be used to identify impacts. The King County Assessor data do not provide a comprehensive analysis, but give a general idea of what views can be had and from where. Often, assessors only conduct their assessment from the street. Therefore, they do not see views from second-story windows, etc. For the Phase 2 Draft EIS, a more refined analysis GIS analysis was used (see Section 3.2). The Phase 2 Draft EIS includes a map that identifies scenic views impacts (see Appendix C, Figure C-6).

Key Theme VR-2: Methodology

Comment Summary:

PSE asked why the Phase 1 Draft EIS analysis did not include an evaluation of vividness, intactness, and unity. PSE also asked for clarification regarding how viewer sensitivity was assessed and whether or not distance zones were factored into the analysis. In addition, PSE requested that more photos be taken to show potential visual impacts. A member of the public asked why the Somerset view covenants were not integrated into the Phase 1 analysis.

PSE asked for more information regarding how the significance criteria were applied. For example, PSE requested clarification that significant impacts from Alternative 1 would be minimized if the route were built in existing transmission line or road corridors, while members of the public stated that significant impacts from Alternative 1 would be unavoidable regardless of design or mitigation proposed. One commenter asked what would happen if PSE decided to construct a larger capacity line, such as a 750 kV line, which was beyond the scope of the analysis for this assessment. Another commenter suggested that the EIS summary (Chapter 1) should state that for unobstructed views that would become obstructed with power poles and/or power lines, the contrast would be high and obstruction permanent.

Response:

Assessment of “vividness”, “intactness”, and “unity” was part of the FHWA guidance from 1981. The Phase 1 and Phase 2 Draft EIS visual impact assessment methodologies were based in part on the 2015 FHWA guidance, adapted for use in the Energize Eastside analysis. Section 11.4 of the Phase 1 Draft EIS describes how the FHWA methodology was applied for the programmatic assessment, and Section 3.2 and Appendix C of the Phase 2 Draft EIS describe how it was applied to the project-level assessment.

Viewer sensitivity was assigned based on a viewer's proximity to the project and their level of awareness. For the Phase 1 assessment, sensitive viewers were typically considered to be residential viewers, and users of the public viewpoints identified in Section 11.3.3. A more refined methodology for analyzing viewer sensitivity was used for the Phase 2 Draft EIS that took into account subarea planning policies, residential density, and other considerations in addition to those evaluated in the Phase 1 Draft EIS (see Section 3.2.3 of the Phase 2 Draft EIS).

Visual simulations are provided in the Phase 2 Draft EIS (see Appendix C, Attachment 2). They show various types of natural and built environments, as well as different proposed pole heights and configurations. In addition, the EIS Consultant Team made several site visits and took numerous photos for reference.

Private covenants were not reviewed for the Phase 1 Draft EIS because the Partner Cities do not have SEPA policies that provide authority to recognize private covenants. For the Phase 2 Draft EIS, private covenants in Somerset were reviewed because they have affected the physical character of that community, which broader City policies seek to preserve, and contribute to the prominence of the taller poles in that location. Section 4.2 of the Final EIS describes how the Somerset covenants were applied in further detail.

In the Phase 1 Draft EIS, potential impacts were described as minor, moderate, or significant based on each one of the criteria being met (see Table 11-3 of the Phase 1 Draft EIS). For instance, if there is a low number of viewers, only a minor impact was assigned because, in order for an impact to be considered moderate or significant, there must be at least a medium number of viewers. Distance zones are factored into the Phase 1 analysis as a component of viewer sensitivity. For the Phase 2 Draft EIS, distance was factored into the analysis via the refined study area.

Section 11.6 of the Phase 1 Draft EIS describes how impacts would vary depending on where the transmission line is placed. However, for the purposes of the Phase 1 Draft EIS, significance was assigned based on the worst-case scenario. At the programmatic-level, it was determined that a new transmission line corridor may result in significant unavoidable adverse impacts if a new corridor were created (see Section 11.9). However, it was more difficult to ascertain if there would be significant unavoidable adverse impacts where a transmission line and clear zone are already present due to the lack of project-level information (such as exact pole heights). Potential significant adverse visual impacts within an existing corridor were further evaluated in the project-level analysis (see Section 3.2 of the Phase 2 Draft EIS, and section 4.2 of the Final EIS). The Phase 2 Draft EIS and the Final EIS describe areas where unobstructed views would be permanently affected by the taller poles, and identify areas where the increase in contrast would be significant. Not all areas with currently unobstructed views where a proposed pole would be visible would be significantly impacted.

At this time, there is no indication that a 750 kV line would be required on the Eastside. If such a line were needed in the future, additional environmental assessment would be required.

Key Theme VR-3: Project clear zones would reduce visual quality

Comment Summary:

Commenters expressed concerns that a 120- to 150-foot clear zone required for Alternative 1, Option A, would result in approximately 327 acres of vegetation removal, including approximately 8,000 trees. Vegetation removal could reduce the visual quality of the surrounding area. It was stated that such clear zone would be visible from large distances, replanting with low bushes would not effectively hide the new transmission poles, and removal of landscaping and structures would be a negative aesthetic impact. PSE stated that the National Electrical Safety Code (NESC) does not provide specific vegetation clearances, but rather that NERC/FERC specify vegetation clearance requirements for high voltage lines. PSE also commented that Alternative 1, Option B could have equal or greater clear zones than Option A, based on its estimation that the new 230 kV line could be built and operated within the existing Sammamish-Lakeside-Talbot Hill 115 kV 100-foot wide corridor; and therefore, the impacts associated with the 50-foot widening would not be realized. Public commenters stated that they would not want the clear zone to be reduced if it would mean lack of compliance with safety standards.

Response:

The Phase 1 Draft EIS examined the worst-case scenario for new overhead transmission lines, which assumed that the new corridor for a 230 kV line would be 120 to 150 feet wide (approximately 30 to 40 feet wider than a 115 kV line and the existing right-of-way corridor). During the development of the Phase 1 Draft EIS, the widths of clear zones were unknown because the height and form of the transmission poles had not been determined. The estimated width was based on a literature review and what information was available at the time of the assessment, including the Utility Vegetation Management and Bulk Electric Reliability Report from the Federal Energy Regulatory Commission (September 7, 2004). The NESC deals with electric safety rules, including transmission wire clearance standards, while the applicable American National Standards Institute code deals with the practice of pruning and removal of vegetation. However, these rules and guidelines are not specific with regard to clearances between transmission lines and vegetation and are subject to interpretation. The 40 percent tree canopy coverage used to programmatically identify vegetation impacts was based on the average tree coverage experienced in the project area jurisdictions.

Project-specific clear zones are described and assessed in the Phase 2 Draft EIS, which includes use of PSE's existing 100-foot-wide Sammamish-Lakeside-Talbot Hill 115 kV corridor. Vegetation Management and Clear Zones are described in more detail in Section 3.4.1.3 of the Phase 2 Draft EIS and Section 4.4.1.1 of the Final EIS. Regulations for 230 kV lines call for the removal of trees with a potential height of greater than 15 feet within the managed right-of-way, while 115 kV lines allow 25-foot trees within the managed right-of-way zone. As described in the Phase 2 Draft EIS, PSE has flexibility within these standards. (Note: the managed right-of-way is sometimes referred to as the clear zone.) Whenever the management of a specific site varies from these standards, PSE would prepare a vegetation management plan addressing the specific situation in consultation with the property owner. Such plans ensure PSE's compliance with safety standards.

Key Theme VR-4: Project would be inconsistent with comprehensive plan policies

Comment Summary:

Commenters cited the City Bellevue Comprehensive Plan, which describes Bellevue as a "City in a Park." These commenters voiced concern that 100-foot poles in residential areas, as well as the removal of acres of vegetation, would be inconsistent with this description and would result in adverse impacts to the aesthetic environment within the City of Bellevue. Commenters described the project as "a clear zone with a 130-foot electric fence along 18 miles of the Eastside." It was stated that such a project would have a significant visual impact from the territorial view standpoint. One commenter noted that the City of Bellevue already has the lowest percentage of tree canopy on the Eastside, and this project could further the trend of tree canopy reduction due to the requirement for the clear zone to remain bare of trees. Commenters noted that Bellevue's "City in a Park" atmosphere provides attractive and desirable living conditions that improve their quality of life and investments made in private property and public spaces. It was stated that the project would introduce industrial blight. One commenter also said that the project would be inconsistent with the Newcastle Comprehensive Plan.

Response:

The Phase 1 Draft EIS examined worst-case scenarios for a variety of options, at a programmatic level. It also discusses applicable comprehensive plan policies. The analysis notes that overhead transmission lines often contrast visually with their surroundings, especially in residential areas. While the project is not considered "industrial" from a city policy perspective, it is acknowledged that the scale and character of transmission line poles is very different from that of residential structures.

The potential extent of tree clearing is also discussed. Updated vegetation removal information is provided in the Phase 2 Draft EIS (see Section 3.4) and the Final EIS (see Section 4.4), and the resulting impacts to the aesthetic environment are also evaluated in greater detail (see Section 3.2 and Section 4.2 of the Draft and Final EIS documents, respectively). There is no overarching policy that states that vegetation removal is inconsistent with Eastside aesthetic values. In fact, a transmission line clear zone is already present on the Eastside. However, there are policies that discourage tree removal in certain areas (e.g., along Richards Road). These are listed in Table 3.2-4 in the Phase 2 Draft EIS.

As part of the Phase 2 Draft EIS analysis, the project-level alternatives were assessed based on their consistency with study area codes and comprehensive plan and subarea plan policies, including those that discourage vegetation removal. This includes additional review, beyond the analysis in the Phase 1 Draft EIS, of comprehensive plan policies for City of Bellevue and City of Newcastle, which are the two comprehensive plans mentioned in the comments. In Bellevue, this was because specific subareas were affected, while in Newcastle, new policies were adopted after the Phase 1 Draft EIS was published.

Key Theme VR-5: Condemning of homes and installation of a new transmission line would change the visual character of Eastside neighborhoods

Comment Summary:

Commenters expressed concern that the removal of homes for the installation of a new transmission line would change the visual character of Eastside neighborhoods. Commenters noted that the reason they choose to live on the Eastside is for the neighborhood character, and stated that the proposed poles would not be consistent with the existing neighborhood character, would blight the landscape, and belong instead in an industrial setting. Some commenters noted that it would be more challenging to hide the taller poles with landscaping.

Response:

During the Phase 1 programmatic evaluation, project alignments were not definitively identified. As a result, the EIS Consultant Team did not know if the removal of homes would be required. The analysis therefore identified this as a possible result of the project. The Phase 1 Draft EIS discusses these potential impacts, including the effect they could have on visual character of a neighborhood.

For the Phase 2 alternatives and for the PSE's Proposed Alignment in the Final EIS, no houses or businesses would be condemned or demolished. For segments where the project would be located within the existing corridor, no new easements or property acquisition would be needed. In segments or options where the project would diverge from the existing corridor, new easements would be required, but this would only result in some accessory structures (e.g., garages and sheds) being moved or demolished. For those residents whose accessory structures would need to be removed, the aesthetics of their yards may be negatively impacted. However, because most of the locations where the project would diverge from the existing corridor would occur along roadways, the likelihood of residential yards being negatively impacted is low. Impacts to visual quality of the aesthetic environment (including inconsistency with neighborhood character) are evaluated in the Phase 2 Draft EIS (see Section 3.2). There are no policies that explicitly state that a transmission line would be inconsistent with neighborhood character; in fact, a transmission line is already present in some Partner City neighborhoods.

Key Theme VR-6: Light and glare

Comment Summary:

One commenter inquired if the130-foot poles would require flashing beacons to alert low flying private aircraft of tall aerial obstructions, especially in areas that cross I-90 or over Somerset. This commenter also noted that tree removal could result in decreased light and glare reduction.

PSE stated that typically galvanized steel poles are more reflective than other finishes on steel poles, especially when new. However, this typically diminishes with time. PSE requested that the EIS mention different types of finishes that are not reflective in nature.

Response:

Aviation warning lights would not be required for this project because the proposed electrical infrastructure, including transmission poles under any of the alternatives evaluated, would be less than 200 feet in height and would not exceed the obstruction standards contained in 14 CFR Part 77. The EIS Consultant Team evaluated light and glare impacts associated with construction and operation of the project, which considered potential impacts associated with construction site lighting, substation security lighting, and reflectivity of steel pole conductors. Section 11.6.3.5.4 of the Phase 1 Draft EIS states that if steel poles are used, a non-reflective coating would be applied.

It is correct that clearing could result in less screening of existing light sources, such as street lights or lights from buildings. Glare from street lights can be reduced by requesting shielding be installed by the public utility providing the lighting, and similar shielding can be provided in some cases for exterior lights on buildings.

No significant impacts were identified regarding light and glare.

Key Theme VR-7: Mitigation

Comment Summary:

A commenter asked how changing the pole color would hide a 130-foot pole. Other commenters stated that the only way to mitigate visual impacts for the project would be to place the transmission lines underground or under water. Others requested that a full range of mitigation measures be provided, including, but not limited to, undergrounding sections of the transmission lines, a range of pole heights, pole colors, aesthetic treatments to poles, landscaping, and tree replacement. PSE noted that the project design could be flexible to accommodate community concerns. For instance, poles could be made taller or shorter, depending on the setting. In addition, PSE stated they would be willing to investigate the use of combined static (shield wire)/communication line to reduce the total number of wires in the air.

Response:

Additional details on potential mitigation are presented in the Phase 2 Draft EIS. To see the proposed pole heights for PSE's proposed alignment, see Chapter 2 of the Final EIS. PSE proposes using a patina covering to reduce the glare associated with galvanized steel poles. Patina causes the steel to rust, changing the color of the poles to a more natural brown tone. Section 4.2.6 of the Final EIS describes considerations for selecting pole finishes based on the background color, color of surrounding features, and the surrounding land use. The poles would not be hidden, but they would be less noticeable. An updated list of proposed mitigation measures to reduce impacts to scenic views and the aesthetic environment is provided in Section 3.2.7 of the Phase 2 Draft EIS. For the Final EIS, PSE has also committed to using a combined shield wire/communication line to reduce the total number of wires in the air.

During Phase 1, it was determined that a submerged 230kV line in Lake Sammamish would not be feasible (see Section 2.4.4 in the Phase 1 Draft EIS). The option of using a submerged or underwater line in Lake Washington was included in the Phase 1 Draft EIS; however, it was not carried forward for analysis due to shoreline regulations that would restrict where it could be placed and the potential for higher environmental impacts than use of using existing corridors. For more information, see Section 2.2.3 in the Phase 2 Draft EIS. However, placing portions of the transmission line underground is still proposed as a potential mitigation measure that could be considered by jurisdictions as part of the permitting process (see Section 3.2.6 of the Phase 2 Draft EIS). Section 4.2.6 of the Final EIS discusses the use of undergrounding as mitigation in greater detail.

Key Theme VR-8: Errata and minor clarifications

Comment Summary:

Following the release of the Phase 1 Draft EIS, PSE provided comments on the project design and the assessment of visual impacts. Another commenter asked if the project included the possibility of "bundling" conductors as a means of controlling radio interference, as suggested in Section 15.6.2 of the Phase 1 Draft EIS.

Response:

Clarifications and identified errors were provided and rectified in the Errata regarding pole height, a statement that there was only one 230 kV transmission line in the Seattle City Light Corridor, and wording that implied the Westminster substation already existed. See Chapter 3 of the Final EIS. PSE (and other commenters) also provided numerous other minor clarifications that have not been included in the Errata, primarily because they relate to Phase 1 alternatives that are no longer being considered, they are minor clarifications (as opposed to factual errors), and they do not influence the results or conclusions of the analysis. The full letters are included in Appendix J, following this narrative summary.

The reference to bundling was provided as an example of something that the IEEE manual suggests where radio interference is a problem. However, PSE has not proposed bundling and uses other methods for mitigating radio interference; therefore, this was not a good example. A profile of the proposed conductors is included in the Phase 2 Draft EIS, Appendix C, Attachment 1.

Economics (Topic ECON)

This section describes and responds to the comments received on the Phase 1 Draft EIS regarding economic issues. Primary themes included property value depreciation, tax revenue impacts, the need for a cost-benefit analysis, and fairness of financial burden.

Key Theme ECON-1: Property value depreciation

Comment Summary:

Commenters voiced concern that the Energize Eastside project would negatively impact their property values. The commenters were concerned about new transmission lines in areas that previously had none, as well as taller transmission lines in areas where transmission lines already exist. They questioned whether the Phase 1 Draft EIS adequately addressed how much the property values could decrease due to view impacts, impacts to neighborhood character, concern regarding the health effects of EMF, and tree loss.

Multiple commenters cited a potential for a 20 percent depreciation in property values, and pointed out that the effect would be more pronounced on the Eastside because the properties are higher-end. Commenters expressed concern about the EPRI report that the Phase 1 Draft EIS relied on, stating that they believed it could be biased, that the findings were inconclusive, and that it was not an Eastside-specific study and was therefore not applicable. Similarly, commenters requested that the EIS team consult with real estate brokers for local data on how real estate prices could be impacted by transmission lines. Commenters stated that local brokers or realtors indicated a 10–30 percent decrease in value for homes along transmission lines. Additionally, commenters pointed to data from the King County Assessor's Office documented in a report prepared by FCS Group, a consultant on the EIS team, which noted that construction of a view-obstructing transmission line could negatively affect property values. Multiple commenters asked for an assessment of property value impacts as a result of obstructed views from residences along the corridor. Representatives for the Somerset Recreation Club stated that the project could reduce property values by blocking views, hindering access, and being co-located with a pipeline.

Several commenters requested information on how a reduction in property values would be mitigated, including a suggestion that PSE compensate owners whose views are affected.

Response:

The Phase 1 Draft EIS provided a review of the impacts at a programmatic level; therefore, no site-specific data were analyzed. Also, SEPA does not require that an economic analysis be included. It allows the Lead Agency to include economic information it believes would be helpful to decision makers. The EIS Consultant Team included a section on impacts to property values because it was highlighted as a concern during the scoping process, and the Lead Agency determined it could be helpful. The scope of the analysis is limited, and is not intended to be a full cost-benefit analysis of the project. The focus of the property value analysis is on using economic studies regarding the siting of transmission lines as one gauge of community acceptance of transmission lines as a land use and as a visual element. Site-specific data (including information gathered from local brokers and real estate agents) were not used in the analysis in the Phase 1 Draft EIS.

For the Phase 2 Draft EIS the EIS Consultant Team performed further economic analysis regarding impacts to property values from transmission lines; this analysis is included in Section 3.10.1. A 2016 study was reviewed that reinforced the conclusion of the Phase 1 Draft EIS that a negative effect on property values is expected from the presence of transmission lines (Tatos et al., 2016, *Property Value Impacts from Transmission Lines, Subtransmission Lines, and Substations).* The findings of this study, however, do not suggest that the replacement of lower voltage with higher voltage lines would result in a greater negative effect than the existing lines have at present.

The Phase 1 Draft EIS identified the results of several studies that gave a range of a 1–20 percent reduction in property value for properties with a view of transmission lines, with the average of these studies being a 6 percent reduction. An EPRI-sponsored study found that the voltage and size of transmission lines and easements were not determining factors regarding changes in property values. The EPRI-sponsored study was chosen as the source of information for the Phase 1 Draft EIS because it synthesizes and summarizes the findings of over 50 surveys and studies. EPRI is an independent nonprofit whose members are made up of electric utilities, businesses, government agencies, regulators, and other entities involved in the generation, delivery, or use of electricity. While most of these entities have an interest in building and operating transmission lines, the study was found to have been conducted without bias, and summarizes a range of independent studies that found various levels of effects on property values.

The Phase 1 Draft EIS analysis found no studies specifically on the subject of increasing the pole height or voltage on an existing corridor. Also, none of the studies looked separately at the effect on property values of scenic view blockage by transmission lines. All focused on the general effect of having the transmission lines in view of the homes, regardless of the presences of a scenic view. The studies reviewed had inconclusive or inconsistent findings on how property values could be impacted by changes in views due to the increased pole heights (see Section 11.6.1.4 of the Phase 1 Draft EIS). Site-specific data (including information gathered from local brokers and real estate agents) were not used in the analysis contained in the Phase 1 Draft EIS.

Chapter 10 of the Phase 1 Draft EIS acknowledges that the sale prices of higher priced homes are more affected by proximity to high power transmission lines than are lower priced homes. The study cited in the comment, however, does not address whether the replacement of lower voltage with higher voltage lines has resulted in a greater negative effect than the existing lines have at present. Based on the studies cited in the EIS and the study cited in this comment, it is reasonable to assume that the existing transmission lines have affected property sale prices and would continue to do so under the No Action Alternative. Although the EIS acknowledges that some reduction of property values is likely, it would be speculative to assume, based on these studies, that replacement of the transmission lines would cause an additional reduction in sales price of the same amount as was observed for homes in the vicinity of the existing lines. Because impacts to property values are not an element of the environment that must be analyzed under SEPA, specific impacts to property values that could be caused by the project were not included in the Phase 2 analysis or the Final EIS.

Because the Phase 1 Draft EIS was a programmatic-level review, it did not look at visual impacts from specific alternative routes. The Phase 2 Draft EIS does include a detailed analysis of the visual impacts (see Section 3.2) and found that there would be no significant unavoidable impacts to scenic views (as defined in the EIS) due to the Energize Eastside project. The project would result in significant impacts to the aesthetic environment under the Bypass 1, Bypass 2, and Willow 1 Options, and the Newcastle Segment as evaluated in the Phase 2 Draft EIS due to high viewer sensitivity and contrast with the aesthetic environment. (For definitions of "scenic views" and the "aesthetic environment" see Section 3.2 of the Phase 2 Draft EIS.) For the Final EIS, significant adverse impacts to the aesthetic environment would occur under the Bellevue South Segment and both Newcastle Options. Because impacts to property values are not an element of the environment that must be analyzed under SEPA, specific impacts to property values that could be caused by the project were not included in the Phase 2 analysis.

As described in the response to Key Theme LU-1, it was not known whether the project would require land acquisition during the Phase 1 Draft EIS process. After the alignments for the alternatives were identified for the Phase 2 Draft EIS analysis, it was determined that the proposed alignment and options evaluated in the Phase 2 Draft EIS would not involve any condemnation of homes or other properties. Access to residential and commercial properties would be maintained (see Chapter 14 of the Phase 1 Draft EIS). Therefore, two factors that commenters suggested would affect property values - removal of homes and addition of a new transmission line through a residential area – would not occur. PSE's proposed alignment evaluated in the Final EIS would be operated entirely in an existing utility corridor.

The EIS does not investigate whether co-location of a transmission line with a pipeline would result in reduced property values independent of having one or the other next to a property. Because the properties along much of the existing PSE corridor already abut a transmission line that is co-located with a pipeline, it is assumed that existing property values reflect the effects of such co-location. It is acknowledged that heightened awareness of the pipeline may be affecting property values more at present than before the Energize Eastside project was proposed. It would be speculative to estimate changes in specific property values that could result from replacing the existing lines with a 230 kV transmission line.

It is not common practice to require monetary reimbursement for property devaluation associated with views of a transmission line or private view obstruction, and there is no city policy in place in any of the jurisdictions suggesting that such compensation be required. However, mitigation measures, such as requiring that the transmission line be placed underground or pole heights be minimized, could be required by the Partner Cities, and are identified as a potential mitigation measure in the Phase 2 Draft EIS, Section 3.2.6. While Bellevue has policies regarding the general preservation of scenic views, no regulations in any of the Partner Cities guarantee the protection of private views. The policies of each jurisdiction regarding the preservation of general visual quality are described in both the Phase 1 Draft EIS and the Phase 2 Draft EIS.

Key Theme ECON-2: Tax revenue impacts

Comment Summary:

Commenters voiced concern that the project would result in decreased property values, which would then decrease the tax revenue for the Partner Cities. This impact, according to commenters, could lead to a decrease in services provided by the communities because of the acquisition of land and conversion to utility use, combined with the potential decrease in property value because of the presence of the transmission lines. One commenter noted that the impact of the project on smaller towns like Newcastle would likely be proportionally higher because larger cities, such as Bellevue, have a more diverse tax base. Several commenters requested information on how the loss of property tax revenue would be mitigated.

Response:

The Phase 1 Draft EIS examined the question of whether a reduction in property value would significantly affect the ability to maintain public services. Because the change in value that can be expected was dependent on the specific location, the Phase 1 analysis looked at hypothetical property value reductions so that decision makers would have a sense of the potential order of magnitude, and could see how that compared to the most affected city, the City of Bellevue. The Phase 2 Draft EIS analyzed the potential loss of property tax revenue, with results presented in Section 3.10. The analysis conducted for Phase 2 used the City of Newcastle as a proxy for impacts to tax revenue because it is the smallest of the Partner Cities jurisdictions in both population and property tax base, and thus is the most sensitive to property tax fluctuations. See Section 3.10.4.1 of the Phase 2 Draft EIS for the results of the analysis.

During the preparation of the Phase 1 Draft EIS, it was not known whether the installation of new 230 kV overhead transmission lines would result in the acquisition of land, and potential condemnation of homes and other improvements. The proposed alignment and options evaluated in the Phase 2 Draft EIS would not involve any condemnation of homes or other properties but may result in the demolition of accessory structures (e.g., sheds). Easements along road rights-of-way would be required. Therefore, the impact on property values from the conversion of land to a utility use is not evaluated in the Phase 2 Draft EIS.

Key Theme ECON-3: Need for a full cost-benefit analysis

Comment Summary:

Many commenters stated that economics are an element of the environment for many SEPA EISs, and suggested that this project warranted a more thorough economic assessment. For instance, the Somerset Recreation Club stated that having 85- to 100-foot poles on their property could result in reduced membership to the point that they might have to close their facility. Commenters stated that a cost comparison of the various alternatives should be conducted and considered during the selection of a preferred alternative.

One commenter said that there should be a preliminary quantitative assessment of the impact on PSE's tariff(s) and rate schedules and a preliminary lifecycle cost estimate for acquisition and ownership for each alternative/option considered based on the same economic/financial basis and expressed in the same-year dollars. Others added that mitigation measures (such as replacing trees, constructing stormwater improvements, property acquisition, and placing portions of the project underground) should be included in the cost estimate, as well as environmental externalities (such as GHG emissions, etc.). Commenters said that the EIS does not adequately address reliability versus cost, and that the Draft EIS should include a numerical analysis of the expected increase in reliability versus the relative cost of each alternative. Some commenters speculated that Alternative 2 would likely cost more while others say Alternative 3 would be expensive due to property acquisition. One commenter said that using newer technologies helps to spread the risk and investment, stating that investment has the potential to go further as technology improves and costs drop.

Some commenters stated that high electricity prices might suppress regional economic activity, business growth, and business development on the Eastside and greater Puget Sound area. Commenters stated that high electricity rates are a careful consideration when a business chooses to start or relocate to the Eastside and noted that Gross State Product is very sensitive to changes in electric prices over time, and there is a correlation between high electric prices and lower or negative economic growth. Commenters were also concerned that the project could use up funds needed for maintenance of other infrastructure.

Response:

Economic analysis is not a required element for a SEPA EIS; however, SEPA provides discretion to agencies to include economic information in an EIS that could be beneficial to decision makers, such as information related to environmental concerns that may not be readily available elsewhere. The analysis in the Phase 1 Draft EIS of property tax effects on the City of Bellevue was prepared to give a sense of how sensitive the budget of the largest city was to changes in property values if the project adversely affected property values. In the Phase 2 Draft EIS, a similar analysis for the City of Newcastle and an analysis of the value of lost ecosystem services due to reduced tree cover were conducted, in response to comments received during the public comment periods for the Phase 1 Draft EIS and the scoping period for the Phase 2 Draft EIS.

The analysis of the costs of undergrounding a portion of the transmission line was developed because it was recognized in Phase 1 that the cost of undergrounding the entire line would be prohibitively high, but that undergrounding might be viable as mitigation in site-specific areas. The analysis is intended to assist decision makers considering whether to require undergrounding as a mitigation measure to offset environmental impacts. Per PSE's interpretation of state-approved tariff rules, the requesting party (such as the local jurisdiction, or an affected party or group) may be responsible for paying the difference between overhead and underground costs, including design, construction, and maintenance.

A full cost comparison of the various alternatives was not assessed because it is not required under SEPA. As the electric utility provider for the Eastside, PSE is responsible for determining the most cost-effective method for delivering reliable electric power. PSE has concluded that the most cost-effective solution to meet its objectives is to site a new 230 kV transformer in the center of the Eastside (Stantec, 2015) (see Section 1.3 of the Phase 1 and 2 Draft EISs).

Commenters are correct that energy prices can be determining factors for businesses locating in the region. Based on the estimates of cost per customer provided by PSE, this project is not expected to significantly affect the price of electricity for existing or prospective businesses. PSE has indicated that customers would not see an increase in their monthly bill directly as a result of the project because PSE funds electric infrastructure upgrades and additions through its annual capital budget, which is already covered in current customer rates. Utility rates are regulated by the Washington Utilities and Transportation Commission, and PSE would need the commission's approval to include this project in its rate basis. Furthermore, SEPA does not require an analysis of how a project will be funded. As such, a cost analysis is not necessary in order to evaluate environmental impacts.

Key Theme ECON-4: Fairness of financial burden

Comment Summary:

Commenters noted that the cost of the project would be borne by rate payers. Some calculated the cost to be over $1 billion over the lifetime of the project and cited the Energize Eastside Economic Analysis on the CENSE website. Many stated that the project is over-scaled and overpriced. Some stated that increased utility bills could impact low-income populations. Some suggested that PSE use the proceeds from selling the Schuffleton Peaker Plant to upgrade the grid. Some commenters asked why PSE customers are being asked to solely pay for electricity grid enhancements and stated that the project should have been included in the regional transmission plan, which would have resulted in the project receiving funding from BPA, SCL, and others. Others stated that all PSE customers should not have to pay for improvements that would only benefit 3 percent of PSE's customers. A handful of commenters stated that rate increases to pay for the project combined with loss of property values would place a double financial burden on adjacent property owners.

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Many stated that the project would result in ratepayers paying for PSE shareholders to profit. Some stated that State regulations allow PSE to collect a 10 percent return on infrastructure investments; others commenters stated opposition for investing in old technology and noted that policies should be put into place to support investing in newer technology. Comments were also received about how PSE budgets and plans for its improvement projects.

Another asked who pays for the acquisition and ownership of possible resources required (gas turbines, microturbines, fuel cells, etc.), and how such payments would be made for Alternative 2, as well as how electrical output from distributed generation would be priced.

Response:

The Partner Cities do not regulate PSE's rates. It is the responsibility of the Washington Utilities and Transportation Commission (WUTC) to determine if the cost of electrical upgrades is appropriate.

PSE has stated that because this project meets local needs, it is a local project and the cost should be borne by PSE customers. It is the responsibility of ColumbiaGrid to determine if the project is needed for regional transmission or is primarily a local transmission solution.

Although the exact cost of the project is unknown, PSE's estimates for its proposed alignment are between $150 million and $300 million. Regular upgrades or additions to the electric infrastructure are shared by all of PSE's customers and are paid for over time. PSE has indicated that customers would not see an increase in their monthly bill directly as a result of the project because PSE funds electric infrastructure upgrades and additions through customer rates based on its annual capital budget. At any given time, the PSE rates cover numerous capital investments made in past years; thus, the Energize Eastside project would be one of many being funded in this way. The Energize Eastside project would be paid for like most transmission and distribution projects, with PSE including the cost of the project in future annual capital budgets. Once the project is built and added to the annual capital budget, PSE expects that $1 to $2 of the average monthly bill for residential customers will go toward paying for the project. While theoretically PSE rates could be lowered if the Energize Eastside project were not built, in practice, PSE would likely fund other capital projects and the rates would not change appreciably.

PSE has determined that Alternative 2 was not feasible because PSE does not have the ability to require its customers to install energy efficiency measures or peak period generation facilities. PSE does not believe it is feasible to expect voluntary measures to be adopted quickly enough to address the capacity deficiency it has identified. Further analysis of Alternative 2 was not conducted. For more information, see Section 2.2.7 of the Phase 2 Draft EIS.

Recreation (Topic REC)

This section describes and responds to the comments received on the Phase 1 Draft EIS regarding recreation. Primary themes include trails in utility corridors, temporary trail closures, impacts to the Somerset Recreation Club (SRC), birding as a recreational activity, and loss of recreation sites/access from right-of-way widening, and the need for new trail corridors.

Key Theme REC-1: Trails in utility corridors

Comment Summary:

PSE noted that trails and utility corridors can co-exist, and often only exist because of the presence of a utility corridor, listing examples such as Bridle Trails State Park Equestrian Trail on the SCL corridor which was established as a utility corridor prior to the area becoming a park; Interurban Trail in south King County, which is situated on PSE's 230 kV/115 kV corridor and co-located with the Olympic Pipeline; and the Puget Power Trail in Redmond along PSE's 230 kV line.

PSE also noted the potential for wider or improved trails where two H-frame pole types are replaced with a single monopole, as is proposed along portions of the corridor as part of PSE’s Proposed Alignment. New trails or improvements to existing trails systems can be incorporated into siting of utility projects so that there is a positive impact to recreation. One commenter requested that the currently fenced green space, particularly between NE 24th Street and the 520 bicycle path, should be made accessible and include a path or trail so that people can use the space, particularly to provide access to the 520 bicycle path from NE 24th Street.

Trail users expressed concern regarding the potential for trails to be closed for months due to vegetation clearing activities associated with the construction of the project. One commenter noted that the trail along the Olympus Trail in Newcastle is a significant part of the Newcastle trail system, and trail users will be negatively impacted by any restrictions in access. PSE noted that there would be temporary closure of trails for maintenance of the transmission line.

Response:

Trails on existing transmission line rights-of-way were described in the Phase 1 Draft EIS as “informal trails,” that are “ancillary to the primary use of the property” (see Section 12.6.3.1.3 of the Phase 1 Draft EIS). Improvements to recreational resources, including trails, can be identified as permit conditions by the appropriate municipality, and comments suggesting such improvements will be taken into consideration by the Partner Cities.

There is the potential for permanent impacts to recreation within existing transmission corridors if vegetation removal results in a permanent conversion of vegetation type (e.g., from forested to low-growing vegetation). This could substantively change or negatively impact the scenic nature of a recreation site or could result in a loss of habitat for animals that may use these areas, reducing user enjoyment. In addition, if benches, playground equipment, gazebos, or other structures are removed underneath the transmission lines, visitors may avoid a recreation site if it no longer offers the amenities they previously used at that site (see Section 12.6.3.1.1). However, the Phase 2 Draft EIS found that within the existing corridor, impacts to recreation would be less-than-significant because vegetation clearing and changes to poles and wires would not affect the use of recreation sites (see Section 3.6.5 of the Phase 2 Draft EIS).

The Phase 1 Draft EIS described construction of the transmission line along existing trails as occurring in three stages, each 1 to 3 days long, over a period of 2 months. The length of time for vegetation clearing would depend on the location, but, it would not be closed for months (see Section 4.6.2.2 of the Phase 2 Draft EIS for discussion).

Impacts to trails, including Olympus Trail in Newcastle, were evaluated in Section 3.6 of the Phase 2 Draft EIS.

Key Theme REC-2: Birding as a recreation activity

Comment Summary:

A representative from the Eastside Audubon noted that birding is a recreation activity, enjoyed in the study area's 235 recreation sites, and should be considered different from other uses listed in the Phase 1 Draft EIS. The commenter asserted that project impacts on birding could be much more negative in the vicinity of the transmission lines and towers than impacts on other users because of the direct impact the overhead transmission lines could have on birds. The commenter suggested adding two sites to Table 12-2 on page 12-6 of the Phase 1 Draft EIS, the Cross Kirkland Trail and the proposed Eastside Rail Corridor that King County is now planning. These linear open space corridors are bordered by high quality woodlands and wetlands, so any habitat fragmentation caused by transmission facilities could significantly affect birding.

Response:

The Phase 1 Draft EIS did consider birding as a subset of nature viewing in keeping with a programmatic evaluation. It is correct that habitat degradation or fragmentation would adversely affect enjoyment of birders as it would other nature viewing. Potential impacts to wildlife, including birds, are discussed in Chapter 6, Plants and Animals in the Phase 1 Draft EIS, as well as in Section 3.4, Plants and Animals, in the Phase 2 Draft EIS. The Phase 2 Draft EIS did not evaluate the Cross Kirkland Trail because the alignment route and options did not extend into the City of Kirkland where the trail is located. Potential impacts to the Eastside Rail Corridor were evaluated in the Phase 2 Draft EIS, Section 3.6.

Key Theme REC-3: Permanent loss of recreation sites

Comment Summary:

A number of commenters expressed concern that recreational sites would be permanently impacted, in some cases eliminated, as a result of corridor widening to make room for the overhead transmission lines and to ensure an adequately safe distance from the existing Olympic Pipeline. Commenters expressed concern over the following recreational sites as a result of Alternative 1, Option A: Coal Creek Natural Area (which a commenter pointed out was recently improved), Bridle Trails State Park, Viewpoint Park, Kelsey Creek Park, May Creek Park, Forest Hill Neighborhood Park, Sierra Heights Park, Eastside Rail Corridor (ERC). Other commenters were concerned about impacts to recreational resources associated with the placement of new 230 kV corridors to connect the SCL corridor with the Sammamish substation and Lakeside substation. Additionally, commenters expressed concerns over the possibility of community programs being shut down for safety reasons, such as the farm at Kelsey Creek Park, elimination of certain recreation activities, such as kite-flying, because of safety concerns, and exposure to children and other park users to unsafe conditions. The cost of replacing lost park lands should be considered. Commenters felt that Alternative 2 would have the flexibility to locate new transmission infrastructure so as to avoid park lands and related environmental destruction.

Commenters expressed concern that recreational users would be affected by the permanent loss of vegetation because it would negatively impact the scenic nature of a recreation site and increase exposure to noise.

Representatives from SRC and others identified potential impacts concerning the SRC facilities, including permanent displacement of SRC facilities as a result of the project and any associated corridor widening, the inability of mitigation measures to provide solutions, and the potential for construction during the club's peak season to affect club membership which would impact the financial viability of the club.

Response:

At the time the Phase 1 Draft EIS was prepared, the alternatives considered included the potential for new corridor routes or widening the existing 115 kV transmission line corridor, which could have affected adjacent recreational resources. For the Final EIS, PSE's proposed alignment would occur within their existing right-of-way and will not require new easements or properties. Therefore, there will be no impacts to the trails along the SCL right-of-way or the recreational resources along new 230 kV corridors that would have been required to be built to connect the SCL corridor with the Sammamish and Lakeside substations. There would also be no impacts to the Eastside Rail Corridor or the Coal Creek Natural Area.

The existing transmission line corridor crosses or abuts Viewpoint, Kelsey Creek, May Creek, Forest Hill, and Sierra Heights Parks, and the SRC. None of these parks or community centers would be eliminated. Programs such as the farm at Kelsey Creek Park would continue unchanged. For further discussion, see the Phase 2 alternatives analysis, which describes impacts to the SRC in more detail (see Sections 3.6.5.9 through 3.6.5.12 of the Phase 2 Draft EIS). The Phase 2 Draft EIS found that no significant adverse impacts to the SRC would occur. More information about the proposed easement, pipeline safety, and recreation impacts are described in Section 3.4, 3.9, and 3.6 of the Phase 2 Draft EIS, respectively. Safety issues, as they relate to recreation resources, are described in Section 3.9.6 of the Phase 2 Draft EIS.

Additionally, mitigation measures in the Phase 1 Draft EIS were in keeping with the programmatic nature of the document, and mitigations measures proposed were high-level in nature. The Phase 2 Draft EIS provides more specific mitigation strategies (see Section 3.6.6 of the Phase 2 Draft EIS).

Key Theme REC-4: Cumulative impacts

Comment Summary:

In combination with the East Link project and other projects planned in the project area, the Energize Eastside project could cause cumulative impacts on recreation if the same recreation sites are affected or if construction periods overlap.

Response:

Cumulative impacts to recreational resources from overlapping construction projects such as the Sound Transit East Link project are described in Section 5.6 of the Phase 2 Draft EIS.

Key Theme REC-5: Errata and minor clarifications

Comment Summary:

Following the release of the Phase 1 Draft EIS, PSE provided comments on the project design and the assessment of recreational impacts.

Response:

Clarifications and errors were identified and rectified in the Errata, specifically regarding transmission line placement in Lake Washington and the summary of recreation impacts in Table 1-3 in the Phase 1 Draft EIS.

PSE also provided other minor clarifications that have not been included in the Errata, primarily because they relate to Phase 1 alternatives that are no longer being considered, they are minor clarifications (as opposed to factual errors), and they do not influence the results or conclusions of the analysis. The full letters are included in Appendix J of the Final EIS, following this narrative summary.

Historic and Cultural Resources (Topic H&C)

This section describes and responds to the comments received on the Phase 1 Draft EIS regarding historic and cultural resources. Primary themes included the interpretation of impacts, the analytical process, impacts to site-specific resources, and information that should be included in the Errata as well as minor clarifications.

Key Theme H&C-1: Interpretation of impacts

Comment Summary:

PSE noted that past project construction within or adjacent to documented resources has not been considered significant—even if the resources are removed—when the resources are properly identified, evaluated, and documented. Other commenters expressed concern over impacts to historic and cultural resources as a result of ground disturbance as a part of routine pole replacement, and whether noise and vibration from the transmission lines should be considered impacts in the context of historic and cultural resources. Commenters requested clarification on why the No Action Alternative would have a minor to moderate impact, noting that nothing would be constructed under this alternative.

Response:

Significance has two meanings with regard to historic and cultural resources. The historic or cultural significance of a site and the potential eligibility of archaeological resources are determined by the Washington State Department of Archaeology and Historic Preservation (DAHP), affected Tribes, and any additional consulting parties, as defined in 36 CFR Part 800.2. Under SEPA, the significance of an impact refers to the intensity of the impact, taking into account any proposed mitigation to reduce that impact.

The potential for ground disturbance and associated impacts under the No Action Alternative is addressed in the Phase 2 Draft EIS (see Section 3.7.4). Pole replacement would be a ground-disturbing activity and could impact archaeological resources, if present. The Eastside Transmission System has been recommended eligible for listing on the National Register of Historic Places, and the existing H-frame wood poles have been recommended as a contributing element to the system's historical significance. Replacement of existing poles has the potential to impact the system's ability to convey its historical significance. This is considered to be a less-than-significant impact under SEPA as it is likely that impacts could be mitigated. PSE is conducting further evaluation of the resource and is consulting with DAHP to obtain an eligibility determination for the system as part of a historic property inventory field assessment. If the Eastside Transmission System is determined eligible by DAHP for listing in the NRHP, pole replacement could be a significant impact, but it is possible that the impacts could be mitigated, such as through conducting an historic property inventory, providing documentation and/or interpretation of the line as it is currently configured or was when it was built, or by other means developed in consultation with DAHP.

Noise and vibration are addressed in the Historic and Cultural Resources chapter of the Phase 1 Draft EIS to identify whether or not noise and/or vibration could cause an impact to a historic and/or cultural resource and its setting. These impacts were characterized as a minor impact in the Phase 1 Draft EIS when considering the noise and/or vibration that would occur as a result of construction of components and larger facilities associated with the transmission lines and maintenance work.

As stated in Section 13.5.2 of the Phase 1 Draft EIS, implementation of the No Action Alternative could have minor to moderate impacts to aboveground historic properties, primarily from the installation of components associated with energy conservation measures (such as solar panels, wind turbines, or rooftop generators). Such components could alter a resource's architectural elements or diminish the ability of the property to convey its historical significance.

Key Theme H&C-2: Analytical process

Comment Summary:

A PSE representative recommended that in order to perform the appropriate level of analysis of identified properties, the analysis should state that prior to construction, PSE will commission the appropriate historic and cultural resources field surveys along the proposed route.

Response:

The Phase 2 Draft EIS addresses the analysis of individual properties (see Section 3.7). PSE has begun conducting historic property and archaeological studies for the resources identified in the EIS, and has committed to completing the analysis prior to construction. PSE will comply with applicable analysis and survey requirements as determined in consultation with DAHP, affected Tribes, and any additional consulting parties, as defined in 36 CFR Part 800.2.

Key Theme H&C-3: Existing and proposed cultural resources

Comment Summary:

Commenters expressed concern over potential impacts to properties in the study area that contain or could contain historical significance, such as the Newcastle Cemetery and the Somerset Recreation Club (SRC). Commenters were also concerned about what mitigation measures could be put in place for specific sites.

Response:

The Phase 1 Draft EIS is a programmatic-level analysis, as specific alternative routes were not identified at the time of the analysis. The Phase 2 Draft EIS is a project-specific analysis and includes information on the routes of specific segments and options. The Phase 2 Draft EIS (see Section 3.7.2.6) describes the Newcastle Cemetery, noting its historic significance. Section 3.7.6.1 of the Phase 2 Draft EIS states that PSE will request an eligibility determination from DAHP regarding the cemetery's eligibility for inclusion on the National Register of Historic Places, and notes that cemeteries and graves will be avoided per state laws. The Phase 2 Draft EIS, Section 3.7.6.2, describes potential mitigation measures, including the preparation of an Inadvertent Discovery Plan (IDP) and conducting ground-penetrating radar survey in areas adjacent to Newcastle Cemetery.

The SRC is addressed in the Phase 2 Draft EIS (see Section 3.7.2.5), which describes the Somerset Neighborhood. PSE is conducting further evaluation of this potential historic district (including the Somerset Recreation Club) as part of the historic property inventory field assessment and is consulting with DAHP to obtain an eligibility determination.

Analysis of components associated with peak generation plants and energy efficiency (as presented in the Phase 1 Draft EIS) was not included in the Phase 2 Draft EIS because these project elements are no longer under consideration.

Key Theme H&C-4: Errata and minor clarifications

Comment Summary:

Following the release of the Phase 1 Draft EIS, PSE provided comments on the assessment of historical and cultural impacts, stating that all alternatives should have the same construction significance conclusions. PSE also noted a number of clarifications, including the following: the definition of properties should also include an object; the Smithsonian numbering system is used for historic resources as well as archaeological sites; and the absence of identification of multicomponent sites in the Phase 1 Draft EIS.

Response:

Identified errors were rectified in the Errata (see Chapter 3 of the Final EIS) regarding the inconsistencies in the Construction Impact Comparison Table and the impacts specific to the Energy Storage and Peak in Alternative 1.

Clarifications were addressed in the Phase 2 Draft EIS analysis; Section 3.7, paragraph 1 includes "object" in the definition of historic and cultural resources. Objects were included in the evaluation of historic and cultural resources. The Phase 2 Draft EIS, Section 3.7.2.9, acknowledges the Smithsonian numbering system includes resources other than archaeological sites. At the time of publication, there are no recorded multicomponent sites, neither within the Phase 1 Draft EIS Alternative 1 study area, nor the Phase 2 Draft EIS Alternative 1 study area.

Transportation (Topic TRAN)

This section describes and responds to the comments received on the Phase 1 Draft EIS regarding transportation. Primary themes included congestion and access during construction, the potential need to truck petroleum products if the pipeline is damaged as a result of the project, transportation associated with large utility infrastructure, and mitigation.

Key Theme TRAN-1: General congestion/transportation impacts associated with construction

Comment Summary:

Some commenters disagreed with the significance determination made for the installation of new 230 kV transmission lines, citing activities that involve large equipment, such as the following: removal of houses, digging holes for pole footings, large trucks hauling power poles, large cranes installing the poles, stringing wires, and a general public exclusion radius for all of these activities. Additionally, commenters stated that the EIS should anticipate disruptions and set-backs for this type of work.

Representatives of the Somerset Recreation Club (SRC) voiced concerns over access to the facility and the parking lot(s) during construction and operation of the project, especially during peak times in the summer season when the swim team meets. Additionally, individuals expressed concerns over vehicular traffic being closed to the Coal Creek Parkway exit in the Olympus neighborhood while the transmission line wire is pulled and strung between poles in the Olympus area.

Individuals expressed concern over the project blocking access to homes, particularly driveways and garages.

Response:

Use of construction vehicles and other construction activities, and the potential for impacts to transportation, are evaluated in Section 14.5 of the Phase 1 Draft EIS. This section evaluates transportation impacts from construction-related restrictions on roadway use, sidewalk use, access to intersecting alleys and driveways, transit, and parking. Impacts from truck trips and employee commute trips generated by construction work, and pavement degradation from heavy trucks are also evaluated. Construction would be spread out over the 18-mile corridor and completed in segments so that disruption of a specific area would be brief in duration.

As noted in the project-level analysis in the Phase 2 Draft EIS, houses would not be removed for the project. A project-level description of construction activities and equipment is provided in Section 2.1.3 of the Phase 2 Draft EIS. The methods used to install new steel poles will depend on the type of pole used and both its physical and functional location. Some poles can be directly embedded in the ground (similar to a wood pole). Such poles do not require a foundation and are installed using a vacuum truck to excavate the hole, which typically results in less surface area disturbance than other equipment (such as a backhoe or drill) and fewer transportation-related impacts. See Chapter 2 of the Final EIS for discussion of the pole types expected for PSE's Proposed Alignment. Regarding the size of trucks needed to deliver poles, it should be noted that steel poles are delivered in sections and assembled on-site. While the trucks delivering poles would be long, they would not need to be long enough to carry fully assembled poles.

It is noted in Section 12.5.1.1 of the Phase 1 Draft EIS that "construction trucks around a recreation site may also disrupt traffic or make parking difficult." However, PSE would work with the SRC to ensure that access is maintained during construction activities, consistent with the mitigation measures identified in Section 14.7 of the Phase 1 Draft EIS. Access to other properties would be maintained during construction, including driveways to homes and garages.

Driveways along the transmission line route would be passable during construction unless there is an alternative driveway serving a property that can accommodate vehicles if one driveway is closed. See Sections 14.5.3.2.2 and 14.5.3.4.2 of the Phase 1 Draft EIS.

With regard to road closures for pulling wires, brief closures could be needed, including on the Coal Creek Parkway exit. Any road closure would be less than a full day, and closures would be minimized and could be scheduled to avoid peak traffic periods. Any road closure would require approval of the responsible agency or agencies. In addition, PSE will need traffic control plans and will work closely with City construction division staff regarding road closures, traffic plans, etc.

Key Theme TRAN-2: Potential need to truck contents of the pipelines

Comment Summary:

Commenters expressed concern over the feasibility of trucks being used as an alternative to the pipeline system in the event of a disruption such as a leak or fire (as part of Alternative 1, Option A); that trucks transporting petroleum products would generate more trips (approximately six times more) on nearby highways than reflected in the Phase 1 Draft EIS. Concerns were also expressed over the temporary nature of a short-term disruption associated with a pipeline shut down possibly being many days to weeks.

Response:

It is difficult to estimate the number of truck trips because a pipeline breach could simply delay delivery of some products, some products could be shifted to trains, some could be transported in undamaged portions of the pipeline north and south of the breach, and some orders could be cancelled. However, it is correct that if a major disruption occurred that shut down the entire pipeline system and lasted more than few days, and if all material normally transported through the entire Olympic Pipeline system were delivered by truck, it would take on the order of 4,000 trucks per day, which is more than was listed in the Phase 1 Draft EIS. The estimate included in the Phase 1 Draft EIS was provided by Olympic, and would result in a substantial reduction in the amount of fuel being transported through the region, or a substantial amount being transported by means other than truck, such as by rail, barge, or ship. This higher estimate of truck trips is considered a worst-case estimate because it assumes no reduction in volume of products being shipped through the region, and all of the products being shipped by truck. This has been noted in the Errata for Phase 1 and in the Final EIS. Not all of these trips would be on nearby highways because the sources and destinations are mostly outside of the project area and dispersed through the region.

Key Theme TRAN-3: Transporting project components

Comment Summary:

Comments expressed concern over the timing and the logistics of transporting larger project components, such as the new poles and substation equipment, and how construction along the 18-mile corridor will be phased.

A PSE representative clarified that large equipment such as 230/115 kV transformers and breakers can remain operational for decades.

Response:

The Phase 1 Draft EIS discusses the fact that project construction would involve oversize loads, and that the timing would follow rules for such loads. Construction timing/scheduling was not known at the time of the Phase 1 Draft EIS or the Phase 2 Draft EIS, but is described in the Final EIS. Steel poles would be delivered to the site in 30- to 50-foot sections, and assembled in the field. The delivery would require one or two vehicle trips per pole. For more information, see Section 2.1.3.2 of the Phase 2 Draft EIS.

During operations, as noted by the PSE comment, the replacement of large equipment happens very infrequently. Section 14.6.3.1.2 of the Phase 1 Draft EIS states that: "a new substation would require infrequent (less than once a year) replacement of very large equipment such as transformers, resulting in oversized loads being carried on surface streets from regional freeways to the substation site. The same route and time of day restrictions could be imposed by a City and/or WSDOT for such loads, as described previously in construction impacts. Operational transportation impacts would be minor." Because this statement remains correct, changes have not been made to the text.

No significant unavoidable adverse impacts to transportation were identified (see Section 14.9 of the Phase 1 Draft EIS). Mitigation measures are provided in Section 14.7; however, their implementation would be included as part of the maintenance of traffic plans.

Key Theme TRAN-4: Mitigation of transportation impacts during construction

Comment Summary:

Commenters suggested restricting the most disruptive construction to night time hours and temporarily relocating residential customers to hotels because of the risk of pipeline accidents during construction.

Response:

Two project-related construction elements could occur at night: (1) stringing across SR 520/I-90, and (2) transformer delivery to the substations. There are no plans to relocate residential customers to hotels. However, this is a potential mitigation measure that could be employed, if warranted. For information about pipeline safety, see Section 4.9 of the Phase 2 Draft EIS.

Section 14.7 of the Phase 1 Draft EIS presents general mitigation measures identified to avoid or reduce the potential transportation impacts expected to occur during construction of Alternatives 1 or 3, and battery storage and peak generation plant facilities for Alternative 2.

Public Services (Topic SVC)

This section describes and responds to the comments received on the Phase 1 Draft EIS regarding public services. Primary themes included interference with communication devices, emergency response to pipeline-related incidents, safety measures currently in place, increased demand for emergency response personnel, and additional information provided by PSE.

Key Theme SVC-1: Response to pipeline-related incident

Comment Summary:

Commenters suggested that additional police and other emergency response personnel would be needed during or after construction of the project because of the risk of a pipeline fire caused by the Energize Eastside project, and that the EIS should identify the costs of such services. Commenters also suggested that emergency personnel would be at increased risk, and asked how such risk is being analyzed and minimized, and whether the involved Cities' insurance would increase. One commenter asked why "6,000 rescue workers recently rehearsed for an earthquake if such an event is not a real possibility."

Commenters cited the Bellevue Fire Department Standards of Response Coverage Report, which states that the Olympic Pipeline system presents a significant consequence risk that approaches the "catastrophic" level. Commenters also said there could be a huge explosion similar to the gas leaks in Greenwood, Lynnwood, and Tukwila, and that such an event would result in impacts to first responders.

Commenters requested a copy of the Olympic Pipeline Break Disaster Plan. One commenter noted that there would be insufficient Aqueous Film Forming Foam (AFFF)-equipped fire trucks and that the ones deployed to the Eastside area by SeaTac International Airport would be too late to respond to an emergency.

Another commenter asked how the elderly and disabled would be assisted in the event of a pipeline incident.

Response:

Potential effects on public services are described in Section 15.4 of the Phase 1 Draft EIS. The analysis found that existing local service providers are expected to be adequate to address the demand for fire and other emergency response for most incidents that could occur during construction and operation of the transmission lines. The demand for emergency services during operation would be similar to the existing demand under current conditions (No Action Alternative).

The Phase 1 Draft EIS does not claim that earthquakes are not a real possibility in this region, or that emergency responders would not be needed for such an event. Section 15.6.3 of the Phase 1 Draft EIS states that there would be a need for emergency response if an earthquake, storm, or accident were to result in a fire, explosion, or spill along the existing transmission lines or at a substation. However, the need for such emergency services would be the same under the No Action Alternative and Alternative 1. An expanded description of seismic hazards is provided in Section 4.11 of the Final EIS.

For the Phase 1 Draft EIS, potential effects on public services were determined by reviewing comprehensive plans and policies of each jurisdiction, conducting phone interviews with the major police and fire departments. The Bellevue Fire Department Standards of Response Coverage Report was not identified as a source by the Bellevue Fire Department at the time and was not reviewed by the EIS Consultant Team during the development of the Phase 1 Draft EIS. Based on policy and code review, it was determined that no unavoidable significant adverse impacts to public services would occur from either construction or operation of the project alternatives, so long as appropriate mitigation measures are implemented. Review of the Bellevue Fire Department Standards of Response Coverage Report suggests that potential impacts in the Phase 1 Draft EIS were generally consistent with that report, but the Phase 1 Draft EIS and Phase 2 Draft EIS did not mention under mitigation measures that additional resources from other jurisdictions could likely be required if there were a major incident on the pipeline system. In the Bellevue Fire Department Standards of Response Coverage Report, petroleum pipeline fires are classified as having a special risk (that is unlikely to occur) and a potentially significant community impact. These findings are consistent with the findings in the Phase 1 and Phase 2 Draft EISs. The report also states that "response and recovery from a significant pipeline event would deplete the response and mitigation abilities of the jurisdiction." Bellevue Fire Department notes that it has agreements with other fire districts and emergency response providers that would provide additional support in such a scenario, and that the rest of the community would remain protected.

The Bellevue Fire Department was interviewed in October 2015. When asked if they had the staff, training, and equipment to respond to an Olympic Pipeline system explosion and fire and a natural gas line explosion and fire, they stated that they do, but staff, training, and equipment could be more extensive. The City of Bellevue, like other jurisdictions, analyzes risks and makes a determination as to the 'reasonable' needs of the City while contemplating the cost of these services. High impact events such as a pipeline fire are similar to other special risks such as earthquakes, high-rise fires, or a volcanic eruption triggering a lahar, where even with extensive training, back-up is likely to be needed (Adolfson, 2017). If an event exceeds the City of Bellevue Fire Department capabilities, then surrounding fire and emergency medical service agencies would provide back-up in accordance with existing agreements.

Gasoline, jet fuel, and diesel fuel generally do not explode unless under pressure, which would not be the case for fuel in an accidental release; therefore, it is unlikely that an explosion such as those that occurred in Greenwood, Lynnwood, and Tukwila (which occurred because of a natural gas release) would occur along the Olympic Pipeline system. Natural gas can spread vertically and permeate surrounding areas more easily and have a higher potential for a large-scale impact. For a buried pipeline transporting refined petroleum product, the greatest risk to the public is posed by pool fires, which are restricted to ground level flow limiting the area of potential impact to the location immediately surrounding the area of release (see additional discussion in the Final EIS on potential variation in pool fire size based on site-specific conditions along the project corridor). Although an explosion is not likely, a pipeline rupture would be extremely hazardous for emergency personnel as well as civilians. For more information, see Section 3.9.4 and Appendix I of the Phase 2 Draft EIS.

According to the Bellevue Fire Department Standards of Response Coverage, flow and pressure are controlled by computers in Olympics' Control Center in Renton. Check valves, hand-operated valves, and remotely-operated valves are utilized throughout the system. Check valves prevent backflow, hand-operated valves are shut by Olympic personnel in the field (this can take over an hour depending on traffic), and remotely-operated valves are controlled by Olympics' Control Center in Renton (which can take approximately 45 to 90 seconds to completely close using a computer-enhanced system) (Bellevue Fire, Undated). The maximum release volume for the Olympic Pipeline system was evaluated in greater detail in the Phase 2 Draft EIS, and it was estimated that approximately 370,000 gallons could be released (see Section 3.9.4). Validating Olympic's system operation is outside of the scope of the EIS for the Energize Eastside project. Olympic, as the pipeline operator, is responsible for operating and maintaining their pipelines in accordance with federal standards.

Olympic's Facility Response Plan is not made available to the public. Rather, it is shared with federal, state, and local officials, including emergency planning agencies and first responders, to strengthen and coordinate planning and prevention activities, with certain key information redacted due to potential security risk. The plan provides guidelines to prepare for and respond to a spill from the Olympic Pipeline system. The Facility Response Plan, which received final 5-year approval by Ecology in 2016, serves as Olympic's oil spill contingency plan under WAC 173-182. The Facility Response Plan is based on the Northwest Area Contingency Plan (Regional Response Team 10 and Northwest Area Committee, 2016), as approved by Ecology and the federal Pipeline Hazardous Materials Safety Administration. Section 15.3.1.3 of the Phase 1 Draft EIS states that the local fire department and Olympic technical staff would be contacted simultaneously, but fire departments within other jurisdictions could be dispatched as backup, as could Olympic, Port of Seattle Fire Department, and Boeing for backup equipment and fire suppression supplies.

The comment on insufficient AFFF trucks is correct. In such an event, City of Bellevue Fire Department fire responders would likely allow the petroleum release to burn off while Olympic shut down the flow. This would be safer than trying to extinguish the fire and thereby risk a larger subsequent fire or continued seeping in to the environment.

The Phase 1 Draft EIS found there would be no unavoidable significant adverse impacts to public services due to construction or operation of the Energize Eastside project. Mitigation measures can limit but cannot eliminate the risk of a catastrophic release and fire on the pipelines, which is possible under both the No Action Alternative and any of the action alternatives. Some of the risk of pipeline release is attributable to proximity to transmission lines and the pipelines, both existing and proposed, as noted in Section 3.9 of the Phase 2 Draft EIS. This low probability/high consequence risk is considered a potential significant impact because it could exceed the capacity of available resources should such an event occur in any of the affected communities. With the mitigation measures noted in Section 3.9 of the Phase 2 Draft EIS, the Energize Eastside project would not likely increase the risk, and could decrease the probability of some aspects of the risk of an accidental release from the pipelines. Incremental change to risks to human health, safety, and the environment as a result of the Energize Eastside project are discussed in Section 3.9 of the Phase 2 Draft EIS.

Mitigation measures for impacts to public services are included in Section 15.7.2 of the Phase 1 Draft EIS to minimize impacts on response times, including requiring the contractor to prepare "maintenance of traffic" plans for any work within the public right-of-way. The Cities will require right-of-way use permits that address traffic, safety, etc. wherever the project crosses or is within a public right-of-way. Emergency response personnel are trained in proper response protocol and procedures to protect their safety and the public's safety when responding to incidents. The Phase 2 Draft EIS provides additional information on protections in place to prepare for and respond to an incident (see Section 3.9.2.2) as well as measures to minimize the potential for pipeline incidents that could occur as a result of construction or operation of the project. In terms of the financial impact of the provision of services, the contractor would be responsible for providing (and paying) for traffic control presence.

Because the risks associated with the transmission lines and pipelines are not expected to increase substantially as a result of the Energize Eastside project, insurance rates for police and other emergency responders are not expected to increase; therefore, no specific measures are proposed as mitigation.

The emergency responders would address the elderly or disabled during or after a pipeline incident by evacuating those in immediate danger and evaluating who they could "protect in place," with frequent evaluations of their safety level as the incident evolves. This is the same approach to what emergency responders would do for other similar high impact incidents.

Key Theme SVC-2: Interference with communication devices

Comment Summary:

Commenters stated that if the project interfered with radio or television reception it would negatively impact nearby residents. Another commenter stated that the Phase 1 Draft EIS fails to address radio frequency interference that the proposed 230 KV transmission lines will likely cause to Personal Radio Service (PRS) licensees along the proposed transmission line route. The commenter noted that PRS must operate at lower frequencies, at lower transmitter power, and over longer transmitter-to-receiver distances and with different modulation types; therefore, PRS is more susceptible to power line interference than those that have been addressed in the Phase 1 Draft EIS.

Commenters also stated that corona produced by the project would interfere with emergency 911 back-up communication within 2,000 feet of the project, impacting radio broadcasting capabilities during natural disasters. Commenters asked for clarification regarding the statement in the Phase 1 Draft EIS that: "electrical engineers will usually design overhead transmission lines to comply with recommended maximum conductor surface gradient values set forth in the Institute of Electrical and Electronics Engineers."

Response:

Section 15.6.2 of the Phase 1 Draft EIS states that overhead transmission lines do not generally interfere with radio or television reception. Whenever corona is a problem, it is usually for amplitude modulation (AM) radio and not the higher frequencies associated with frequency modulation (FM) radio or TV/satellite signals. Therefore, it is possible that some residents near the transmission lines would notice interference with AM stations. Section 15.6.4.1.3 of the Phase 1 Draft EIS states that corona interference is not considered a problem for transmission lines rated at 230 kV and below. No corona-generated interference with police and emergency personnel communication/emergency devices is anticipated, and to comply with FCC regulations, PSE would work with owners and operators of communications facilities along the transmission lines to identify and implement mitigation measures if interference should occur. See Section 15.6.2 for additional information.

The Institute of Electrical and Electronics Engineers study cited is a design guide that electric transmission line designers use in designing overhead lines. PSE would design the new 230 kV lines in consideration of these reference guidelines.

Key Theme SVC-3: Safety measures and plans

Comment Summary:

Commenters asked about the operational safety requirements for new or upgraded transmission lines and if the City of Bellevue or Eastside Fire and Rescue need to invest in any specific equipment or update emergency response plans to account for the proposed transmission lines.

Commenters inquired if construction activities would hinder emergency access to their property or would result in increased response time for emergency responders, such as when wires are pulled during construction.

Commenters asked for clarification regarding the statement in the Phase 1 Draft EIS that: “Stronger laws are in place that require monitoring for digging that occurs near the pipeline.” PSE stated that because Olympic conducts aerial reconnaissance of the corridor weekly, unauthorized work near the pipelines and transmission lines is monitored on a regular basis.

One commenter asserted that the transmission line towers would pose a safety risk for small aircraft.

Response:

Section 15.6 of the Phase 1 Draft EIS describes the operational impacts on public services at a programmatic level. Section 15.6.1 states that operation of new transmission lines, expanded substations, distributed generation, generators, and energy storage facilities associated with the alternatives could increase demand for emergency services in the study areas. However, with the appropriate mitigation measures in place, no unavoidable significant adverse impacts to public services are anticipated from either construction or operation of the Energize Eastside project. The need for new equipment or updated emergency response plans was not identified, but it would be at the discretion of emergency service providers to determine if additional equipment or planning would be needed to conform with industry standards and regulatory requirements. First responders were interviewed for the Phase 1 assessment. Current safety measures, including emergency service providers, levels of service, and response times, are detailed in Section 15.3 of the Phase 1 Draft EIS.

Access to residential and commercial properties would be maintained at all times (see Section 14.7 of the Phase 1 Draft EIS). The wire-stringing operation requires the use of temporary pulling or tensioning sites that are typically 2 to 3 miles apart; at a given location, stringing the wires across the pole occurs within 1 or 2 days (see Section 2.1.3 of the Phase 2 Draft EIS).

The Phase 1 Draft EIS broadly evaluates pipeline safety and applicable requirements for work near the pipelines, including laws that have been strengthened in recent years, such as Washington State’s Damage Prevention Law and the “one-call” locator service law. For the Phase 2 Draft EIS, a more detailed pipeline safety risk assessment was conducted to further evaluate pipeline safety risks, including construction risks. In addition to Washington State’s Damage Prevention Law and “one-call” locator service law, Olympic has a list of requirements for all work proposed near their pipelines. This includes specific requirements related to work within 100 feet of the pipelines. Regarding the driving of vehicles over the pipelines (surcharge loads), these risks are described in Section 4.9.3 of the Phase 2 Draft EIS. As part of Olympic’s construction requirements, PSE will provide all necessary information for Olympic to perform pipe stress calculations of equipment crossings and surface loads. Based on pipe stress calculations, and in coordination with Olympic, PSE will provide additional cover that may include installing timber mats, steel plating, or bridging, or avoid crossing in certain identified areas. This, and other mitigation measures related to surcharge loads, are included in Section 4.9.4.1 of the Phase 2 Draft EIS. Section 15.3.1.3 of the Phase 1 Draft EIS states that Olympic flies the pipeline corridor once per week to check for discoloration of the grass or other anomalies and to ensure unauthorized digging is not occurring within the easement.

As noted in Section 11.6.3.4 of the Phase 1 Draft EIS, the Federal Aviation Administration (FAA) has standards and guidelines that determine when structures need to be marked and lighted for aircraft safety. Aviation warning lights would not 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 FAA's obstruction standards in 14 CFR Part 77.

Key Theme SVC-4: Reliable energy is required for community services to operate

Comment Summary:

The Bellevue Medical District requested that the project ensure PSE can supply reliable electricity to serve the expanding Eastside region. The Medical District noted that if PSE's infrastructure is not equipped to serve projected customer energy demands in Bellevue and throughout the Eastside, there would be a "crippling effect on their ability to accommodate the health and safety needs of the local community." They noted that it would become a major public safety issue if their hospitals and medical facilities are not powered in a consistent and reliable way.

Response:

Since publication of the Phase 1 Draft EIS, PSE has clarified how the project relates to reliability. PSE is proposing the project to meet regulatory requirements that relate to protection of the regional transmission grid that could result if PSE were to have an equipment failure in its transmission system. Many commenters have conflated distribution reliability concerns, which are far more common, with transmission system reliability. The transmission system improvement that PSE is proposing is designed to avoid a potential future reliability issue that they expect to develop as a result of growth in demand for electricity at peak times. PSE has determined that, without the project, under certain circumstances the Eastside communities would need to be placed at risk of load shedding (deliberate power outages) in order to protect the regional grid. The degree of additional system reliability provided by the Energize Eastside project is nearly impossible to predict or quantify because of the complexity of the system and the variety of factors that can cause equipment failure. The likelihood of the need for load shedding is different from reliability problems with the electrical distribution system in Bellevue and other areas of the Eastside. Please see the response to Key Theme OBJ-1.

Key Theme SVC-5: Minor clarifications

Comment Summary:

In the context of emergency access, PSE stated that a Consent Agreement between PSE and property owners allows for a shared lock system for fences, gates, and structures within PSE's easement. PSE also stated that 230 kV systems are typically constructed using steel poles rather than wood; therefore, operationally, pole replacement frequency would be reduced as compared with the existing 115 kV system. Also, steel poles are stronger and less susceptible to weather impacts.

Response:

No changes have been made to the EIS in response to this comment. The description in Section 15.6.4.1.2 of the Phase 1 Draft EIS provides the appropriate level of detail for this high-level assessment, and these comments do not affect any of the conclusions of the EIS. As stated in Section 15.6.4.1.1 of the Phase 1 Draft EIS: "The same types of hazards and potential need for emergency services related to operation of new 230 kV transmission lines in proximity to the Olympic Pipeline are already present with the existing 115 kV lines and would remain similar with a 230 kV line…"

Utilities (Topic UTL)

This section describes and responds to the comments received on the Phase 1 Draft EIS regarding utilities. Primary themes included impacts to other utilities, utility disruptions caused by terrorism or natural hazards, utility oversight, co-location with the Olympic Pipeline system, conclusions of the Phase 1 Draft EIS assessment, and clarification and errors identified by PSE. There were also comments about Chapter 16, *Utilities*, regarding PSE's statement of need for increased reliability; these comments are addressed in Topic OBJ.

Key Theme UTL-1: Impacts to other utilities

Comment Summary:

One commenter asked about interference with home electronics and appliances. The commenter also inquired how the project might interfere with cell phone towers attached to the water tower on 12th Ave North (sic). (Because there is no 12th Ave North in the area referred to in the comment, presumably this refers to a water tower near 12th Ave NE.) The Somerset Recreation Club (SRC) stated that there is a T-Mobile cell tower on one of the existing 115 kV H-frames on SRC's property; they requested that it be protected because it provides cell coverage in the area and the rental income is "essential to SRC operations." Commenters stated that the natural gas, other telecommunications systems, water, and wastewater utilities in the area have not been identified and will potentially be impacted.

The King County Wastewater Treatment Division (WTD) reviewed the Phase 1 Draft EIS and determined that, due to the programmatic nature of the document, it did not have enough information to comment on the physical impacts to specific facilities, access to facilities for maintenance, or permanent easements associated with these facilities. WTD requested that design drawings be submitted as the design of specific alternatives continues.

Response:

Section 15.6.2 of the Phase 1 Draft EIS describes the potential for interference with other electronic communications equipment. It does not address any specific locations, but indicates that interference is unlikely due to frequency differences and distance. Specifically for cellphone transmission, it is not uncommon for cellphone transmission sites to have objects that are taller than them, including trees, hills, and buildings. Cellphone providers determine how much interference such objects cause for their service and add sites if necessary. None of the cellphone providers in the region has indicated that any interference with their service is expected from the Energize Eastside project.

If the project is constructed, PSE will work with telecom companies to reinstall cellular equipment onto the new 230 kV poles, subject to the requirements of Chapter 80.54 RCW, Chapter 480-54 WAC, and local jurisdiction regulations.

Utilities present within the combined study area are described programmatically in Section 16.3 of the Phase 1 Draft EIS.

PSE will continue to coordinate with WTD as the project design is refined. WTD was provided a copy of the Phase 2 Draft EIS and this Final EIS.

Key Theme UTL-2: Utility disruptions caused by terrorism or natural hazards

Comment Summary:

A commenter noted that the Phase 1 Draft EIS does not mention the possibility of the project being a target for physical or cyber terrorism. The commenter referenced Ted Koppel's book *Lights Out*, and stated that an attack on such infrastructure could cause "months of hardship." The commenter stated that PSE may have increased the likelihood of such an incident as a result of the public involvement effort for this project. Commenters also stated there should be more information about the potential security threats. Another commenter stated that building one single line without redundancy makes the system more vulnerable to disruptions caused by construction accidents, natural causes (storms, floods and earthquakes), or malicious intent (terrorism).

Response:

Public safety risks associated with terrorist attacks are discussed in the Phase 1 Draft EIS as an unlikely, but possible worst-case scenario. However, the project is not expected to increase the risk of terrorist or other malicious attacks. While public awareness of this transmission line has increased because of the EIS process, there is no reason that the project would become a more likely target of such action because of the Energize Eastside project. Impacts associated with natural hazards are described in Chapter 3 of the Phase 1 Draft EIS.

Redundancy is considered by PSE as part of its long-range planning efforts. The proposed Energize Eastside project includes two 230 kV lines feeding the new substation in the center of the Eastside, one from the north and one from the south. This allows the substation to be powered from either direction, in the event one of the lines is damaged or out of service.

Key Theme UTL-3: Utility oversight

Comment Summary:

One commenter stated that they hoped Newcastle would adopt policies that encourage use of new or innovative technologies to increase the quality and efficiency of utility service. A commenter stated that PSE needs oversight and noted that the Washington Utilities and Transportation Commission (WUTC) did not approve of PSE's Integrated Resource Plan (IRP). They added that the WUTC would not grant PSE the ability to charge ratepayers for the Energize Eastside project. One commenter stated that the WUTC should stop the project from being built over the Olympic Pipeline system, stating that the Olympic Pipe Line Company was put on notice to make corrosion repairs in 2014, which it still has not completed.

Response:

Although the City of Newcastle is one of the Partner Cities in preparing this EIS, the EIS does not address whether or not Newcastle should consider changes to their policies regarding innovative technologies.

The WUTC regulates private, investor-owned electric and natural gas utilities in Washington. It is the commission's responsibility to ensure that regulated companies provide safe and reliable service to customers at reasonable rates, while allowing them the opportunity to earn a fair profit. The WUTC has authority to allow or disallow PSE to recover costs for the project once it is built. The WUTC does not regulate the siting or construction of transmission lines.

The IRP process is a separate regulatory process from the setting of rates and relates to the sources of power that PSE plans to use to provide electricity to its customers. The IRP is not related to transmission line planning, except to the degree that, if a potential source of power were inaccessible because of transmission capacity, the IRP could include plans to improve transmission capacity. That is not the case with Energize Eastside.

The WUTC also regulates the Olympic Pipeline system, including oversight of safety planning, inspection, and reporting. WUTC regulation of the Olympic pipeline system is independent from PSE's project.

Key Theme UTL-4: Co-location with Olympic Pipeline system

Comment Summary:

Regarding the co-located Olympic Pipeline system, a commenter asked the following: when the last inspection date was, if any anomalies exist and if they have been repaired, how often block valves are tested and if the test results are available to the public, how a leak is detected for a pipeline located under a street, the percentage of pressure drop in the pipeline required to set off an alarm, and what the minimum acceptable thickness of the pipeline wall is to meet applicable regulations. A commenter asked if Olympic has the legal authority to deny PSE's project; the same commenter asked if liability is assigned to Olympic, PSE, or another party if there were a pipeline explosion.

A commenter asked if upgrading the line from 115 kV to 230 kV would require changes in the cathodic protection system for the Olympic Pipeline system and, if so, how and when the changes would be implemented. The commenter also asked for clarification regarding the statement in the Phase 1 Draft EIS that there would be potential disruption to existing natural gas lines or the Olympic Pipeline system during construction of the project.

Response:

The Energize Eastside project is proposed by PSE and not by Olympic. Questions about pipeline inspections and test results should be directed to Olympic or the WUTC (website address: https://www.utc.wa.gov/Pages/Default.aspx). In response to questions about pipeline safety, the Phase 2 Draft EIS included a probabilistic risk assessment that took into account some of the information requested by the commenters.

Olympic is responsible for operating its pipeline system safely. This includes protecting it from corrosion caused by overhead transmission lines, as well as other potential damage, such as construction, or corrosion caused by groundwater or soil.

For the proposed Energize Eastside project, the annual test post cathodic protection survey data should be reviewed prior to construction. During operation, the necessary information should be provided to Olympic so that it can record AC and DC pipe-to-soil potentials during the annual cathodic protection survey. This will assist Olympic in detecting any changes in corrosion potential resulting from the transmission lines (see Section 3.9.7 of the Phase 2 Draft EIS). If the cathodic protection needs to be changed to address the effects of the project, it is the responsibility of the pipeline operator to make those changes.

Olympic does not have legal authority to deny PSE's project. If there were a pipeline explosion (or leak or fire), the liability would depend on the cause. Olympic is responsible for protecting its pipelines from corrosion such as that caused by AC interference, but if the pipelines were damaged by an activity like excavation, the responsibility could also fall on other parties.

Key Theme UTL-5: Conclusions of the Phase 1 Draft EIS

Comment Summary:

Commenters asked why the Phase 1 Draft EIS states that the No Action Alternative would result in moderate to significant impacts on utilities. Commenters asserted that ColumbiaGrid has resources to mitigate the stated impacts if PSE did not build the Energize Eastside project; therefore, the impact on utilities for the No Action Alternative should be "negligible." Commenters also stated that the assertion in the EIS that there would be a reliability risk under Alternative 2 is false due to ColumbiaGrid resources.

Commenters asked for information supporting the claim that the No Action Alternative would experience minor effects from hazards due to conformance with industry standards and regulatory requirements, with the Greenwood explosion provided as an example. Commenters also inquired why the risks due to maintenance activities would be the same for 230 kV and the 115 kV transmission lines, given that their structures are very different. Commenters also stated that 115 kV poles do not have foundations and asked why the Phase 1 Draft EIS implies that they do.

Response:

PSE has stated that this project is needed in part to protect the regional grid from harm that could result from overloading of PSE's system due to growing demand within the Eastside. Consistent with NERC requirements, PSE cannot pass that responsibility off to its regional partners in ColumbiaGrid. Also, ColumbiaGrid does not have a project that proposes to address the transmission capacity issue within the Eastside. Therefore, the EIS does not assume that ColumbiaGrid will address the issue if PSE does not. Similarly, for Alternative 2 of the Phase 1 Draft EIS, it cannot be assumed that ColumbiaGrid will take action if Alternative 2 failed to address the capacity deficiency identified by PSE. For more information, see Chapter 1 of the Phase 1 and Phase 2 Draft EISs.

Conformance with industry standards and regulatory requirements would ensure that potential hazards are identified and design plans developed to minimize adverse effects from these hazards to minor levels. The Partner Cities are aware that PSE was found to have not complied with regulatory requirements in the case of the Greenwood natural gas pipeline explosion. For SEPA purposes, the Partner Cities need to take this into account in making their permit decisions, including possibly placing conditions on PSE for additional reporting to ensure compliance with all safety regulations.

Maintenance activities required for 115 kV transmission lines are similar to those for 230 kV lines, despite their differences in height and form. One difference is that most 115 kV lines are on wood poles, while most 230 kV lines are on metal poles. Thus, periodic pole replacement could be different. It is true that typically no foundations are used for wooden poles. In many cases, metal poles are also directly embedded in the ground and have no foundation. In some cases, 115 kV lines are placed on metal poles, and in a few places, those poles require foundations due to soil conditions or other structural factors, such as whether the pole is a terminal pole or turning point in the line. While both 115 kV lines would be likely to have fewer poles with foundations than 230 kV lines, the overall maintenance activities would be similar for both types, except for those few locations where a 230 kV line would need a foundation and a 115 kV line would not.

Key Theme UTL-6: PSE clarifications and Errata

Comment Summary:

PSE stated that if an existing utility corridor is used, they will commission an engineering analysis to evaluate soil conditions as they relate to conductivity and corrosiveness of existing underground utilities. PSE noted that such a study is used to help them determine the appropriate grounding and cathodic protection. PSE added that all steel pipelines are required to have cathodic protection regardless of their proximity to a power line. In areas where transmission lines and pipelines are co-located, PSE said it works with the pipeline operator to ensure that appropriate engineering analysis is performed so that if any modifications to the pipeline's cathodic protection are necessary, they can be made. PSE stated that they would work with Olympic to evaluate the construction and operational parameters related to the replacement of the two existing 115 kV lines with both a 230 kV and a 115 kV line, including electrical interaction potential, cathodic protection, and proximity.

PSE clarified that the proposed project would replace the existing 115 kV lines with one 230 kV line and one high capacity 115 kV line. PSE stated that oftentimes road rights-of-way have more co-located utilities in them, thereby leading to a higher risk of disruption.

For information purposes, PSE stated that the 230 kV substations will have several dead-end towers with a height of 65 feet. If new 115 kV line were sited with an existing 115 kV line, the circuits could be on both sides of the pole or on taller poles with the circuits on the same side of the pole.

Regarding Alternative 2 in the Phase 1 Draft EIS, PSE estimated that more than 15 miles of high pressure natural gas pipeline would need to be installed, and also said other utilities may need to be upgraded if peaker plants are necessary. PSE also stated that for alternatives that utilize a battery facility, a new substation would be required at the facility. An existing substation could be expanded to support the battery facility, but no existing substations in the Bellevue area have enough room for expansion.

PSE said that regulations regarding colocation of high consequence land uses with hazardous materials pipelines only prohibit new uses within proximity to the existing corridor, and that there are no policies that discourage co-location. They noted that Kirkland and Redmond have policies regarding new uses, which are designed to minimize risk.

PSE stated that the reference to the Bothell-SnoKing double-circuit 230 kV line should have been the Maple Valley-SnoKing double-circuit 230 kV line, and that the BPA Maple Valley substation is next to PSE Talbot Hill substation with two connections to Talbot Hill. PSE noted that Olympic has a franchise agreement with the City of Bellevue, which was passed in early 2016. PSE stated that the claim that "two new substations may be needed" is incorrect, and that only two new transformers are required. PSE stated that it is considering expanding the Lakeside and Westminster substation sites, not the Vernell substation. It also noted that Vernell is not an existing substation; therefore, it could not be expanded. In addition, PSE noted that there are many foundations associated with the proposed project, including dead-end towers, the control house, etc. PSE clarified that it would completely remove the old lines and rebuild the existing SCL 230 kV lines under Alternative 1, Option B.

PSE stated that the SR 520 Improvement Project should not be included in the cumulative impacts for the project because SR 520 was completed on the Eastside from Medina to I-405, and the floating bridge portion opened in April 2016.

Response:

Clarifications and identified errors were provided and rectified in the Errata regarding BPA facilities, Olympic franchise agreements, foundations, substations, and improvements to the SCL corridor. See Chapter 3 of the Final EIS. PSE also provided numerous other minor clarifications that have not been included in the Errata, primarily because they relate to Phase 1 alternatives that are no longer being considered, they are minor clarifications (as opposed to factual errors), and they do not influence the results or conclusions of the analysis. The full letters are included in this Appendix J, following the narrative summary. Regulations and policies that prohibit colocation of high consequence land uses with hazardous material pipelines are further evaluated in Section 3.1 of the Phase 2 Draft EIS. The SR 520 Improvement Project was not included in the cumulative impacts in Phase 2 of the EIS.

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APPENDIX J-2.
REPRODUCED COMMENT LETTERS AND CROSS-REFERENCES TO KEY THEME RESPONSES

Note: Because of its length, Appendix J-2 is included as Volume 3, as a separate PDF.

K

Appendix K:
Phase 2 Comments and Responses

energize EASTSIDE EIS

APPENDIX K.
PHASE 2 COMMENTS AND REPONSES

Note: Because of its length, Appendix K is included as Volume 4, as a separate PDF.

Appendix L:
Comparison of Data Sources

energize EASTSIDE EIS

APPENDIX L. COMPARISON OF EIS DATA SOURCES

PSE continued to refine the design of the proposed project from when the Phase 2 Draft EIS was published (in May 2017) and as the analysis was being conducted for the Final EIS. In particular, PSE submitted two permit applications to the Cities of Bellevue and Newcastle for the initial phase of project construction; the permit applications included more detailed, site-specific information for portions of the project alignment (namely, the Bellevue South Segment, the Richards Creek substation site, that portion of the Bellevue Central Segment that contains the Lakeside substation, and the Newcastle Segment). The permit applications include refined, site-specific information for project components such as proposed pole types and locations, as well as vegetation survey and clearing data. The Partner Cities decided that the analysis in the Final EIS should reflect the most up-to-date data and information, which because of the permit applications differs in level of detail from segment to segment.

Appendix L was prepared to assist the reader and reviewer understand the relationship between the data sources used in the Phase 2 Draft EIS and the Final EIS documents. It summarizes and compares the source material and results, organized by element of the environment and project segment. Because the data sources used for the Redmond, Bellevue North, Bellevue Central (excluding the Lakeside substation), and Renton Segments are substantively the same as those used for the Phase 2 Draft EIS, the material in Appendix L focuses on the segments associated with the permit applications. It focuses on the following project components and analyses: pole location data, critical areas data, construction access data, and tree clearing data.

Scenic Views & Aesthetic Environment	Phase 2 Draft EIS		Final EIS (Permit Application)	
	Richards Creek Substation			
	Data Source(s)		**Data Source(s)**	
	• The Watershed Company, 2016 and accompanying GIS data.		• The Watershed Company, 2017 and accompanying GIS data. • Energize Eastside Vegetation Management Plan, August 30, 2017.	
	Pole Data	**Tree Data**	**Pole Data**	**Tree Data**
	N/A	No trees were inventoried or identified for removal adjacent to the Lakeside substation.	N/A	Near the Lakeside substation, approximately 43 trees would be removed.
	Notes: Tree removal next to the Lakeside substation results in the Richards Creek substation being more noticeable from the northeast than was evident in the Phase 2 Draft EIS.			

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Scenic Views & the Aesthetic Environment	Phase 2 Draft EIS		Final EIS (Permit Application)	
	Bellevue Central Segment			
	Data Source(s)		**Data Source(s)**	
	• Strauch, B. 2016. Email (with attachment) from Bradley Strauch, Sr. Land Planner/Environmental Scientist, PSE, to Claire Hoffman and Reema Shakra, ESA, regarding information and data for the Energize Eastside Project. August 16, 2016. • The Watershed Company, 2016 and accompanying GIS data.		• PSE. 2017. Emails from Bradley Strauch, Energize Eastside Project Manager, PSE, to Reema Shakra and Mark Johnson, ESA. August 23, 2017, and December 1, 2017. • The Watershed Company, 2017 and accompanying GIS data. • Energize Eastside Vegetation Management Plan, August 30, 2017.	
	Pole Data	**Tree Data**	**Pole Data**	**Tree Data**
	95'-115' tall double-circuit steel monopoles	No trees were inventoried or identified for removal adjacent to the Lakeside substation.	94'-113' tall double-circuit steel monopoles.	Near the Lakeside substation, approximately 43 trees would be removed, including trees near Chestnut Hill Academy.
	Notes: The Bellevue Central Segment is not in the permit application, except for the area near the Lakeside substation. Pole types have not changed substantively. An additional 43 trees would be removed adjacent to the Lakeside substation.			

Scenic Views and the Aesthetic Environment

	Phase 2 Draft EIS		Final EIS (Permit Application)	
Bellevue South Segment				
	Data Source(s)		**Data Source(s)**	
	• Strauch, B. 2016. Email (with attachment) from Bradley Strauch, Sr. Land Planner/Environmental Scientist, PSE, to Claire Hoffman and Reema Shakra, ESA, regarding information and data for the Energize Eastside Project. August 16, 2016. • The Watershed Company, 2016 and accompanying GIS data.		• PSE. 2017. Emails from Bradley Strauch, Energize Eastside Project Manager, PSE, to Reema Shakra and Mark Johnson, ESA. December 1, 2017. • The Watershed Company, 2017 and accompanying GIS data. • Energize Eastside Vegetation Management Plan, August 30, 2017.	
	Pole Data	**Tree Data**	**Pole Data**	**Tree Data**
	Remove 2 existing 60-foot H-Frame poles. Replace with 1-2 85-100’ tall monopoles at each location (total 2-4). Typical pole height 65’ to 100’.	Approximately 20 trees would be removed near the Coal Creek to SE 60th Street segment of the Lower Coal Creek Trail.	Pole types, heights, and sizes are more detailed than in the Phase 2 Draft EIS but generally the same as described for Phase 2. General pole types, heights, and locations in permit application are the same as the information provided by PSE in August 2017.	Approximately 20 trees would be removed north of where the Lower Coal Creek Trail crosses the transmission corridor.

Scenic Views and the Aesthetic Environment

	Phase 2 Draft EIS		Final EIS (Permit Application)	
Newcastle Segment (No Code Variance)				
Data Source(s)			**Data Source(s)**	
	• Strauch, B. 2016. Email (with attachment) from Bradley Strauch, Sr. Land Planner/Environmental Scientist, PSE, to Claire Hoffman and Reema Shakra, ESA, regarding information and data for the Energize Eastside Project. August 16, 2016. • The Watershed Company, 2016 and accompanying GIS data.		• The Watershed Company, 2017 and accompanying GIS data. • PSE. 2017. Emails from Bradley Strauch, Energize Eastside Project Manager, PSE, to Reema Shakra and Mark Johnson, ESA. December 1, 2017.	
	Pole Data	**Tree Data**	**Pole Data**	**Tree Data**
	100’ tall single circuit steel monopoles.	301 trees removed.	General pole types, heights, and locations were the same based on updated information provided by PSE in August 2017.	244 trees removed.

Notes: Discussion of tree removal is qualitative in the Phase 2 Draft EIS and Final EIS and is based on a spatial analysis of tree removal within the corridor. Reduction in tree removal did not result in new findings for the Final EIS.

Water Resources

Phase 2 Draft EIS			Final EIS (Permit Application)		
Richards Creek Substation					
Data Source(s)			**Data Source(s)**		
• The Watershed Company. 2016. City of Bellevue Critical Areas Delineation Report. Prepared for Puget Sound Energy – Energize Eastside Project. May 2016.			• The Watershed Company. May 2016. City of Bellevue. Critical Areas Delineation Report: Puget Sound Energy –Energize Eastside Project. Prepared for PSE. • The Watershed Company. 2017. Richards Creek Substation Property, Wetland and Stream Delineation Report. The Watershed Company Reference Number: 111103.6. Submitted to Molly Reed, PSE. June 22, 2017. • The Watershed Company. August 2017. City of Bellevue Critical Areas Report: Puget Sound Energy – Energize Eastside Project South Bellevue Segment. Prepared for PSE. • PSE. 2017. Emails from Bradley Strauch, Energize Eastside Project Manager, PSE, to Reema Shakra and Mark Johnson, ESA. December 1, 2017.		
Pole Data	**Wetlands and Streams Data**	**Construction Access Data**	**Pole Data**	**Wetlands and Streams Data**	**Construction Access Data**
Two poles would be in wetland JB01 or its buffer.	Streams--East Creek, Stream C, Stream JB01, unnamed tribs. of Richards Creek. Wetlands—BC, FG, JB01.	Used general assumptions since preliminary access road data provided did not indicate whether wetlands would be filled or not. Assumed all new roads in wetlands, streams, and buffers were temporary, and would be restored per Bellevue Code requirements.	Ten poles would be in Wetland A or its buffer, and approx. six poles would be in Wetland H or its buffer.	More specific information on stream and wetland impacts. Streams A & C. Wetlands: New wetland naming system. Wetland A (named BC in Draft EIS), Wetland B, Wetland C, Wetland D (named FG in Draft EIS), Wetland H (named JB01 in Draft EIS).	Temporary access roads would be constructed in Wetlands A and H, and stringing sites would be constructed in Wetland A.
Notes: Information in the Richards Creek delineation report and in the permit application identified two wetlands not shown in the Phase 2 Draft EIS, provides greater detail on wetland locations and impacts, and renames some wetlands. Information in the Richards Creek delineation report and permit application also provides greater detail on stream classifications and impacts.					

Water Resources

Phase 2 Draft EIS			Final EIS (Permit Application)		
Bellevue Central Segment					
Data Source(s)			**Data Source(s)**		
• The Watershed Company. 2016. City of Bellevue Critical Areas Delineation Report. Prepared for Puget Sound Energy – Energize Eastside Project. May 2016.			• The Watershed Company. 2016. City of Bellevue Critical Areas Delineation Report. Prepared for Puget Sound Energy – Energize Eastside Project. May 2016. (No new information was provided for this segment.) • PSE. 2017. Emails from Bradley Strauch, Energize Eastside Project Manager, PSE, to Reema Shakra and Mark Johnson, ESA. December 1, 2017.		
Pole Data	**Wetlands and Streams Data**	**Construction Access Data**	**Pole Data**	**Wetlands and Streams Data**	**Construction Access Data**
Poles in wetlands reduced from 3 to 2. Poles in buffers reduced from 14 to 6.	Kelsey Creek, East Creek and various tribs to Kelsey, East, and Richards creeks. 23 Category II and IV wetlands.	Used general assumptions based on narrative; preliminary access road data provided did not indicate whether wetlands would be filled or not.	Poles in wetlands would be reduced to 0; no poles in streams or stream buffers.	No change to wetlands or streams.	Used general assumptions since no data provided, except as noted for Richards Creek above.
Notes: Bellevue Central Segment is not in the permit application, except for the area near the Lakeside substation. The permit application did not show any change in wetland and stream impacts in that area.					

Water Resources	Phase 2 Draft EIS			Final EIS (Permit Application)		
	Bellevue South Segment					
	Data Source(s)			**Data Source(s)**		
	• The Watershed Company. 2016. City of Bellevue Critical Areas Delineation Report. Prepared for Puget Sound Energy – Energize Eastside Project. May 2016.			• The Watershed Company. 2016. City of Bellevue Critical Areas Delineation Report: Puget Sound Energy Energize Eastside Project. May 2016. • The Watershed Company. 2017. City of Bellevue Critical Areas Report: Puget Sound Energy – Energize Eastside Project South Bellevue Segment. August 2017. • PSE. 2017. Emails from Bradley Strauch, Energize Eastside Project Manager, PSE, to Reema Shakra and Mark Johnson, ESA. December 1, 2017.		
	Pole Data	**Wetlands and Streams Data**	**Construction Access Data**	**Pole Data**	**Wetlands and Streams Data**	**Construction Access Data**
	Poles in wetland buffers would decrease from 7 to 3.	3 unnamed tributaries of East Creek, Sunset, and Coal creeks. 14 Category II and IV wetlands.	Used general assumptions based on narrative; preliminary access road data provided did not indicate whether wetlands would be filled or not.	Poles in wetland buffers would decrease from 7 to 1.	7 tributaries, different naming system in permit data. 13 Category III and IV wetlands.	No access roads in wetlands, streams, or buffers.
	Notes: Stream and wetland information was revised for the Final EIS based on additional detail in the permit application. Information in the permit application was used for access road locations.					

Water Resources

	Phase 2 Draft EIS			Final EIS (Permit Application)		
Newcastle Segment (No Code Variance)						
Data Source(s)				**Data Source(s)**		
• The Watershed Company. 2016. City of Newcastle Critical Areas Delineation Report. Prepared for Puget Sound Energy – Energize Eastside Project. May 2016.				• The Watershed Company. 2016. City of Newcastle Critical Areas Delineation Report. Prepared for Puget Sound Energy – Energize Eastside Project. May 2016. • PSE. 2017. Emails from Bradley Strauch, Energize Eastside Project Manager, PSE, to Reema Shakra and Mark Johnson, ESA. December 1, 2017.		
	Pole Data	**Wetlands and Streams Data**	**Construction Access Data**	**Pole Data**	**Wetlands and Streams Data**	**Construction Access Data**
	No poles in critical areas or buffers.	2 unnamed streams and May Creek. One Category IV and one Category III wetland.	Used general assumptions based on narrative; preliminary access road data provided did not indicate whether wetlands would be filled or not.	No poles would be placed in streams or stream buffers. Number of poles in wetland buffers would be reduced.	3 unnamed streams (one with headwaters in Bellevue was added), May Creek. Two Category III wetlands.	No access roads in wetlands, streams, or buffers.

Notes: In the Newcastle permit application, the wetlands were reclassified using revised Newcastle Critical Areas regulations. Information in the permit application was used for access road locations.

Plants and Animals	Phase 2 Draft EIS			Final EIS (Permit Application)		
	Richards Creek Substation					
	Data Source(s)			**Data Source(s)**		
	• The Watershed Company. 2016a. Tree Inventory: Energize Eastside Project. Includes the following separate reports: City of Bellevue Tree Inventory Report; King County Tree Inventory Report; City of Newcastle Tree Inventory Report; City of Redmond Tree Inventory Report; Segment O Tree Inventory Report; Segment P Tree Inventory Report; and Bypass Routes 1 and 2 Tree Inventory and Analysis Report. Prepared for Puget Sound Energy, Bellevue, WA. Prepared by the Watershed Company, Kirkland, WA. May and July 2016. • The Watershed Company. 2016b. Tree Inventory: Energize Eastside Project. Includes the following separate reports: City of Bellevue Critical Areas Delineation Report; King County Critical Areas Delineation Report; City of Newcastle Critical Areas Delineation Report; City of Redmond Critical Areas Delineation Report; City of Renton Critical Areas Delineation Report. Prepared for Puget Sound Energy, Bellevue, WA. Prepared by the Watershed Company, Kirkland, WA. May and July 2016. • The Watershed Company. 2016c. GIS Dataset labeled as twc_ee_veg_impact_results_20160914. September 14, 2016.			• The Watershed Company, 2017 and accompanying GIS data. • The Watershed Company. 2017. City of Bellevue Critical Areas Report: Puget Sound Energy – Energize Eastside Project South Bellevue Segment. August 2017.		
	Tree Data	**Construction Access**	**Wetland/Stream Habitat**	**Tree Data**	**Construction Access**	**Wetland/Stream Habitat**
	173 removed (109 significant, 0 CA, 29 CA buffers).	Used general assumptions since preliminary access road data provided did not indicate whether existing habitat would be impacted. Assumed all new roads were temporary, and would be restored per Bellevue Code requirements.	2.8 acres of habitat would be removed.	178 removed (108 significant, 23 trees in critical areas, 76 tress in critical area buffers)	No additional information added.	2.8 acres of habitat would be removed. More specific information on impacts from realigning Stream C. (see Water section)
	Notes: Tree removal numbers in the Phase 2 Draft EIS column reflect corrected numbers (see Chapter 3, *Errata,* of the Final EIS). Therefore, they are slightly different than what was presented in the Phase 2 Draft EIS.					

Plants and Animals	Phase 2 Draft EIS			Final EIS (Permit Application)		
	Bellevue Central Segment					
	Data Source(s)			**Data Source(s)**		
	• The Watershed Company. 2016a. Tree Inventory: Energize Eastside Project. Includes the following separate reports: City of Bellevue Tree Inventory Report; King County Tree Inventory Report; City of Newcastle Tree Inventory Report; City of Redmond Tree Inventory Report; Segment O Tree Inventory Report; Segment P Tree Inventory Report; and Bypass Routes 1 and 2 Tree Inventory and Analysis Report. Prepared for Puget Sound Energy, Bellevue, WA. Prepared by the Watershed Company, Kirkland, WA. May and July 2016. • The Watershed Company. 2016b. Tree Inventory: Energize Eastside Project. Includes the following separate reports: City of Bellevue Critical Areas Delineation Report; King County Critical Areas Delineation Report; City of Newcastle Critical Areas Delineation Report; City of Redmond Critical Areas Delineation Report; City of Renton Critical Areas Delineation Report. Prepared for Puget Sound Energy, Bellevue, WA. Prepared by the Watershed Company, Kirkland, WA. May and July 2016. • The Watershed Company. 2016c. GIS Dataset labeled as twc_ee_veg_impact_results_20160914. September 14, 2016.			• The Watershed Company, 2017 and accompanying GIS data.		
	Tree Data	**Construction Access**	**Wetland/Stream Habitat**	**Tree Data**	**Construction Access**	**Wetland/Stream Habitat**
	599 removed (232 significant, 50 CA, 152 CA buffer).	Used general assumptions based on narrative; preliminary access road data provided did not indicate whether wetland habitat would be filled or not.	No impacts to terrestrial species are expected and stream habitat would not be substantially affected.	642 removed (234 significant, 68 CA, 172 CA buffer).	No additional information added.	No additional information added.
	Notes: Tree removal numbers changed primarily due to an increase in tree removal near the Lakeside substation. Additional trees would be removed from critical areas and critical area buffers. Tree removal numbers in the Phase 2 Draft EIS column reflect corrected numbers (see Chapter 3, *Errata,* of the Final EIS). Therefore, they are slightly different than what was presented in the Phase 2 Draft EIS.					

Plants and Animals

Phase 2 Draft EIS			Final EIS (Permit Application)		
Bellevue South Segment					
Data Source(s)			**Data Source(s)**		
• The Watershed Company. 2016a. Tree Inventory: Energize Eastside Project. Includes the following separate reports: City of Bellevue Tree Inventory Report; King County Tree Inventory Report; City of Newcastle Tree Inventory Report; City of Redmond Tree Inventory Report; Segment O Tree Inventory Report; Segment P Tree Inventory Report; and Bypass Routes 1 and 2 Tree Inventory and Analysis Report. Prepared for Puget Sound Energy, Bellevue, WA. Prepared by the Watershed Company, Kirkland, WA. May and July 2016. • The Watershed Company. 2016b. Tree Inventory: Energize Eastside Project. Includes the following separate reports: City of Bellevue Critical Areas Delineation Report; King County Critical Areas Delineation Report; City of Newcastle Critical Areas Delineation Report; City of Redmond Critical Areas Delineation Report; City of Renton Critical Areas Delineation Report. Prepared for Puget Sound Energy, Bellevue, WA. Prepared by the Watershed Company, Kirkland, WA. May and July 2016. • The Watershed Company. 2016c. GIS Dataset labeled as twc_ee_veg_impact_results_20160914. September 14, 2016.			• Energize Eastside Vegetation Management Plan, August 30, 2017.		
Tree Data	**Construction Access**	**Wetland/Stream Habitat**	**Tree Data**	**Construction Access**	**Wetland/Stream Habitat**
1,032 removed (449 significant, 4 in CA, 76 in CA buffers).	Used general assumptions based on narrative; preliminary access road data provided did not indicate whether wetlands would be filled or not.	No impacts to terrestrial species are expected and stream habitat would not be substantially affected.	1,030 trees removed (442 significant, 3 in CA, 69 in CA buffers)	No changes.	No changes in this chapter.

Notes: Tree removal numbers in the Phase 2 Draft EIS column reflect corrected numbers (see Chapter 3, *Errata,* of the Final EIS). Therefore, they are slightly different than what was presented in the Phase 2 Draft EIS.

Plants and Animals	Phase 2 Draft EIS			Final EIS (Permit Application)		
	Newcastle Segment (No Code Variance)					
	Data Source(s)			**Data Source(s)**		
	• The Watershed Company. 2016a. Tree Inventory: Energize Eastside Project. Includes the following separate reports: City of Bellevue Tree Inventory Report; King County Tree Inventory Report; City of Newcastle Tree Inventory Report; City of Redmond Tree Inventory Report; Segment O Tree Inventory Report; Segment P Tree Inventory Report; and Bypass Routes 1 and 2 Tree Inventory and Analysis Report. Prepared for Puget Sound Energy, Bellevue, WA. Prepared by the Watershed Company, Kirkland, WA. May and July 2016. • The Watershed Company. 2016b. Tree Inventory: Energize Eastside Project. Includes the following separate reports: City of Bellevue Critical Areas Delineation Report; King County Critical Areas Delineation Report; City of Newcastle Critical Areas Delineation Report; City of Redmond Critical Areas Delineation Report; City of Renton Critical Areas Delineation Report. Prepared for Puget Sound Energy, Bellevue, WA. Prepared by the Watershed Company, Kirkland, WA. May and July 2016. • The Watershed Company. 2016c. GIS Dataset labeled as twc_ee_veg_impact_results_20160914. September 14, 2016.			• The Watershed Company, 2017 and accompanying GIS data. • Newcastle CUP No Variance (C-2), Significant Tree Inventory. • The Watershed Company. 2017. City of Newcastle Critical Areas Report: Puget Sound Energy – Energize Eastside Project South Bellevue Segment. November 2017. • The Watershed Company. November 8, 2017. Addendum to the Newcastle Critical Areas Report for the Puget Sound Energy Energize Eastside Project.		
	Tree Data	**Construction Access**	**Wetland/Stream Habitat**	**Tree Data**	**Construction Access**	**Wetland/Stream Habitat**
	301 removed (33 significant, two in CA, 57 in CA buffer).	Used general assumptions based on narrative; preliminary access road data provided did not indicate whether wetlands would be filled or not.	No impacts to terrestrial species are expected and stream habitat would not be substantially affected.	244 removed (30 significant, 0 in CA, 21 in CA buffer)	No changes	No changes.
	Notes: Tree removal numbers in the Phase 2 Draft EIS column reflect corrected numbers (see Chapter 3, *Errata,* of the Final EIS). Therefore, they are slightly different than what was presented in the Phase 2 Draft EIS.					

Greenhouse Gases	Phase 2 Draft EIS	Final EIS (Permit Application)
	Richards Creek Substation	
	Data Source(s)	**Data Source(s)**
	• The Watershed Company, 2016. GIS Dataset labeled as twc_ee_veg_impact_results_20160914. September 14, 2016.	• Energize Eastside Vegetation Management Plan, August 30, 2017. • The Watershed Company, 2017 and accompanying GIS data.
	GHG Emissions	**GHG Emissions**
	• 173 trees for removal.	• 178 trees for removal.
	Notes: Tree removal numbers only increased slightly.	
	Bellevue Central Segment	
	Data Source(s)	**Data Source(s)**
	• The Watershed Company, 2016. GIS Dataset labeled as twc_ee_veg_impact_results_20160914. September 14, 2016.	• Energize Eastside Vegetation Management Plan, August 30, 2017. • The Watershed Company, 2017 and accompanying GIS data.
	GHG Emissions	**GHG Emissions**
	• 599 trees for removal	• 642 trees for removal
	Notes: Tree removal numbers increased somewhat.	

Greenhouse Gases	Phase 2 Draft EIS	Final EIS (Permit Application)
	Bellevue South Segment	
	Data Source(s)	**Data Source(s)**
	• The Watershed Company. 2016. Tree Inventory Excel Database titled Willow, Oak, Richards, Bypass_EIS Segments w VIA Result. Dated September 9, 2016.	• Energize Eastside Vegetation Management Plan, August 30, 2017. • The Watershed Company, 2017 and accompanying GIS data.
	GHG Emissions	**GHG Emissions**
	• 1,032 trees for removal. **Notes**: Tree removal numbers only decreased slightly.	• 1,030 trees for removal.
	Newcastle Segment (No Code Variance)	
	Data Source(s)	**Data Source(s)**
	• The Watershed Company, 2016. GIS Dataset labeled as twc_ee_veg_impact_results_20160914. September 14, 2016.	• Energize Eastside Vegetation Management Plan, August 30, 2017. • The Watershed Company, 2017 and accompanying GIS data.
	GHG Emissions	**GHG Emissions**
	301 trees for removal. **Notes**: Tree removal numbers decreased somewhat.	244 trees for removal.

Recreation	Phase 2 Draft EIS		Final EIS (Permit Application)	
	Richards Creek Substation			
	Data Source(s)		**Data Source(s)**	
	• The Watershed Company. 2016c. GIS Dataset labeled as twc_ee_veg_impact_results_20160914. September 14, 2016.		• Energize Eastside Vegetation Management Plan, August 30, 2017. • The Watershed Company, 2017 and accompanying GIS data.	
	Pole Data	**Tree Data**	**Pole Data**	**Tree Data**
	Chestnut Hill Academy: No poles existing or proposed on the school site.	Trees would be removed on the adjacent substation site, but they would not be visible from the school.	Chestnut Hill Academy: No poles existing or proposed on the school site.	Trees would be removed on the adjacent Lakeside and Richards Creek substations that may be visible from the school.

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Recreation	Phase 2 Draft EIS		Final EIS (Permit Application)	
	Bellevue South Segment			
	Data Source(s)		**Data Source(s)**	
	• The Watershed Company. 2016c. GIS Dataset labeled as twc_ee_veg_impact_results_20160914. September 14, 2016.		• Energize Eastside Vegetation Management Plan, August 30, 2017. • The Watershed Company, 2017 and accompanying GIS data.	
	Pole Data	**Tree Data**	**Pole Data**	**Tree Data**
	Summary: 32 poles would be removed and replaced with 17 poles in recreation areas (number in Coal Creek Natural Area not specified). Tyee Middle School: 2 60-foot H-frames replaced with a 100-monopole. Somerset North Slope Open Space: No existing poles, one 85-foot pole placed within park and 1 to the adjacent parcel (2 total). Somerset Recreation Club: 2 new taller poles in place of existing 2. Forest Hill Neighborhood Park & Open Space: 2 60-foot H-frame poles replaced with 2 85-foot tall monopoles. Coal Creek Natural Area: existing pairs of 60-foot H-frames would be replaced with 100-foot monopoles or 2 85-foot tall poles (number not specified). Newport Hills Mini Park: 2 sets of 3 poles would be replaced with 2 85-foot tall poles.	Summary: 77-87 trees removed in specific recreation areas. Tyee Middle School: 17 removed. Somerset North Slope Open Space: One tree removed. Somerset Recreation Club: 5-10 removed. Forest Hill Neighborhood Park & Open Space: 14 trees removed. Coal Creek Natural Area: 35 trees removed. Newport Hills Mini Park: 5-10 trees removed.	Summary: 32 poles would be removed and replaced with 16 poles in recreation areas. Tyee Middle School: The more northern 60-foot H-frame replaced with a 100-foot monopole, the other replaced with 2 110-foot monopoles. Somerset North Slope Open Space: No poles existing, and none would be placed within or adjacent to. Somerset Recreation Club: 2 90-foot poles in place of existing 2. Forest Hill Neighborhood Park & Open Space: 2 60-foot H-frame poles replaced with 2 90-foot tall monopoles. Coal Creek Natural Area: Ten e pairs of 60-foot H-frames would be replaced with 100-foot monopoles or 2 110-foot tall poles (20 poles would be replaced with 7 poles total). Newport Hills Mini Park: 2 sets of 3 poles would be replaced with 2 110-foot tall poles.	Summary: 60-75 trees for removal in specific recreation areas. Tyee Middle School: 12 trees for removal. Somerset North Slope Open Space: One tree for removal. Somerset Recreation Club: 4-8 trees for removal. Forest Hill Neighborhood Park & Open Space: 13 trees for removal. Coal Creek Natural Area: 25 – 30 trees for removal. Newport Hills Mini Park: 5-10 trees for removal.
	Notes: Limited changes to pole numbers, pole heights, and tree removal numbers.			

Recreation

Phase 2 Draft EIS		Final EIS (Permit Application)	
Newcastle Segment (No Code Variance)			
Data Source(s)		**Data Source(s)**	
• The Watershed Company. 2016c. GIS Dataset labeled as twc_ee_veg_impact_results_20160914. September 14, 2016.		• Energize Eastside Vegetation Management Plan, August 30, 2017. • The Watershed Company, 2017 and accompanying GIS data.	
Pole Data	**Tree Data**	**Pole Data**	**Tree Data**
Summary: There would be approximately half the number of poles. Waterline, Cross Town, China Creek (proposed), and Olympus Trails: Existing pairs of 60-foot H-frames would be replaced with 2 85-foot monopoles (number not specified). May Creek Natural Area: Two pairs of 60-foot H-frames replaced with 2 85-foot monopoles.	Summary: Approximately 280 trees for removal. Waterline, Cross Town, China Creek (proposed), and Olympus Trails: Approximately 185 trees for removal. May Creek Natural Area: 94 trees for removal.	Summary: There would be approximately half the number of poles. Waterline, Cross Town, China Creek (proposed), and Olympus Trails: Existing pairs of 60-foot H-frames would be replaced with 2 95-foot monopoles (number not specified). May Creek Natural Area: The two pairs of 60-foot H-frames would be replaced with 2 95-foot monopoles.	Summary: Approximately 215 trees for removal. Waterline, Cross Town, China Creek (proposed), and Olympus Trails: Approximately 170 trees for removal. May Creek Natural Area: Approximately 45 trees for removal.
Notes: Fewer trees would be removed in the May Creek Natural Area.			

Ecosystem Services	Phase 2 Draft EIS	Final EIS (Permit Application)
	Richards Creek Substation	
	Data Source(s)	**Data Source(s)**
	• The Watershed Company. 2016c. GIS Dataset labeled as twc_ee_veg_impact_results_20160914. September 14, 2016.	• Energize Eastside Vegetation Management Plan, August 30, 2017. • The Watershed Company, 2017 and accompanying GIS data.
	Trees Removed	**Trees Removed**
	173	178
	Bellevue Central Segment	
	Data Source(s)	**Data Source(s)**
	• The Watershed Company. 2016c. GIS Dataset labeled as twc_ee_veg_impact_results_20160914. September 14, 2016.	• Energize Eastside Vegetation Management Plan, August 30, 2017. • The Watershed Company, 2017 and accompanying GIS data.
	Trees Removed	**Trees Removed**
	599	642

Ecosystem Services	Phase 2 Draft EIS	Final EIS (Permit Application)
	Bellevue South Segment	
	Data Source(s)	**Data Source(s)**
	• The Watershed Company. 2016c. GIS Dataset labeled as twc_ee_veg_impact_results_20160914. September 14, 2016.	• Energize Eastside Vegetation Management Plan, August 30, 2017. • The Watershed Company, 2017 and accompanying GIS data.
	Trees Removed	**Trees Removed**
	1,032	1,030
	Newcastle Segment (No Code Variance)	
	Data Source(s)	**Data Source(s)**
	• The Watershed Company. 2016c. GIS Dataset labeled as twc_ee_veg_impact_results_20160914. September 14, 2016.	• Energize Eastside Vegetation Management Plan, August 30, 2017. • The Watershed Company, 2017 and accompanying GIS data.
	Trees Removed	**Trees Removed**
	301	244

M

Appendix M: Mitigation Measures

energize EASTSIDE EIS

APPENDIX M. SUMMARY OF MITIGATION MEASURES

Potential mitigation measures as identified in the Phase 1 Draft EIS, Phase 2 Draft EIS, and Final EIS are listed below, organized by element of the environment. Table M-1 identifies potential mitigation measures during construction. Table M-2 identifies potential measures during operations. Individual cities may require additional mitigation measures during the land use entitlement process consists with their city policies and regulations.

Table M-1. Construction Mitigation Measures

Mitigation Measures (Construction)	Related Resources	Phase/ Source
Land Use		
Prior to Construction None		
During Construction • In locations where access is difficult, a helicopter or large crane could be used to lift foundation rebar and/or poles over adjacent properties and into place. Helicopters could also be used to facilitate stringing the new transmission line into place, reducing the need to enter property to feed the initial lead line (called a "sock line") that is used to pull the actual conductors into place. The decision to use a large crane or helicopter is usually determined by the construction contractor to address access concerns and minimize site disturbance. Use of a helicopter for this purpose is regulated by the Federal Aviation Administration (FAA). A "congested air" permit and advance notification are required. Because of the potential impacts of this type of construction, local regulators may also want to limit where this type of construction would be allowed. Appendix A includes a series of questions and answers about helicopter use. Following is a brief summary of considerations regarding this type of construction. o Helicopter use for stringing the sock line takes only a few minutes per pole, for each conductor. It involves flying directly over the poles and would not likely involve suspending anything over occupied buildings or homes. o If a crane or helicopter were used to install poles, it would require occupants of buildings or homes in the path of the poles being transported to vacate the premises for up to 2 hours at a time during daylight working hours. o Helicopters generate substantial noise that is not regulated by local codes. Appendix A includes a table that shows expected noise levels. o Helicopter use would not eliminate the need for construction access by vehicles for excavation and pouring concrete.	Plants and Animals	Final

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Mitigation Measures (Construction)	Related Resources	Phase/ Source
<u>During Operations</u> • None		
Visual Resources		
<u>Prior to Construction</u> • Choosing routes that are already developed with power lines and where minimal vegetation clearing is necessary.	Plants and Animals, GHG, Economics	Phase I
<u>During Construction</u> • None		Final
<u>During Operations</u> • None		Final
Water Resources		
<u>Prior to Construction</u> • Apply for all necessary permits (BMPs specific to the site and project would be specified in the construction contract documents that the construction contractor would be required to implement). (*Regulatory Requirements*)	Plants and Animals	Final, Phase II
• Comply with applicable requirements from local, state, and federal regulatory agencies for all construction affecting water resources directly or indirectly.	Plants and Animals	Phase I
• All of the segments and options would need to comply with applicable federal, state, and local permit requirements for stormwater, streams, wetlands, and critical areas, and Shorelines of the State. Compliance with these requirements would mitigate the potential for short-term adverse impacts to water resources. Mitigation measures required to comply with such regulations are not discretionary. (*Regulatory Requirements*)	Plants and Animals	Phase II
<u>During Construction</u> • Comply with code provisions for the protection of water resources from clearing and grading activities. (*Regulatory Requirements*)	Plants and Animals	Final, Phase II

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Mitigation Measures (Construction)	Related Resources	Phase/ Source
• Comply with all necessary permits (*Regulatory Requirements*): o National Pollutant Discharge Elimination System general permit for construction (issued by Ecology). o Hydraulic Project Approval (issued by WDFW). o Construction Stormwater General Permit.	Plants and Animals	Final, Phase II
• Implement the Stormwater Pollution Prevention Plan and Temporary Erosion and Sediment Control Plan to mitigate potential increased sedimentation and turbidity from stormwater runoff. These plans will include BMPs to ensure that sediment originating from disturbed soils would be retained, with the limits of disturbance such as the following (*Regulatory Requirements*): o Temporary covering of exposed soils and stockpiled materials. o Silt fencing, catch basin filters, interceptor swales, or hay bales. o Temporary sedimentation ponds or sediment traps. o Installation of a rock construction entrance and street sweeping.		Final, Phase II
• Implement a Spill Prevention, Control, and Countermeasures Plan to minimize the potential for spills or leaks of hazardous materials. BMPs in the Spill Prevention, Control, and Countermeasures Plan would include the following (*Regulatory Requirements*): o Operating procedures to prevent spills. o Control measures such as secondary containment to prevent spills from entering nearby surface waters. o Countermeasures to contain, clean up, and mitigate the effects of a spill. o Construction vehicle storage and maintenance and fueling of construction equipment will be located away from streams and wetlands.		Final, Phase II
• Comply with a dewatering plan to monitor groundwater withdrawal during excavations and to avoid groundwater contamination. This would likely include collecting dewatering water from excavations and treating it before discharge to surface water or stormwater systems. (*Regulatory Requirements*)		Final, Phase II
• Comply with construction standards applicable to Wellhead Protection Zone 4 (RZC 21.64.050D.4.b) in the City of Redmond. (*Regulatory Requirements*)		Final, Phase II

Mitigation Measures (Construction)	Related Resources	Phase/ Source
• Comply with construction standards applicable to Wellhead Protection Area Zone 2 (RMC 4-4-030.C8) in the City of Renton. These standards include requirements for the following (*Regulatory Requirements*): o Secondary containment for hazardous materials. o Securing hazardous materials. o Removal of leaking vehicles and equipment. o Cleanup equipment and supplies.		Final, Phase II
• Monitor soils from construction-related excavation/grading for contamination; if contaminated soils are encountered, mitigate in accordance with federal, state, and local regulations. (*Regulatory Requirements*)		Final, Phase II
• Comply with applicable requirements from local, state, and federal regulatory agencies for all construction affecting water resources directly or indirectly.		Phase I
• Avoid and minimize impacts to Waters of the U.S. (lakes, wetlands, streams, and buffers), or provide compensatory mitigation for losses that are approved.		Phase I
• Control construction within floodplains so that flood risk is not increased and floodway capacity is not reduced.		Phase I
• Require trenchless construction for underground and underwater power line segments (Only applicable if undergrounding is used for mitigation).		Phase I
• Bore underneath water resources to avoid temporary and permanent impacts to those areas when feasible.		Phase I
• Manage stormwater to ensure it is properly detained and treated prior to release.		Phase I
<u>During Operations</u> None		Final

Mitigation Measures (Construction)	Related Resources	Phase/ Source
Plants and Animals		
Prior to Construction None		Final
During Construction • Implementation of the mitigation measures described in Section 5.3.3 of the Final EIS to minimize impacts to water resources would minimize impacts to plants and animals. In addition, PSE would comply with applicable construction windows for in-water work. (*Regulatory Requirements*)	Water	Final
• PSE would also comply with all requirements of their Joint Aquatic Resources Permit Application (JARPA) imposed by natural resource agencies to protect fish and wildlife species and their habitat, such as: (*Regulatory Requirements*) o Limit work to allowable "fish window" time periods. o Limit work during sensitive nesting and breeding seasons for protected wildlife species occurring in the area. o Implement PSE's established bird protection programs and procedures. o Provide fish exclusion if required to prevent harm to protected species. o Replant and stabilize disturbed construction and staging areas with native trees, shrubs, and grasses. o Implementation of temporary erosion control measures. o Utilize a Spill Prevention and Control Plan.		Final, Phase II
• Minimize impacts to critical areas and buffers, including Fish and Wildlife Conservation Areas, to the extent practicable. (*Regulatory Requirements*)	Water	Phase II
• Mitigate impacts to critical areas to the levels established by the appropriate jurisdictions and environmental permit requirements. (*Regulatory Requirements*)	Water	Phase II
• Flag the limits of construction, trees to be retained, and critical habitat areas and associated buffers to be avoided.		Final, Phase II
• PSE would continue to implement an ecologically based, integrated weed management program to control the spread of invasive and noxious weeds at these disturbed areas by planting native plants.		Final, Phase II
• At sites where access is difficult, a helicopter or large crane may be used to limit the extent of disturbance necessary for construction access. See the discussion of helicopter use in Section 5.1.3.	Land Use	Final
• Avoid removal of mature trees in all construction areas, where possible.		Phase I

Mitigation Measures (Construction)	Related Resources	Phase/ Source
• Facilities, access roads, and staging areas should be located in areas of disturbed vegetation cover if possible.	Visual Resources	Phase I
• If vegetation is removed for construction, where possible, replace with appropriate native plant species.	Visual Resources	Phase I
• Utilize PSE vegetation management permits for their right-of-way in Bellevue that minimize tree removal in transmission line clear zones that are located in critical areas in favor of tree pruning where feasible.	Visual Resources, GHG, Economics	Phase I
• Measures to reduce noise and human activity should be implemented for construction activities located near undisturbed or functional wildlife habitat areas such as forests and wetlands, riparian zones, and Lake Washington.	Noise	Phase I
• During construction, best management practices would be used to minimize potential impacts from noise, dust, and turbidity, and established water quality standards and in-water work permit conditions would be met.	Noise, Water	Phase I
• Timing of construction work would occur outside of critical time periods for listed species such as nesting and spawning seasons.		Phase I
<u>During Operations</u> None		
GHG		
<u>Prior to Construction</u> None		Final
<u>During Construction</u> • Use renewable diesel for diesel-powered construction equipment. The fuel can achieve a 40–80 percent reduction in GHG emissions compared to fossil diesel and is a recommended component of GHG reduction efforts in other jurisdictions such as the Drive Clean Seattle program (Seattle OSE, 2012).		Final, Phase II
• Use non-petroleum lubricants for construction equipment.		Final, Phase II
• Replant disturbed construction and staging areas with native trees, shrubs, and grasses.	Visual Resources	Final, Phase II
<u>During Operations</u> None		Final

Mitigation Measures (Construction)	Related Resources	Phase/ Source
Recreation		
Prior to Construction • Coordinate with potentially affected park districts/departments.		Final, Phase II
• Provide alternative access points to recreation sites and trail detours.		Final, Phase II
• Avoid construction during months when recreation sites are busier, when possible.		Final, Phase II
• Avoid vegetation clearing for construction activities where possible.	Visual Resources, Plants and Animals, GHG, Economics	Final, Phase II
• Avoid replacing poles at Rose Hill Middle School and Tyee Middle School while school is in session.		Final, Phase II
• Notify local jurisdictions, schools, or private owners (including the Somerset Recreation Club), 60 days in advance of work within recreation sites.		Final, Phase II
• Notify the public of any temporary closure of trails or recreations sites 2 weeks in advance.		Final, Phase II
• Provide signage along trails or park entrances at least 1 week prior to closures.		Final, Phase II
• Alternative access points to recreation sites and trail detours would be provided and months in which recreation sites are busier would be avoided as much as reasonably possible.		Phase I
During Construction • Use BMPs to minimize noise, dust, and other disturbances to visitors to recreation sites during construction, as well as in areas used for informal recreation (e.g., along roads). (*Regulatory Requirements*)	Noise	Final, Phase II, Phase 1
• Recreation facilities and access to recreation activities (e.g., water access points) would be avoided to the extent practicable.		Phase I
Post Construction • Restore recreation sites or trails after construction.		Final, Phase II, Phase I

Mitigation Measures (Construction)	Related Resources	Phase/ Source
Cultural Resources		
Prior to Construction None		Final, Phase II, Phase I
During Construction • Follow outlined procedures in the Inadvertent Discovery Plan in the event archaeological resources are identified during construction activities. Under state law (RCW 27.44), archaeological resources identified during construction would need to be evaluated. If the resources are considered significant, any impacts on archaeological resources would require mitigation, which would likely entail archaeological investigation such as scientific excavation and analysis. For archaeological resources found during construction, an emergency archaeological excavation permit may be issued by DAHP and is typically received within three business days. It is possible that archaeological monitoring would be recommended for portions of the project; this work would be conducted under an Archaeological Resources Monitoring Plan.		Phase I
• Best management practices would be implemented during construction to minimize impacts from dust, noise, and vibration.	Noise	Phase I
• Vibration monitoring may be conducted at historic buildings to document that vibration does not exceed acceptable levels.		Phase I
During Operations None		Final, Phase II
EMF		
Prior to Construction • No adverse impacts from magnetic fields are expected; therefore, no mitigation is proposed.		Final, Phase II, Phase I
During Construction • No adverse impacts from magnetic fields are expected; therefore, no mitigation is proposed.		Final, Phase II, Phase I
During Operations • No adverse impacts from magnetic fields are expected; therefore, no mitigation is proposed.		Final, Phase II, Phase I

Mitigation Measures (Construction)	Related Resources	Phase/ Source
Pipeline Safety		

Prior to Construction — Final, Phase II

- Develop construction and access plans in coordination with Olympic's Damage Prevention Team and mutually agreed upon by both parties. These plans will outline the specific actions that PSE will take to protect the pipelines from vehicle and equipment surcharge loads, excavation, and other activities in consideration of Olympic's general construction requirements and in consultation with Olympic on the Energize Eastside project design specifically. The following general measures, at a minimum, would be included in the construction and access plans (*Regulatory Requirements*):
  - Notify "one-call" 811 utility locater service at least 48 hours prior to PSE or PSE designated contractors conducting excavation work. (Olympic's line marking personnel would then mark the location of the pipelines near the construction areas. These procedures are designed to ensure that excavation would not damage any underground utilities and to decrease potential safety hazards.)
  - Field verify the distance between the pipelines and transmission line pole grounds.
  - Add the pipeline location and depth to project plans and drawings and submit to Olympic for evaluation.
  - Arrange for Olympic representatives to be on-site to monitor construction activities near the pipelines.
  - Install temporary fencing or other markers around the pipeline area.
  - Provide all necessary information for Olympic to perform pipe stress calculations for equipment crossings and surface loads (surcharge loads). Based on pipe stress calculations, and in coordination with Olympic, provide additional cover that may include installing timber mats, steel plating, or temporary air bridging; utilize a combination of these; or avoid crossing in certain identified areas in order to avoid impacts on Olympic pipelines. Ensure that mitigation to address potential surcharge load impacts is implemented in accordance with applicable requirements and recommended practices, including the following:
    - 49 CFR 195, Transportation of Hazardous Liquid by Pipeline.
    - American Petroleum Institute Recommended Practice 1102, Steel Pipelines Crossing Railroads and Highways.
    - American Lifelines Alliance, Guidelines for the Design of Buried Steel Pipe.
  - Comply with additional measures related to minimizing surcharge loads included in Olympic's general construction requirements (Appendix I-2).

Mitigation Measures (Construction)	Related Resources	Phase/ Source
• Prior to permit issuance of the Energize Eastside project, prepare a preliminary plan detailing measures PSE will required of its contractor to protect the pipeline during construction.		Final, Phase II
• Prior to construction of the Energize Eastside project, file a mitigation and monitoring report with the Partner Cities documenting consultations with Olympic and mitigation measures to address safety-related issues. The report should include a monitoring plan that identifies how mitigation measures will be monitored to ensure that mitigation related to construction activities is followed.		Final, Phase II
• Require that a geotechnical engineer review final plans and indicate in their report measures necessary to ensure that construction activity will not increase the risk of landslides that could damage the Olympic Pipeline system.	Earth	Final
• Coordinate with Olympic and include safeguards in the project construction and access plans to protect nearby pipelines from excavation activities and surcharge loads.		Final, Phase II
• Develop an adjacent use protection plan near sensitive land uses to identify appropriately sized construction zones to protect the general public, construction timing limits, and other mitigation measures that would effectively limit the exposure of the general public to potential pipeline incidents.		Final, Phase II
• Coordinate with school districts to identify the most appropriate time for construction to occur near schools that would minimize exposure to students or others in the school facility.	Public Services	Final
<u>During Construction</u> • As part of Olympic's general construction requirements for all work proposed near the pipelines (see Appendix I of the Phase 2 Draft EIS), comply with other applicable requirements, including the following (*Regulatory Requirements*): o No excavation or construction activity will be permitted in the vicinity of a pipeline until appropriate communications have been made with Olympic's field operations and its Right-of-Way Department. A formal engineering assessment (conducted by Olympic) may be required. o No excavation or backfilling within the pipeline right-of-way will be permitted for any reason without a representative of Olympic on-site giving permission. o In some instances, excavation and other construction activities around certain pipelines can be conducted safely only when the pipeline operating pressure has been reduced. PSE must inform its designated contractors that		Final, Phase II

Mitigation Measures (Construction)	Related Resources	Phase/ Source
excavation that exposes or significantly reduces the cover over a pipeline may have to be delayed until the reduced operating pressures are achieved. o For a project within 100 feet of the pipelines, Olympic's Damage Prevention Team will meet the construction crew on-site at the beginning of the project and weekly thereafter. If excavation has the potential to be within 10 feet of the pipelines, the Damage Prevention Team would be on-site at all times to monitor excavation.		
• To address the potential to encounter boulders, use vacuum truck/equipment (or hand digging in difficult to access areas) to dig past the depth of the pipelines before auguring type equipment is utilized.		Final, Phase II
• Coordinate with Olympic to ensure that line marking personnel mark the entire length of any pipeline within 50 feet of any excavation or ground disturbance below original grade, and not only the location of angle points (points of intersection).		Final, Phase II
• Use soft dig methods (e.g., hand excavation, vacuum excavation, etc.) whenever the pipeline(s) are within 25 feet of any proposed excavation or ground disturbance below original grade.		Final, Phase II
• Coordinate with Olympic to ensure that an Olympic employee, trained in the observation of excavations and pipeline locating, is on-site at all times during excavation and other ground-disturbing activities that occur within 100 feet of the pipelines where the pipelines are co-located with the proposed transmission lines.		Final, Phase II
• Arrange for a special monitor (third-party monitor) on-site at all times during excavation and other ground-disturbing activities that occur within 100 feet of the pipelines where the pipelines are co-located with the proposed transmission lines.		Final, Phase II
• Where excavations will be within 10 to 20 feet of the Olympic Pipeline system, temporary casing in the upper 10 to 15 feet should be considered to reduce the risk of sloughing under the pipeline.		Final, Phase II
• Steel plates or mats should be placed over the pipelines to distribute vehicle loads where construction equipment needs to cross over the pipelines.		Final, Phase II

Mitigation Measures (Construction)	Related Resources	Phase/ Source
• Utility settlement monitoring points, similar to that described below, should be established on the Olympic Pipeline system where drilled shafts will be within 15 feet, if requested by Olympic, to monitor settlement during installation of the drilled shafts. Settlement monitoring points should be installed so that base-line readings of the settlement monitoring points may be completed prior to the contractor mobilizing to the site. Monitoring should continue during construction on a daily basis and twice a week in the 3 weeks following construction. The monitoring readings should be reviewed by the Engineer on a daily basis. If measured settlement exceeds 1 inch, or the amount specified by the utility owner, the integrity of the utility should be tested and the contractor should be required to repair any damage to the utilities as a result of construction.		Final, Phase II
During Operations None		
Economics		
Prior to Construction • The economic aspects of the project that are evaluated in this Final EIS do not relate to construction impacts.		Final, Phase II
During Construction • The economic aspects of the project that are evaluated in this Final EIS do not relate to construction impacts		Final, Phase II
During Operations • The economic aspects of the project that are evaluated in this Final EIS do not relate to construction impacts		Final, Phase II
Earth Resources		
Prior to Construction • Implementation of construction BMPs as required by local codes would ensure that impacts are minor and not significant. This includes having a geotechnical engineer review plans and make recommendations to avoid increasing the risk of destabilizing landslide prone slopes or increasing soil erosion, and implementing those recommendations during construction.		Final
• Avoid construction on steep slopes, known and potential landslide zones, and areas with organic or liquefiable soils, where feasible.		Phase I

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Mitigation Measures (Construction)	Related Resources	Phase/ Source
• Coordinate with other utility providers, as appropriate, to determine how best to avoid or minimize any impacts. PSE would work with other utility service providers during design of the project to coordinate the placement of new facilities and ensure protection of other utilities.	Utilities	Phase I
During Construction • Implementation of construction BMPs as required by local codes would ensure that impacts are minor and not significant.		Final
• Use appropriate shoring during construction.		Phase I
• Use erosion and runoff control measures, including retention of vegetation, replanting, ground cover, etc.		Phase I
• Comply with relevant state and local critical areas codes and other applicable requirements.		Phase I
• Dispose of soils at approved disposal sites.		Phase I
• Conduct settlement and vibration monitoring, as applicable, during construction to identify potential adverse conditions to critical structures and local facilities.		Phase I
During Operations • Implementation of construction BMPs as required by local codes would ensure that impacts are minor and not significant.		Final
Energy and Natural Resources (Phase I Only)		
Prior to Construction None		Phase I
During Construction None		Phase I
During Operations None		Phase I

Mitigation Measures (Construction)	Related Resources	Phase/ Source
Noise (Phase I Only)		
Prior to Construction None		Phase I
During Construction • **Nighttime Construction Noise.** For project elements that would require prolonged nighttime construction activities, portable acoustical barriers may be used to reduce noise. Moveable sound barrier curtains can provide 15 dBA of sound attenuation (INC, 2014). Static sound barrier curtains can provide sound transmission loss of 16 to 40 dBA, depending on the frequency of the noise source (ENC, 2014).		Phase I
During Operations None		Phase I
Transportation (Phase I Only)		
Prior to Construction • **Education and Outreach:** A public involvement program should be implemented prior to project construction. It would provide information about the purpose and importance of the project, and detailed information about the types and locations of expected construction impacts and the measures that would be implemented to minimize those impacts. A Construction Outreach Team may be desired, which would work closely with affected residents and business owners to minimize construction-related impacts throughout the duration of project construction. A contact person should be identified whom community members can contact to address specific concerns both prior to and during project construction.		Phase I
• **Coordination with Other Projects:** PSE must coordinate all construction needs and impacts of this project with the other infrastructure and development projects in the combined study area. This would typically be done as part of the permitting process with each community affected by potential construction.		Phase I
• **Maintenance of Traffic Plans:** The contractor would be required to prepare “maintenance of traffic” plans for any work within the public right-of-way that affects vehicular, transit, bicycle, or pedestrian traffic. These plans must show the location of traffic cones, traffic control personnel, and signs; note if bus stops are to be closed or relocated; and indicate special treatments for pedestrian and bicycle access.		Phase I

Mitigation Measures (Construction)	Related Resources	Phase/ Source
• **Haul Routes:** The contractor would need to coordinate with municipalities to determine appropriate times of travel and haul routes for construction-generated truck traffic. Haul routes generally would be on arterial streets through commercial areas and use the most direct path to and from the state highway system.		Phase I
• **Signal Detection Disruption:** Some intersections have in-pavement induction loops that control traffic signal operations. Prior to trenching through these intersections, alternative detection equipment (e.g., camera detectors) might need to be installed to maintain proper signal function. Loops or permanent cameras would need to be installed as part of restoration. (Only applies to undergrounding for mitigation).		Phase I
During Construction • **Construction through an Intersection:** Manual traffic control would be needed when construction occurs through an intersection. Work in a signalized intersection may require police officer control; work in an unsignalized intersection can typically be performed with certified flaggers.	Public Services	Phase I
• **Construction across Driveways:** Access to residential and commercial properties would need to be maintained at all times. When trenching across a driveway, the work can usually be done in two parts: trench across one-half of the driveway and then plate it for driving before trenching the other half of the driveway. At major driveways, flagger control may be needed to facilitate alternating enter and exit traffic. Special treatment would be needed for developments that have split driveways (with one driveway serving entering traffic and one serving exiting traffic) if traffic cannot easily be shifted to the other driveway for two-way operation. The contractor would be required to coordinate with property owners when driveways or alleys are affected by construction.	Land Use	Phase I
• **Bus Stop Closure or Relocation:** For bus stops that would need to be closed or relocated during construction, the contractor would be required to coordinate with King County Metro Transit, Sound Transit, or Community Transit.		Phase I
• **Pavement Restoration:** Any pavement degradation that results from increased construction truck traffic or excavation would need to be fully restored upon completion of construction activities. This includes restoration of streets, curbs, gutters, sidewalks, parking lots, driveways, and traffic signal induction loops where appropriate.		Phase I
During Operations None		Phase I

Mitigation Measures (Construction)	Related Resources	Phase/ Source
Public Services (Phase I Only)		
Prior to Construction **Emergency Response Service** • As required by law, contact appropriate Underground Service Alert organization to identify the location of underground utilities and pipelines prior to any excavation work.	Pipeline Safety, Utilities	Phase I
Response Times • Preparation of “Maintenance of Traffic” plan by contractor for any work within the public right-of-way, as described in Chapter 14 (Phase I), to minimize effects on emergency response and other public services.	Transportation	Phase I
Substation Fire Risk • Notify service providers and neighborhood residents of construction schedules, street closures, and utility interruptions as far in advance as possible.		Phase I
• Notify and coordinate with fire departments for water line relocations that could affect water supply for fire suppression, and establish alternative supply lines prior to any service interruptions.		Phase I
• Where feasible, schedule construction outside of hours of peak traffic congestion and times when service providers such as school buses and waste collectors are in the area.	Transportation	Phase I
• Coordinate with law enforcement agencies to implement crime prevention plans for construction sites and staging areas.		Phase I
During Construction **Emergency Response Service** • An OPLC representative is to be present to observe excavation activities around buried pipelines during construction.	Pipeline Safety	Phase I
During Operations None		

Mitigation Measures (Construction)	Related Resources	Phase/ Source
Utilities (Phase I only)		
Prior to Construction • **Coordination with Other Utility Providers.** PSE would site new transmission lines according to industry best practices, which includes proper positioning and design (separation and grounding) relative to other utilities. For all alternatives, coordination with the individual utility providers would be required to determine whether or not existing and future utilities could be affected and how best to avoid or minimize those impacts. PSE would work with other utility service providers during design and construction of the project to coordinate the placement of new facilities and ensure protection of other utilities. In some instances, vibration and settlement monitoring may be required where construction would occur near existing utilities.		Phase I
• **Utility Location:** PSE would follow regulatory requirements to correctly locate and plan for other utility locations such as gas lines or the OPLC pipelines prior to start of construction, including showing pipeline locations on plans and requiring contractors to field locate utilities. Prior to the start of construction, existing utilities would be located and field-verified where feasible to avoid conflicts with the proposed facilities.	Pipeline Safety	Phase I
• **Utility Relocations.** PSE and its contractors would be required to develop construction sequence plans and coordinate schedules for utility work to minimize service disruptions and provide ample advance notice when service disruptions are unavoidable, consistent with utility owner policies. Relocation plans and service disruptions would be reviewed and approved by the affected utility providers before construction begins. PSE would develop a plan for public outreach to inform customers of potential service outages and construction schedules. The public outreach effort would be coordinated with other utility service providers.		Phase I
During Construction None		Phase I
During Operations None		Phase I

Table M-2. Operations Mitigation Measures

Mitigation Measures (Operations)	Related Resources	Phase/ Source
Land Use		
Prior to Construction • Design and operate regional utility facilities to minimize impacts on the surrounding uses, the environment, and the city (NMC 18.44.052.C.1). (*Regulatory Requirements*)	Visual Resources	Final
• Work with the City of Newcastle to adopt any conditions imposed relating to the location, development, design, use, or operation of a utility facility to mitigate environmental, public safety, or other identifiable impacts. Mitigation measures may include, but are not limited to, natural features that may serve as buffers, or other site design elements such as fencing and site landscaping (NMC 18.44.052.D). (*Regulatory Requirements*)	Visual Resources	Final
• Consolidate utility facilities and co-locate multiple utilities (City of Newcastle Plan Policy UT-P3).	Visual Resources	Final
• Implement new and expanded transmission and substation facilities in such a manner that they are compatible and consistent with the local context and the land use pattern established in the Comprehensive Plan (City of Bellevue Plan Policy UT-95).	Visual Resources	Final
• Design, construct, and maintain facilities to minimize their impact on surrounding neighborhoods (City of Bellevue Plan Policy UT-8).	Visual Resources	Final
• Conduct a siting analysis for new facilities and expanded facilities at sensitive sites (areas in close proximity to residentially-zoned districts) (City of Bellevue Plan Policy UT-96).	Visual Resources	Final
• Underground sections of the transmission lines where inconsistencies with the comprehensive plan policies regarding aerial facilities would otherwise occur.	Visual Resources	Final, Phase II
• Select the route that requires the least number of properties where easements would restrict future development in areas with policies encouraging building up to or close to the street edge. (Applies only to Bypass 1, Bypass 2, Bellevue Central Easement, Oak 1, Oak 2, Willow 1, and Willow 2 Options).		Phase II
• Construct taller transmission lines so that wires would clear the tops of buildings sufficiently to meet NESC standards if such development were to occur in the future.		Phase II
• Design transmission lines to extend as far as possible over the street right-of-way to minimize the amount of easement and clearance needed adjacent to the right-of-way. (Applies only to Bypass 1, Bypass 2, Oak 1, Oak 2, and Willow 2 Options).		Phase II

Mitigation Measures (Operations)	Related Resources	Phase/ Source
• Use existing utility corridors or properties already in PSE-ownership to the extent feasible.	Visual Resources	Phase I
• Provide relocation assistance for any residents displaced or businesses purchased.		Phase I
During Construction None		Final, Phase II
During Operations • Limit the number of telecommunication facilities that could be installed on the 230 kV poles to the number currently installed in the corridor and proposed to be reinstalled as part of the EIS (seven locations).	Visual Resources	Final
• Require the reinstalled telecommunications facilities to be in the same approximate locations as they were previously and to comply with the requirements of Chapter 80.54 RCW, Chapter 480-54 WAC, and local jurisdiction regulations.	Visual Resources	Final
Visual Resources		
Prior to Construction • Ensure siting and location of transmission facilities is accomplished in a manner that minimizes adverse impacts on the environment and adjacent land uses (City of Renton Plan Policy U-72).	Land Use	Final
• Consolidate utility facilities and co-locate multiple utilities (City of Newcastle Plan Policy UT-P3).	Land Use	Final, Phase II
• Implement new and expanded transmission and substation facilities in such a manner that they are compatible and consistent with the local context and the land use pattern established in the Comprehensive Plan (City of Bellevue Plan Policy UT-95).	Land Use	Final, Phase II
• Design, construct, and maintain facilities to minimize their impact on surrounding neighborhoods (City of Bellevue Plan Policy UT-8).	Land Use	Final, Phase II
• Conduct a siting analysis for new facilities and expanded facilities at sensitive sites (areas in close proximity to residentially-zoned districts) (City of Bellevue Plan Policy UT-96).	Land Use	Final, Phase II
• New development should install a dense visual vegetative screen along Richards Road (City of Bellevue Plan Policy S-RV-31).		Final, Phase II
• Consider neighborhood character in planting appropriate varieties and trimming tree limbs around overhead lines (City of Newcastle Plan Policy UT-P9).		Final, Phase II

Mitigation Measures (Operations)	Related Resources	Phase/ Source
• Design overhead transmission lines in a manner that is aesthetically compatible with surrounding land uses (City of Newcastle Plan Policy UT-P10). This could include design measures such as changes to pole height, spacing, location, or color.		Final, Phase II
• Minimize visual and other impacts of transmission towers and overhead transmission lines on adjacent land uses through careful siting and design (City of Newcastle Plan Policy UT-P14).		Final, Phase II
• Design transmission structures to minimize aesthetic impacts appropriate to the immediate surrounding area whenever practical (City of Newcastle Plan Policy UT-P16).		Final, Phase II
• Underground sections of the transmission lines where unavoidable significant impacts to scenic views or the aesthetic environment would otherwise occur.		Final, Phase II
• Position poles and adjust pole height to minimize impacts to the greatest extent possible. In Newcastle, a variance from the setback requirements would allow the poles to be positioned farther away from the houses. This would also allow for shorter poles.		Final, Phase II
• Specify poles with an aesthetic treatment (such as paint or a self-weathering finish) to reduce contrast with the surrounding environment (see Section 4.2.6.3 below).		Final, Phase II
• Choosing routes that are already developed with power lines and where minimal vegetation clearing is necessary.		Phase I
• Consulting with Cities and affected residents when locating structures, rights-of-way, and other disturbed areas to minimize visual impacts.		Phase I
• Complying with applicable plans and policies within potentially affected jurisdictions.	Land Use	Phase I
• Placing and designing structures to minimize impacts on specific visual resources and popular public viewpoints.		Phase I
• Using aesthetically pleasing materials and landscaping to shield electrical equipment from public view.		Phase I
• For steel poles, using paint colors that reduce the contrast of the poles with the surrounding environment.		Phase I
• 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.		Phase I
• 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.		Phase I

Mitigation Measures (Operations)	Related Resources	Phase/ Source
During Construction • Retain or replace trees to the greatest extent possible.	Plants and Animals, GHG, Economics	Final, Phase II
During Operations • Limit disturbance to vegetation within major utility transmission corridors to what is necessary for the safety and maintenance of transmission facilities (City of Newcastle Plan Policy UT-P8). In areas where vegetation disturbance is unavoidable, replant with vegetation that would be compatible with vegetation clearance requirements, preventing future vegetation removal or maintenance in the future.	Plants and Animals, GHG, Economics	Final, Phase II
• Use landscape screening of above-ground utility facilities to diminish visual impacts (City of Newcastle Plan Policy UT-P20).		Final, Phase II
Water Resources		
Prior to Construction Before any direct wetland impacts occur, PSE would obtain the necessary state and federal authorizations. To obtain state and federal authorization, PSE must provide: • A jurisdictional determination from the U.S. Army Corps of Engineers stating whether the delineated wetlands are under federal jurisdiction.		Final
• An application and report presenting impacts to jurisdictional wetlands.		Final
• A mitigation plan for unavoidable wetland impacts following the standards in *Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance* (Ecology, 2006).	Plants and Animals	Final
The project would also need to comply with the following regulations of the Partner Cities: • Stormwater regulations of the Partner Cities, which are based on the standards set by Ecology's *Stormwater Management Manual for Western Washington* (Ecology, 2014).		Final, Phase II
• Requirements of Shoreline Master Programs for Renton in crossing the Cedar River (see Appendix B-3).	Land Use	Final

Mitigation Measures (Operations)	Related Resources	Phase/ Source
• Requirements of each applicable Partner City's critical areas ordinance (see Appendix D). Typical mitigation measures suggested in the ordinances include: o Replacement of wetland acreage based on replacement ratios in critical areas ordinances. o Replacement of lost buffer area. o Enhancement or restoration of buffers.	Plants and Animals	Final, Phase II
• Avoid locating poles in wetlands and wetland buffers to the extent possible. It should be possible to avoid most wetlands by raising the height of poles, allowing for a longer stretch of transmission line over the wetland.	Plants and Animals	Final, Phase II
• Comply with the requirements of Shoreline Master Programs for Bellevue and Renton in crossing Kelsey Creek and the Cedar River (see Appendix B-3). (Applies only to Bypass Options).	Land Use	Phase II
<u>During Construction</u>		
• Avoid and minimize impacts to Waters of the U.S. (lakes, wetlands, streams, and buffers), or provide compensatory mitigation for losses that are approved.		Phase I
• Manage stormwater to ensure it is properly detained and treated prior to release.		Phase I
<u>During Operations</u> • Implement Spill Prevention Control and Countermeasures Plans during maintenance activities (for poles, the transmission corridor, and access roads) to prevent spills or leaks of hazardous materials, paving materials, or chemicals from contaminating surface or groundwater.		Final, Phase II
Plants and Animals		
<u>Prior to Construction</u> • Increasing pole heights to allow greater separation between poles, allowing for some poles to be moved outside of critical areas or buffer.	Water	Final, Phase II
• Partner with local, state, and federal agencies to identify potential off-site mitigation areas that are currently degraded.	Water	Final, Phase II
• Develop enhancement plans to convert off-site mitigation areas into thriving ecosystems, with an emphasis on enhancing critical habitat areas and buffers through planting of native trees and shrubs to provide shade to streams and habitat for birds, woody debris for fish and amphibians, foraging habitat for mammals, and nesting habitat for avian species.	Water	Final, Phase II

Mitigation Measures (Operations)	Related Resources	Phase/ Source
• Pay an in-lieu fee to the City of Bellevue for trees removed in the City's right-of-way to offset loss of public amenity.		Final, Phase II
• Pay an in-lieu fee to the City of Renton if tree replacement ratios cannot be met within the corridor.		Final, Phase II
• Short-term impacts on vegetation and habitat caused by development of facilities and infrastructure would be mitigated through site and facility design to minimize the need for vegetation and tree removal to the extent feasible.		Phase I
• If intact vegetation or habitat is present, the footprint of the facility should be minimized and situated to result in the least amount of disturbance.		Phase I
• The impacts on animals, including listed species, caused by the development of facilities and infrastructure would be mitigated through site and facility design to minimize the need for habitat removal and construction activity.		Phase I
• Specific measures and pile driving restrictions will be provided in the project-specific permits from WDFW, Corps of Engineers, U.S. Fish and Wildlife Service, and National Marine Fisheries Service.		Phase I
• The PSE Avian Protection Program would also be implemented to address avian issues and concerns with electrical systems, including methods and equipment to reduce avian collisions, electrocution, and problem nests.		Phase I
<u>During Construction</u> • Replace trees removed for the project based on tree protection ordinances and critical areas regulations in each jurisdiction; some of these trees would likely be planted off-site or, in the case of the City of Newcastle, mitigated by paying into an in-lieu fee program. Replacement may be based on cross-sectional diameter of trees removed, or on habitat functions lost due to tree removal, depending on applicable regulations. (*Regulatory Requirements*)		Final, Phase II
• In the Bridle Trails Subarea in the City of Bellevue, plant replacement trees as required under the City's Tree Retention and Replacement Code. (*Regulatory Requirements*)	Visual	Final, Phase II
• Replant disturbed areas using native vegetation that would meet transmission line clearance requirements and would not need to be removed or require maintenance (i.e., trimming) in the future.	Visual	Final, Phase II
• Critical area and buffer trees would be trimmed and not removed if possible, and trimmed branches and trunks at least 4-inches in diameter would be left in place to provide a greater amount of available woody debris for the area streams, compared to the long-term natural recruitment process.	Water	Final
• Avoid removal of mature trees in all construction areas, where possible.		Phase I

Mitigation Measures (Operations)	Related Resources	Phase/ Source
• Facilities, access roads, and staging areas should be located in areas of disturbed vegetation cover if possible.	Visual	Phase I
• If vegetation is removed for construction, where possible, replace with appropriate native plant species.		Phase I
• Utilize PSE vegetation management permits for their right-of-way in Bellevue that minimize tree removal in transmission line clear zones that are located in critical areas in favor of tree pruning where feasible.		Phase I
• Measures to reduce noise and human activity should be implemented for construction activities located near undisturbed or functional wildlife habitat areas such as forests and wetlands, riparian zones, and Lake Washington.	Noise	Phase I
• During construction, best management practices would be used to minimize potential impacts from noise, dust, and turbidity, and established water quality standards and in-water work permit conditions would be met.	Noise, Water	Phase I
• Habitat that is determined to be of significant importance (e.g., presence of listed species, priority habitats) will be avoided to the greatest extent possible.		Phase I
• Timing of construction work would occur outside of critical time periods for listed species such as nesting and spawning seasons.		Phase I
<u>During Operations</u> • Trees removed from critical areas in Bellevue and Renton may require mitigation monitoring. (*Regulatory Requirements*)		Final, Phase II
• Continue to implement an ecologically based, integrated weed management program, to control the spread of invasive and noxious weeds along the corridor, and at PSE substation facilities, including the removal of existing infestations of invasive species.		Final, Phase II
• Continue to implement PSE's Avian Protection Program (PSE, 2016b), and mitigate for the direct loss of nesting and roosting habitat for protected species (i.e., eagles, osprey, and other raptors). This mitigation typically occurs by providing nesting platforms in isolated areas away from power lines when nests of species protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act need to be removed from the power structures. Any such removal/replacement would occur outside of the nesting season to minimize the disturbance of the birds. In addition, PSE will continue to proactively discourage and minimize the use of the power structures by all avian species by retrofitting existing structures with wire guards, flight diverter devices, and bird guards.		Final, Phase II

Mitigation Measures (Operations)	Related Resources	Phase/ Source
• During tree maintenance activities, critical area and buffer trees would be trimmed and not removed if possible, and trimmed branches and trunks at least 4 inches in diameter would be left in place to provide a greater amount of woody debris for the area streams, compared to the long-term natural recruitment process.		Final
• Revegetated areas would be monitored to ensure success and invasive species would be controlled.		Phase I
GHG		
<u>Prior to Construction</u> • Install SF6-filled equipment with manufactured guaranteed leakage rate of 0.1 percent at the Richards Creek, Sammamish, and Talbot Hill substations. Installation of such equipment could reduce fugitive SF6 emissions by up to 80 percent over older equipment types.		Final, Phase II
<u>During Construction</u> • Replace trees removed for the project based on tree protection ordinances and critical areas regulations in each jurisdiction; some of these trees would likely be planted off-site or, in the case of the City of Newcastle, mitigated by paying into an in-lieu fee program. Replacement may be based on the cross-sectional diameter of trees removed, or on habitat functions lost due to trees removal, depending on applicable regulations. (*Regulatory Requirements*)	Plants and Animals, Economics	Final, Phase II
• Install fuel flow meter to restrict the use of fuel and associated GHG emissions over a given time period, if gas turbines or reciprocating engines are selected as distributed energy components and if required by air quality permits.		Phase I
• Implement vegetation replacement program to reduce sequestration losses under Alternative 1, Option A, and Alternative 3 to a moderate level. Alternative 1, Options B and C would also involve vegetation clearing for alignments, although to a lesser extent.		Phase I
<u>During Operations</u> • Carbon credits may be purchased to offset operational emissions generated by permitted sources.		Phase I

Mitigation Measures (Operations)	Related Resources	Phase/ Source
Recreation		
Prior to Construction		Final, Phase II
• Avoid placement of infrastructure within or adjacent to recreation sites where there is none currently to the extent possible. (*Regulatory Requirements*)		
• Meet site-specific agency requirements regarding acquisition of easements that require conversion of recreation land to a non-recreation use. (*Regulatory Requirements*). (Applies only to Bypass 1, Bypass 2, Oak 1, Oak 2, and Willow 2 Options).		Phase II
• Use vegetation outside of any area required to be cleared to screen poles and wires where transmission infrastructure is placed within a recreation site.	Visual Resources	Final, Phase II
• Work with each Partner City to determine mitigation for tree removal within recreation sites in its jurisdiction.		Final, Phase II
• Undergo a public review process for the conversion to non-recreational use of public park lands and facilities (City of Bellevue Plan Policy PA-37). (Applies only to Bypass 1, Bypass 2, Oak 1, Oak 2, and Willow 2 Options).		Phase II
• Design the project so that poles would be placed farther into the road right-of-way and supports would extend farther over the road so that new easements would not be required for the pole placement or the associated vegetation clear zone (i.e., the managed right-of-way). (Applies only to Bypass 1, Bypass 2, Oak 1, Oak 2, and Willow 2 Options).		Phase II
• Work with the City of Bellevue to relocate the trailhead at Woodridge Open Space, if needed under Bypass Option 2. (Applies only to Bypass 2 Option).		Phase II
• Work with Newport High School (Bellevue School District) to relocate lighting structures for the track, if needed under the Oak 2 Option. (Applies only to Oak 2 Option).		Phase II
• To minimize potential operational impacts to recreation sites, placement of infrastructure within or adjacent to recreation sites would be avoided to the extent possible.		Phase I
• All impacts to recreational sites would comply with applicable requirements, such as restrictions that protect recreation land from conversion to other uses (for example, state or federal grant funded sites).		Phase I
• If it is not possible to avoid a recreation site, vegetation screening could be used outside of any required clear zone.		Phase I

Mitigation Measures (Operations)	Related Resources	Phase/ Source
• If recreation sites are affected and cannot be restored, they would be relocated and replaced as required; for example property could be purchased and a new recreation facility created.		Phase I
<u>During Construction</u> None		Final, Phase II
<u>During Operations</u> None		Final, Phase II
Cultural Resources		
<u>Prior to Construction</u> • Develop resource-specific mitigation measures during consultation with DAHP, affected Tribes, KCHPP, and other appropriate stakeholders if a protected archaeological resource is identified during pre-construction archaeological survey or historic property inventory. (*Regulatory Requirements*)		Final, Phase II
• Apply for an archaeological excavation permit from DAHP (WAC 25-48-060) if impacts to a protected archaeological resource cannot be avoided. (*Regulatory Requirements*)		Final, Phase II
• Request an eligibility determination from DAHP for resources listed as eligible for listing in the NRHP (Eastside Transmission System, Somerset Neighborhood, Newcastle Cemetery, Mt. Olivet Cemetery, and the Columbia & Puget Sound Railroad). If any are determined eligible, mitigation measures specific to those resources will be developed during consultation with DAHP, affected Tribes, and any other appropriate stakeholders. (*Regulatory Requirements*)		Final, Phase II
• Obtain a Certificate of Appropriateness (COA) from KCHPP (KCC 20.62) if there are potential impacts to a designated KC Landmark. (*Regulatory Requirements*)		Final, Phase II
• Avoid cemeteries in accordance with state law (Chapters 68.60 RCW and 68.50 RCW). (*Regulatory Requirements*)		Final, Phase II
• Avoid graves outside of the dedicated boundaries of a cemetery in accordance with state law (Chapters 27.44 RCW and 68.60.050). (*Regulatory Requirements*)		Final, Phase II
• Conduct a historic property inventory (field work is complete; resulting forms and associated report are being submitted to DAHP for review).		Final, Phase II

Mitigation Measures (Operations)	Related Resources	Phase/ Source
• Conduct archaeological resource surveys for the selected route that include subsurface testing (pedestrian and subsurface survey of the 16-mile alignment and specific proposed pole locations began in August 2017 and is still ongoing as of the writing of this [December 2017]; PSE will conduct a second pedestrian and subsurface survey to assess staging areas, laydown areas, stringing sites, and access roads once more information on these locations is available; as of this writing this has not started).		Final, Phase II
• Prepare an Inadvertent Discovery Plan (IDP) for the project and discuss the IDP during pre-construction meeting(s).		Final, Phase II, Phase I
• Conduct subsurface testing.		Final, Phase II
• Consult with DAHP and any other appropriate stakeholders to develop resource-specific mitigation measures for impacts to significant cultural resources.		Final, Phase II
• Preserve or add screening at proposed pole sites to minimize potential impacts to the viewsheds of historic cemeteries.		Final, Phase II
• Adjust the proposed pole locations to reduce potential direct impacts to historic cemeteries.		Final, Phase II
• Conduct ground penetrating radar analysis in areas adjacent to Newcastle Cemetery, if conditions are determined appropriate.		Final, Phase II
• If the selected alternative presents potential operational impacts to eligible or listed historic properties, mitigation measures would depend upon the nature of the property and the characteristics contributing to its significance. If impacts to a designated King County Landmark are proposed, the project will be subject to the COA process with the King County Landmarks.		Phase I
• Operational impacts to aboveground resources may include noise, vibration, and views. The impacts to each identified historic resource will need to be assessed individually to determine mitigation measures, which may include redesign options or measures to minimize noise and vibration impacts.		Phase I

Mitigation Measures (Operations)	Related Resources	Phase/ Source
<u>During Construction</u> • Develop mitigation measures during consultation with DAHP, affected Tribes, and any other appropriate stakeholders if a protected archaeological resource is identified during construction. In accordance with RWC 27.53, an archaeological resource identified during construction is protected until DAHP determines whether it is eligible for listing in the NRHP.[1](*Regulatory Requirements*)		Final, Phase II
• Follow procedures dictated by state law (RCW 27.44) if human skeletal remains are discovered. (*Regulatory Requirements*)		Final, Phase II
• Obtain an excavation permit from DAHP if unmarked graves would be disturbed. (*Regulatory Requirements*)		Final, Phase II
• Follow the procedures identified in the IDP if any cultural resources are encountered during construction.		Final, Phase II
<u>During Operations</u> None		Final, Phase II
EMF		
<u>Prior to Construction</u> • No adverse impacts from magnetic fields are expected; therefore, no mitigation is proposed.		Final, Phase II
<u>During Construction</u> • No adverse impacts from magnetic fields are expected; therefore, no mitigation is proposed.		Final, Phase II
<u>During Operations</u> • No adverse impacts from magnetic fields are expected. If radio frequency interference is found, PSE would de-tune pole structures by installing hardware (such as arresters). Mitigation for potential corrosion of the pipeline is discussed in Section 4.9.7, *Mitigation Measures* (for Pipeline Safety). Mitigation for potential corrosion of the pipeline could include optimizing the geometry of the phase conductors in a triangular pattern, which results in higher cancellation of magnetic fields, as discussed in the Phase 2 Draft EIS (Section 3.8.5.1) (DNV GL, 2016). If that mitigation is incorporated into the project, it would further reduce magnetic field levels at the ground level from the proposed transmission lines.		Final, Phase II

[1] Isolated (single) artifacts, either precontact or historic, are not protected because they do not meet the definition of a "site" under state law (WAC 25-48-020(9)).

Mitigation Measures (Operations)	Related Resources	Phase/ Source
Pipeline Safety		
Prior to Construction • Continue to coordinate with Olympic and include safeguards in the project design to protect nearby pipelines from interaction with the new transmission lines due to AC current density, faults caused by lightning strikes, mechanical/equipment failure, or other causes.		Final, Phase II
• Perform an AC interference study incorporating the final powerline route, configuration, and operating parameters to confirm that current densities would remain within acceptable levels, and inform Olympic of any locations where additional measures may be needed to protect the pipelines.		Final, Phase II
• Obtain and incorporate all of the pipeline parameters required for detailed modeling and study (i.e., locations and details of above-grade pipeline appurtenances/stations, bonds, anodes, mitigation, etc.). This should include a review of the annual test post cathodic protection survey data.		Final, Phase II
• Fully assess the safety and coating stress risks for phase-to-ground faults at powerline structures along the entire area of co-location, including both inductive and resistive coupling.		Final, Phase II
• Fully assess the safety and AC corrosion risks under steady state operating conditions on the powerline.		Final, Phase II
• Reassess the safe separation distance at each pole location to minimize arcing risk based on NACE SP0177-2014 and considering the findings in CEA 239T817 (Stantec, 2017).		Final, Phase II
• Ensure that the separation distance between the pipelines and the powerline structures exceeds the safe distance required to avoid electrical arcing by installing pole grounds at appropriate distance from the pipeline based on engineering analysis.		Final, Phase II
• In areas where the pipelines are within the modeled arcing distance of transmission line pole grounding rods, incorporate mitigation measures into the project design to prevent ground fault arcing to the pipelines (see Section 4.9.5.5 for information on arcing distances). Recommended measures to incorporate into the project design may include installing arc shielding protection, consisting of zinc ribbon, copper wire, or other acceptable means extending a minimum of 25 feet past the transmission line pole grounding rods in both directions. The arc shielding protection should be designed so that it is connected to the pipelines through a single direct-current decoupler.		Phase II

Mitigation Measures (Operations)	Related Resources	Phase/ Source
• File a mitigation and monitoring report with the Partner Cities demonstrating that sufficient safety factors have been incorporated into design, and documenting all consultations with Olympic, including the sharing of modeling and engineering information with Olympic to assist Olympic in its monitoring and mitigation responsibilities. The report should include a plan that identifies the process for conducting additional field surveys and data collection for identifying mitigation measures following project start-up, and proposed monitoring to ensure that mitigation related to operational issues is followed.		Final, Phase II
• Install Optical Ground Wire (OPGW) shield wire on the transmission line poles.		Final
• Apply the results and recommendations of the *AC Interference Study* (DNV GL, 2016) to the design of pole locations, layout, and configuration.		Phase II
• Optimize conductor geometry, where a true delta configuration provides the greatest level of field cancellation.		Phase II
• During project design, field verify the distances between the pipelines and transmission line poles grounding rods.		Phase II
• Design AC mitigation (as required) to ensure that all safety and integrity risks have been fully mitigated along the collocated pipelines.		Phase II
• Design monitoring systems to monitor the AC corrosion risks along the pipelines.		Phase II
<u>At Project Startup</u> • Work with Olympic to evaluate and implement appropriate mitigation measures to reduce electrical interference on the Olympic Pipeline system to safe levels. (Olympic has informed PSE that, after the system is energized, it plans to collect field data to assess the necessity for the installation of AC grounding or similar systems to address steady-state conditions. Olympic has informed PSE that it plans to implement appropriate mitigation measures to the extent needed based on its analysis of field data collected following system energization. AC grounding systems are commonly installed in connection with power transmission poles to dissipate any energy to ground.)		Final, Phase II
• Verify arc distances once poles are installed and, where necessary, install ground wires or other grounding systems to ensure that pole grounds are all adequately separated from the pipelines.		Final
• Mitigation that Olympic could provide based on the results of the analysis may include the installation of additional protective measures such as grounding mats, horizontal surface ribbon, and/or deep anode wells based on a detailed mitigation study, as appropriate.		Final

Mitigation Measures (Operations)	Related Resources	Phase/ Source
• Install and commission the AC mitigation and monitoring systems prior to energization of the 230 kV powerline.		Phase II
• Install Optical Ground Wire (OPGW) shield wire on the transmission line poles.		Phase II
• After energization, perform a site survey to ensure that all AC interference risks have been fully mitigated under stead-state operation of the powerline.		Phase II
• Install additional grounding based on the results of the detailed engineering/mitigation analysis conducted by Olympic. Final mitigation measures and design would be based on field data collected after the system is energized. Mitigation may include the installation of additional protective measures such as grounding mats, horizontal surface ribbon, and/or deep anode wells based on a detailed mitigation study.		Phase II
<u>During Operations</u> • If indicated by the AC interference study conducted for final design, inform Olympic when the electrical system is expected to operate at or near winter peak loading so as to provide Olympic a reasonable opportunity to take appropriate steps to measure actual AC current densities.		Final
• To detect any unexpected changes between the pipeline and transmission line, provide information to Olympic as necessary for Olympic to record AC pipe-to-soil potentials and DC pipe-to-soil potentials during their annual cathodic protection survey.		Final, Phase II
• Provide Olympic with as much advance notice as practical of when outages are planned on the individual circuits, as the AC induction effects on the pipelines may be magnified when only one circuit (of the double-circuit transmission lines) is energized.		Final, Phase II
• Provide the Partner Cities with PSE monitoring data on maximum currents under peak winter operating conditions.		Final
• Operate both circuits at 230 kV to address the AC current load imbalance between the two circuits (see Section 3.9.5.5 for information on AC current load imbalance). Although the other proposed measures listed in this section are anticipated to fully address potential external corrosion issues related to the current imbalance, this measure is recommended, where feasible, to reduce or eliminate the potential for electrical interference with the pipeline.		Phase II
• Inform Olympic when the electrical system is operating at, or near, winter peak loading so that Olympic can conduct testing to ensure that AC current densities do not exceed 20 amps per square meter in areas where AC current density has been predicted by the *AC Interference Study* (DNV GL, 2016) to exceed 20 amps per square meter. PSE would inform the Partner Cities upon completion of Olympic monitoring and/or mitigation.		Phase II

Mitigation Measures (Operations)	Related Resources	Phase/ Source
• Inform Olympic when loading scenarios are expected to be at their greatest to ensure that Olympic conducts field monitoring and/or mitigation for AC potential greater than 15 volts and AC current density greater than 20 amps per square meter throughout the project corridor. PSE would inform the Partner Cities upon completion of Olympic monitoring and/or mitigation.		Phase II
Economics		
Prior to Construction None		Final
During Construction • Replace trees removed for the project based on tree protection ordinances and critical areas regulations in each jurisdiction; some of these trees would likely be planted off-site or, in the case of the City of Newcastle, mitigated by paying into an in-lieu fee program. Replacement may be based on cross-sectional diameter of trees removed, or on habitat functions lost due to tree removal, depending on applicable regulations.	Plants and Animals, Water	Final
During Operations • Mitigation for economic impacts from a project is not required under SEPA; however, potential impacts to City revenues due to decreased assessed value for property could be mitigated by an adjustment to the mil rate for all taxpayers or a reduction in expenditures to match the reduced revenues.		Phase II
Earth Resources		
Prior to Construction • Confirm that a Washington State licensed geotechnical engineer has conducted geotechnical hazard evaluations for all proposed elements addressing groundshaking, fault rupture, liquefaction, and landslides, and that all geotechnical recommendations have be incorporated into project design.		Final
• Design Richards Creek substation project in accordance with the design recommendations presented in the project geotechnical report GeoEngineers 2016). This will ensure that substation structures will be designed to IBC seismic standards even though the IBC exempts this project from its requirements.		Final

Mitigation Measures (Operations)	Related Resources	Phase/ Source
• Use the 2012 International Building Code (IBC) parameters for short period spectral response acceleration (S_S), 1-second period spectral response acceleration (S_1), and Seismic Coefficients F_A and F_V presented in Table 2 of the geotechnical report (GeoEngineers 2016).		Final
• Use site-specific soil input parameters for lateral load design that consider the effects of liquefaction through the application of p-multipliers for LPILE parameters.		Final
• For the area north of the proposed Richards Creek substation, reevaluate the lateral spreading risk to the proposed poles in this area once their final location has been determined, to determine appropriate foundation dimensions.		Final
• Where liquefiable deposits are present, extend foundations below the loose to medium density liquefiable deposits into underlying dense, non-liquefiable soils.		Final
• Reevaluate the axial capacity of the pole foundations and potential downdrag loads for poles in liquefiable deposits once final locations are selected, and consider these in the structural design.		Final
• For the one location where soil test results indicated a moderate to high potential for corrosion consider engaging a corrosion engineer.		Final
• Where bedrock is near the surface, additional options such as rock anchors or micropiles might be appropriate as an alternative to drilled shafts. If micropiles are used, the contractor should submit a detailed micropile plan describing methods and demonstrating consistency with specifications.		Final
• The contractor should submit a detailed drilled shaft installation plan describing casing and drilled shaft construction methods for review and comment by the engineer before construction. The submittal should include a narrative describing the contractor's understanding of the anticipated subsurface conditions, the overall construction sequence, access to the pole locations, and the proposed pole foundation installation equipment.		Final
• The contractor should submit a detailed direct embedment pole installation plan describing both uncased and temporary casing methods.		Final
<u>During Construction</u> • If drilled shafts are used where groundwater is present, the concrete for drilled shafts should be placed using the "tremie" method (described in geotechnical report).		Final

Mitigation Measures (Operations)	Related Resources	Phase/ Source
• Monitor the installation of the drilled shafts to confirm that soil conditions are as anticipated and that the shafts are installed in accordance with project plans and specifications, document variations in the field if necessary, and provide consultation as required should conditions vary from those anticipated.		Final
• Where sensitive structures may be present within about 100 feet of the work area, vibration should be monitored.		Final
<u>During Operations</u> • Develop a monitoring and maintenance program that includes inspection and reporting on structural stability.		Final
• As part of PSE's regular inspection of the transmission line, monitor all improvements for changes in conditions such as cracking foundations or slumping slopes that could reduce the ability of structures to resist seismic disturbances. This could include regular reporting to permitting agencies to ensure compliance.		Final
• If changes are identified during inspection and monitoring of conditions, implement additional measures to reduce or minimize those impacts.		Final
• Monitor all improvements for changes in conditions such as cracking foundations, slumping slopes, or loss of vegetative cover.		Phase I
• Implement inspection and maintenance programs for all improvements to ensure consistent performance and stability.		Phase I
• Comply with relevant state and local critical areas codes.		Phase I
Energy and Natural Resources (Phase I Only)		
<u>Prior to Construction</u> None		Phase I
<u>During Construction</u> None		Phase I
<u>During Operations</u> None		Phase I

Mitigation Measures (Operations)	Related Resources	Phase/ Source
Noise (Phase I Only)		
Prior to Construction • **Substation/Transformer Operational Noise.** Although electrical substations are exempt from the maximum permissible noise levels established in Chapter 173-60 of the Washington Administrative Code, the transformers could result in a noticeable increase in local ambient noise levels and therefore elicit an adverse community reaction. If new transformers are proposed for installation in a new substation facility, siting of that facility should consider the proximity of sensitive land uses. Site plans should include noise attenuation measures as necessary to maintain noise levels at the nearest receptors within 5 dBA of existing ambient noise levels. Static sound barrier curtains can provide sound transmission loss of 16 to 40 dBA, depending on the frequency of the noise source (ENC, 2014).		Phase I
During Construction • **Nighttime Construction Noise.** For project elements that would require prolonged nighttime construction activities, portable acoustical barriers may be used to reduce noise. Moveable sound barrier curtains can provide 15 dBA of sound attenuation (INC, 2014). Static sound barrier curtains can provide sound transmission loss of 16 to 40 dBA, depending on the frequency of the noise source (ENC, 2014).		Phase I
During Operations • **Distributed Energy Operation Noise.** The following distributed generation sources have the potential to result in minor to moderate operational noise impacts: wind turbines, gas turbines, anaerobic digesters, reciprocating engines, and microturbines. Siting of facilities that would operate these types of equipment should consider the proximity of sensitive land uses. Site plans should include noise attenuation measures as necessary to maintain noise levels at the nearest receptors within 5 dBA of existing ambient noise levels. Static sound barrier curtains can provide sound transmission loss of 16 to 40 dBA, depending on the frequency of the noise source (ENC, 2014). The efficacy of such barriers would depend on the surrounding elevations of the plant and receptors, and air flow requirements of the plant that might prohibit ceiling barriers. Exhaust stack silencers are also widely available for electrical generator engine applications.		Phase I

Mitigation Measures (Operations)	Related Resources	Phase/ Source
Public Services (Phase I Only)		
During Operations **Substation Fire Risk.** In order to reduce the risk of substation fire, PSE would routinely do the following: • Install relays and circuit breakers to shut down equipment experiencing a fault or malfunction. • Install systems to conduct lightning to the ground rather than through lines or equipment. • Use sulfur hexafluoride (SF_6) gas for closely spaced equipment. SF_6 is a nonflammable gas and an excellent insulator.		Phase I
• Monitor oil insulation for evidence of *arcing* and gassing. Monitor substations for evidence of overloading, overheating, or malfunctions.		Phase I
Utilities (Phase I only)		
Prior to Construction • **Coordination with Other Utility Providers.** PSE would site new transmission lines according to industry best practices, which includes proper positioning and design (separation and grounding) relative to other utilities. For all alternatives, coordination with the individual utility providers would be required to determine whether or not existing and future utilities could be affected and how best to avoid or minimize those impacts. PSE would work with other utility service providers during design and construction of the project to coordinate the placement of new facilities and ensure protection of other utilities. In some instances, vibration and settlement monitoring may be required where construction would occur near existing utilities.	Pipeline Safety	Phase I
• **Coordination with Other Projects:** PSE would coordinate all construction needs and impacts of this project with the other infrastructure and development projects in the combined study area. This would typically be done as part of the permitting process with each community affected by potential construction.		Phase I
• **Utility Location:** PSE would follow regulatory requirements to correctly locate and plan for other utility locations such as gas lines or the OPLC pipelines prior to start of construction, including showing pipeline locations on plans and requiring contractors to field locate utilities. Prior to the start of construction, existing utilities would be located and field-verified where feasible to avoid conflicts with the proposed facilities.	Pipeline Safety	Phase I

Mitigation Measures (Operations)	Related Resources	Phase/ Source
• **Utility Relocations.** PSE and its contractors would be required to develop construction sequence plans and coordinate schedules for utility work to minimize service disruptions and provide ample advance notice when service disruptions are unavoidable, consistent with utility owner policies. Relocation plans and service disruptions would be reviewed and approved by the affected utility providers before construction begins. PSE would develop a plan for public outreach to inform customers of potential service outages and construction schedules. The public outreach effort would be coordinated with other utility service providers.		Phase I
<u>During Construction</u> None		Phase I
<u>During Operations</u> None		Phase I