

# Puget Sound Energy – Energize Eastside Conditional Use Permit Project Narrative – Redmond Segment

Puget Sound Energy, Inc. (PSE) proposes the construction of a new substation in South Bellevue (the “Richards Creek substation”) and the upgrade of approximately 16 miles of two existing transmission lines operating at 115 kilovolt (kV) to 230 kV lines and continued aggressive conservation (collectively the “Energize Eastside Project” or the “Project”). The new substation, upgraded lines, and aggressive conservation are needed to address electrical system deficiencies identified during federally-required planning studies. This Project significantly improves reliability for Eastside communities, including the City of Redmond (City), and will supply the additional electrical capacity needed for current and anticipated growth.

The existing system is not robust enough to maintain reliable service if the entire existing PSE Eastside electric system facility is taken out of service at one time. Therefore, the Energize Eastside Project will be constructed in two phases. This will allow PSE to keep the existing 115 kV facilities partially in-service during construction, allowing PSE to maintain reliable service to all customers during construction.

The second phase, which includes the “Redmond Segment”, is the focus of this application and includes upgrading approximately 2 miles of existing 115 kV lines with 230 kV lines between the Sammamish substation and the Redmond/Bellevue city boundary. This upgrade includes replacing existing wood H-frame poles (which have 2-3 poles each) with steel monopoles. After deliberate review and extensive stakeholder input, PSE proposes to undertake this work in the existing transmission line corridor rather than siting a new corridor through Redmond neighborhoods that currently lack a transmission line corridor. Within the existing utility corridor, the proposed pole locations for the rebuilt lines will generally be in the same locations as the existing poles. Use of the existing corridor (which has housed transmission lines since the 1920s and 30s) minimizes potential impacts to the environment (e.g., vegetation management, aesthetic impacts) and to adjacent uses to the fullest extent feasible. Selective tree removal will also be required within the managed corridor to meet federal vegetation management requirements and PSE standards.

PSE is seeking a Conditional Use Permit (CUP) for the portion of the Project that is within the City, known as the Redmond Segment. Within the City, the Project is considered construction of Regional Utilities (Redmond Zoning Code [RZC] 21.78), which includes “*electrical transmission substations and lines 115 kV or greater*”. Review and approval of a CUP is considered a Type III Review (RZC Table 21.76.050B) in the City.

A Project Description, including Construction Methods, Permitting Approach, and Schedule are provided below. PSE’s compliance with the City of Redmond’s Conditional Use Decision Criteria (RZC 21.76.070(K)(4)) and Comprehensive Plan are included in the Decision Criteria Analysis and Response Memorandum attached to the CUP application.

## Project Description

The Redmond Segment of the Project includes approximately 2 miles of transmission line upgrade (i.e., installing new transmission line poles where poles exist today) within a 100-foot-

wide utility corridor that extends from the Sammamish substation to NE 60th Street at the Redmond/Bellevue city limits.

The Redmond Segment includes the following activities:

- Pole replacement, including removal of approximately 35 wooden H-frames and 6 single poles, and the installation of 28, 230 kV capacity steel monopoles comprised of 18 single-circuit monopole pairs and 10 double-circuit single monopoles (for these poles 19 drilled pier foundations are planned along with 9 direct-embed poles);
- Temporary access routes and staging areas;
- Stringing sites;
- Vegetation management for federally-required line clearance;
- Addition of a new 230 kV line bay within the Sammamish substation; and
- Additional improvements (e.g., replacement switchgear, breakers, etc.) within the Sammamish and Rose Hill substations.

### Construction Methods

Construction activities will primarily involve the replacement of existing poles with new poles and the stringing of new poles with new wire, as well as ancillary activities to support those construction activities. Construction at the Sammamish and Rose Hill substations will include connecting the substation equipment to the new 230 kV line. Substation upgrades and transmission line construction will occur simultaneously. At the Rose Hill substation additional equipment will be required as will the reconfiguration of the yard. In general, all Sammamish substation upgrades will occur within the existing footprint of the substation. The Rose Hill substation upgrades will occur within the fenced area of PSE's existing facility.

### Installation

Existing H-frames (consisting of either 2 or 3 wood poles) and some single poles will be replaced with new steel monopoles (i.e., a single pole). Typically, new poles will be placed in the same general location as the existing poles. Following installation of the new poles and stringing new conductor, existing poles will be removed. Most of the new poles (19 total) will require a drilled pier foundation. Each pole with a foundation will require excavation with a line truck/auger of a hole up to 9 feet wide and up to 46 feet deep. Reinforced-steel anchor bolt cages will be installed in the hole and then filled with concrete. The steel pole will then be placed on the foundation by crane. The remainder of the poles (9 total) will be directly embedded into the ground. Direct-embed poles will require excavation of a hole up to 5 feet wide and up to 25 feet deep. Wood poles being removed from critical areas and buffers will be removed and backfilled with spoils from an excavation for one of the new poles, or native soils from another appropriate source.

The temporary work area at each pole removal site is assumed to be approximately 2,500 square feet. The temporary work area around each pole installation site is approximately 5,000 square feet for poles with foundations, and approximately 2,500 square feet for direct-embed poles.

At the Sammamish substation, two new 230 kV line bays will be added as well as additional equipment upgrades; additional work at the substation may include installing conduits, cable trenches, grounding, security upgrades and/or drainage improvements. All upgrades to the existing substation are expected to occur within the footprint of the substation. At the Rose Hill Substation, the equipment will be reconfigured and upgraded so that the station can connect to the 230 kV lines. This will include a replacement transformer and supporting operating equipment. The substation will remain generally in the same location within PSE's existing fenced facility.

### ***Temporary Access Routes and Staging Areas***

Wherever possible, existing routes will be used to access pole locations during construction. These are partially vegetated access routes, which are re-used periodically over time to maintain the corridor. Staging activities at the Sammamish and Rose Hill substations will occur within the footprints of the existing PSE facilities and will not result in additional impacts.

Following construction, disturbed access route areas will be revegetated, as necessary, and left to return to their natural state. As most access routes are in areas of dense reed canarygrass and other non-native species, revegetation will typically consist of seeding to stabilize the site and prevent erosion.

### ***Stringing Sites***

In order to replace the transmission conductor, stringing and tensioning equipment will be staged near new steel poles at various locations along the corridor in preparation for the new stringing of wire. In critical areas and their buffers, mats will be placed over existing vegetation, where possible, to allow access to poles for stringing activities. Tree removal and trimming activities necessary for stringing new wire will be performed in a manner that minimizes impacts to underlying shrubs, ground cover, and other vegetation, without disturbance to soil.

### ***Vegetation and Tree Management***

The Redmond Segment was initially disturbed during the original transmission line construction, and disturbance from routine vegetation maintenance in the existing corridor is regular and ongoing. There are approximately 460 significant trees (out of approximately 902 significant trees total) that do not meet federal and PSE vegetation management standards in the City and must be removed. Most of these trees are located within an existing and managed transmission line corridor and approximately 90 percent are in fair condition or worse. Three landmark trees are proposed for removal. PSE proposes to create wildlife snags where appropriate under the following circumstances: When trees are proposed for removal in natural areas on City- or PSE-owned property north of Redmond Way (currently, 39 trees proposed for snag creation in this area). See the enclosed Vegetation Inventory & Tree Health Assessment Report (The Watershed Company 2021) for more information. Following construction of the new 230 kV line, pruning of trees along the Redmond Segment will be required on a periodic basis to maintain requisite clearances from the transmission lines. The following standards for vegetation and tree management, as applicable, will apply:

- **Wire Zone** –The section of a utility transmission ROW 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, unless the topographic change is sufficient to allow a 20-foot clearance between the power lines and the mature height of trees.

- **Managed ROW** –The section of a transmission line ROW that extends 16 feet outside of the wire zone. Vegetation with a mature height of 15 feet or less is allowed in this zone, unless the topographic change is sufficient to allow a 20-foot clearance between the power lines and the mature height of trees.
- **Legal ROW** –The full width of the easement. While vegetation maintenance is permitted within the full extent of the legal ROW, only a portion of the legal ROW is intended to be maintained; this area is described as the maintained legal ROW and generally extends 10 feet from the edge of the managed ROW. Maximum height of mature vegetation between the managed ROW and legal ROW is dependent upon tree species, tree health, and distance from the wires. A maximum mature tree height of 70 feet is presumed. Existing trees greater than 70 feet, or with a mature height of greater than 70 feet, will not necessarily be trimmed or removed.

### Streams and Wetlands

A total of seven wetlands and six streams (eight segments) were mapped in the study area vicinity. All mapped wetlands and streams occur in the portion of the study area north of NE Redmond Way. The wetlands include one slope/depressional and two slope wetlands on or near the substation site and four slope wetlands located along the transmission line corridor (Table 1). These wetlands occur on relatively undeveloped portions of the Project corridor in a watershed recognized by the City as the Willows Watershed. Wetlands delineated within the study area are described below in Table 1, and streams delineated are described below in Table 2.

Table 1 Wetlands Delineated in the Redmond Segment				
Wetland	Approximate Area of Wetland within Study Area <sup>1</sup>	Wetland Classification: Rating <sup>2</sup> , HGM Class, and Cowardin Class <sup>3</sup>	Associated Stream and Classification	Standard Regulatory Wetland and Stream Buffers <sup>4</sup>
ARDE6	1,765 sq. ft. (0.04 acre)	Category III Slope/Depressional PFO/PE M	NA	110 feet
ARDE7	32,079 sq. ft. (0.74 acre)	Category III Slope PFO/PSS/PEM	NA	110 feet
ARDE8	533,880 sq. ft. (12.26 acres)	Category II Slope PEM/PSS/PFO	Upper Willows Creek – Class II Lower Willows Creek – Class II Peter’s Creek Tributary – Class III	Wetland: 225 feet Streams: 100 feet (Class III) or 150 feet <sup>5</sup> (Class II)
CR01	20,457 sq. ft. (0.47 acre)	Category III Slope PEM/PFO	Stream CR02 – Class II Stream CR03 – Class II	Wetland: 110 feet Streams: 150 feet <sup>5</sup>
CR02	14,142 sq. ft. (0.32 acre)	Category III Slope PFO	Stream CR01 – Class II	Wetland: 110 feet Stream: 150 feet <sup>5</sup>
CR03	8,553 sq. ft. (0.20 acre)	Category III Slope PSS/PEM	Stream CR04 – Class II	Wetland: 110 feet Stream: 150 feet <sup>5</sup>
CR04	42,477 sq. ft. (0.98 acre)	Category III Slope PSS/ PFO	Stream CR04 – Class II Stream CR05 – Class II	Wetland: 110 feet Streams: 150 feet <sup>5</sup>
<b>Total Wetland Area (within Study Area): 653,353 square feet (15.01 acres)</b>				

HGM = hydrogeomorphic; sq. ft. = square feet; NA = not applicable.

<sup>1</sup> Wetlands with additional acreage beyond the study area include ARDE8, CR01, CR03, and CR04.

<sup>2</sup> HGM classification and Washington State Department of Ecology (Ecology) wetland ratings were determined according to Hruby 2014.

<sup>3</sup> Cowardin Classification: PEM = Palustrine Emergent, PSS = Palustrine Scrub-Shrub, PFO=Palustrine Forested, (Cowardin et al. 1979).

<sup>4</sup> Sources: RZC 21.64.020.B.3; RZC 21.64.030.B.2.

<sup>5</sup> 150-foot buffer includes 100-foot inner buffer plus 50-foot outer buffer.

Stream Name	City of Redmond <sup>1</sup>	
	Stream Class	Standard Regulatory Stream Buffer
Upper Willows Creek/Lower Willows Creek	Class II	100 feet + 50-foot outer buffer
Peter's Creek Tributary	Class III	100 feet
Stream CR02	Class II	100 feet + 50-foot outer buffer
Stream CR03	Class II	100 feet + 50-foot outer buffer
Stream CR04	Class II	100 feet + 50-foot outer buffer
Stream CR05	Class III	100 feet + 50-foot outer buffer

<sup>1</sup>Buffer width(s) identified by RZC 21.64.030(B)(2).

### Impacts

Project activities within the Redmond Segment will result in both permanent and temporary impacts, as described below.

#### Permanent Impacts

Permanent impacts associated with the installation of three new poles will occur within Wetland ARDE8, a large, Category II slope wetland. The total area of permanent impact will be approximately 110 square feet (0.0025 acre) of PEM wetland with a total fill volume of approximately 160 cubic yards. These impacts will be partially offset by the permanent removal of 4 poles from the wetland. The total area of fill removed from Wetland ARDE8 will be approximately 15 square feet (0.0003 acre). When pole removals are considered, the net permanent wetland impact is approximately 100 square feet (0.0023 acre; impacts have been rounded up to the nearest 10 square feet).

A total of 85 trees in the Redmond Segment have been identified as being incompatible with Project poles or transmission lines at their mature height. These trees have been identified for trimming or removal, and their associated canopy has been included in the calculation of conversion impact area. Permanent impacts associated with tree trimming or removal in wetlands will occur in Wetlands ARDE7, ARDE8, CR02, and CR04.

#### Temporary Impacts

Temporary impacts from access routes, work areas, and stringing sites will occur in portions of Wetlands ARDE8 and CR01.

A summary of permanent and temporary impacts from the Project, broken down by wetland and stream, are included in Table 3. Impacts to stream buffers are included in the buffer impacts for adjacent wetlands.

Table 3 Summary of Project Wetland Impacts							
Wetland	Category and Type	Wetland Impacts			Buffer Impacts		
		Net Permanent Impact Area – Fill (square feet)	Permanent Impact Area – Conversion (square feet)	Temporary Impact Area (square feet)	Net Permanent Impact Area-Fill (square feet)	Permanent Impact Area – Conversion (square feet)	Temporary Impact Area (square feet)
ARDE8	Category II PEM/PSS/PFO	100	8,120	45,590	50	10,760	36,310
ARDE7	Category III PFO/PSS/PEM	0	4,500	0	0		0
CR01	Category III PEM/PFO	0	0	7,440	0	15,170	8,200
CR02	Category III PFO	0	2,000	0	0		0
CR03	Category III PEM/PSS	0	0	0	0	5,760	0
CR04	Category III PSS/PFO	0	5,870	0	0		3,950
<b>Total</b>		<b>100</b>	<b>20,490</b>	<b>53,030</b>	<b>50</b>	<b>31,690</b>	<b>48,460</b>

Additional temporary impacts include the closure of unnamed trails running between the Sammamish substation and where the transmission corridor turns south. The trails would be temporarily closed while adjacent poles are replaced, and vegetation may be temporarily cleared to facilitate construction. The trail may be closed until all poles are replaced, or users may avoid the area. Given the number of poles, work in this area would likely be continuous for approximately 1 month. Impacts would be limited, as this is not a high use area. Additional unnamed trails on the north-south portion of the corridor may also be temporarily closed while adjacent poles are replaced, depending on proximity to roads and if the trail is needed to access other poles.

### *Mitigation Strategies*

PSE is proposing on-site mitigation to compensate for permanent impacts to wetlands and associated buffer areas, and for vegetation conversion associated with removal of trees. Mitigation for the transport and use of ground-operated equipment is not proposed, as these activities will not result in significant ground disturbances. Best Management Practices (BMPs) implemented during construction will minimize the risk of erosion and sedimentation into aquatic areas. All areas of ground disturbance will be restored immediately upon completion of activities.

On-site mitigation will occur south of the Sammamish substation property as a component of the Willows Creek Stream Relocation Project, where the majority of Project wetland impacts will occur. This property is owned by PSE and is therefore available for a suitable mitigation project that allows PSE to continue to use this property for its transmission needs, and that does not include tall vegetation that would be incompatible with overhead transmission lines.

The primary goals of the proposed compensatory mitigation are as follows:

- Provide compensatory mitigation for wetland area and functions impacted by the Project through wetland enhancement on the Sammamish Substation site as a component of the Willows Creek Stream Relocation Project.
- Provide consolidated mitigation for linear project impacts to ensure greater habitat functional lift and more viability of success than spot mitigation along the Project route.
- Provide compensatory mitigation on a site controlled long-term by PSE.

The above goals will be met by:

- Enhancing wetland areas through invasive species control and native species installation to compensate for permanent wetland and wetland vegetation conversion impacts.
- Enhancing wetland buffer areas through invasive species control and native species installation to compensate for permanent buffer impacts and tree removal impacts.
- Managing invasive species and establishing communities of native vegetation in the vicinity of the enhanced wetland and new stream channel.

In addition to meeting the required mitigation ratio for unavoidable wetland impacts through wetland enhancement, the Willows Creek Stream Relocation Project will benefit the Sammamish River Watershed and, specifically, the Willows Creek Sub-watershed through enhanced habitat, water quality, and hydrologic functions to a large portion of wetland directly connected to Willows Creek.

Wetland ARDE8 currently provides low water quality and hydrologic functions and high habitat functions; however, significant portions of the wetland have limited plant diversity and are dominated by invasive species. As a result, the overall level of structural habitat complexity in the wetland could be improved. Water quality and hydrologic functions would be further improved by the reconnection of portions of the wetland with the floodplain of Willows Creek, as well as the addition of trees, shrubs, and large woody debris to trap sediment and slow flood flows.

The proposed enhancement plantings include approximately 10 native woody species within the wetland and 8 native woody species in buffer plantings, which would provide a wide variety of additional sources of food for wildlife, additional cover and habitat complexity for wildlife, as well as additional water quality and hydrologic benefits from increased dense and rigid vegetation which would serve to trap sediments and slow flood flows and enhance the aquatic environment.

This will also improve plant diversity by adding new species that are not present in the existing wetland and increase vertical and horizontal habitat complexity by establishing a new area of scrub-shrub habitat types.

The details of the mitigation project, including specific areas of enhancement, are discussed in a separate mitigation plan (*Conceptual Mitigation Plan, Energize Eastside Project*, HDR 2021).

## Schedule

Construction is anticipated to start in Spring 2022 with startup and commissioning anticipated to occur later that year. Construction of the Redmond portion of the Project would not be phased.