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Appendix M: Mitigation Measures

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		
<u>Prior to Construction</u> None		
<u>During Construction</u> <ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> ○ 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. ○ 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. ○ Helicopters generate substantial noise that is not regulated by local codes. Appendix A includes a table that shows expected noise levels. ○ Helicopter use would not eliminate the need for construction access by vehicles for excavation and pouring concrete. 	Plants and Animals	Final

Mitigation Measures (Construction)	Related Resources	Phase/ Source
<u>During Operations</u> <ul style="list-style-type: none"> None 		
Visual Resources		
<u>Prior to Construction</u> <ul style="list-style-type: none"> Choosing routes that are already developed with power lines and where minimal vegetation clearing is necessary. 		
<u>During Construction</u> <ul style="list-style-type: none"> None 		Final
<u>During Operations</u> <ul style="list-style-type: none"> None 		Final
Water Resources		
<u>Prior to Construction</u> <ul style="list-style-type: none"> 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). <i>(Regulatory Requirements)</i> 		
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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. <i>(Regulatory Requirements)</i> 	Plants and Animals	Phase II
<u>During Construction</u> <ul style="list-style-type: none"> Comply with code provisions for the protection of water resources from clearing and grading activities. <i>(Regulatory Requirements)</i> 		
	Plants and Animals	Final, Phase II

Mitigation Measures (Construction)	Related Resources	Phase/ Source
<ul style="list-style-type: none"> • Comply with all necessary permits (<i>Regulatory Requirements</i>): <ul style="list-style-type: none"> ○ National Pollutant Discharge Elimination System general permit for construction (issued by Ecology). ○ Hydraulic Project Approval (issued by WDFW). ○ Construction Stormwater General Permit. 	Plants and Animals	Final, Phase II
<ul style="list-style-type: none"> • 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 (<i>Regulatory Requirements</i>): <ul style="list-style-type: none"> ○ Temporary covering of exposed soils and stockpiled materials. ○ Silt fencing, catch basin filters, interceptor swales, or hay bales. ○ Temporary sedimentation ponds or sediment traps. ○ Installation of a rock construction entrance and street sweeping. 		Final, Phase II
<ul style="list-style-type: none"> • 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 (<i>Regulatory Requirements</i>): <ul style="list-style-type: none"> ○ Operating procedures to prevent spills. ○ Control measures such as secondary containment to prevent spills from entering nearby surface waters. ○ Countermeasures to contain, clean up, and mitigate the effects of a spill. ○ Construction vehicle storage and maintenance and fueling of construction equipment will be located away from streams and wetlands. 		Final, Phase II
<ul style="list-style-type: none"> • 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. (<i>Regulatory Requirements</i>) 		Final, Phase II
<ul style="list-style-type: none"> • Comply with construction standards applicable to Wellhead Protection Zone 4 (RZC 21.64.050D.4.b) in the City of Redmond. (<i>Regulatory Requirements</i>) 		Final, Phase II

Mitigation Measures (Construction)	Related Resources	Phase/ Source
<ul style="list-style-type: none"> • 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 (<i>Regulatory Requirements</i>): <ul style="list-style-type: none"> ○ Secondary containment for hazardous materials. ○ Securing hazardous materials. ○ Removal of leaking vehicles and equipment. ○ Cleanup equipment and supplies. 		Final, Phase II
<ul style="list-style-type: none"> • Monitor soils from construction-related excavation/grading for contamination; if contaminated soils are encountered, mitigate in accordance with federal, state, and local regulations. (<i>Regulatory Requirements</i>) 		Final, Phase II
<ul style="list-style-type: none"> • Comply with applicable requirements from local, state, and federal regulatory agencies for all construction affecting water resources directly or indirectly. 		Phase I
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • Control construction within floodplains so that flood risk is not increased and floodway capacity is not reduced. 		Phase I
<ul style="list-style-type: none"> • Require trenchless construction for underground and underwater power line segments (Only applicable if undergrounding is used for mitigation). 		Phase I
<ul style="list-style-type: none"> • Bore underneath water resources to avoid temporary and permanent impacts to those areas when feasible. 		Phase I
<ul style="list-style-type: none"> • Manage stormwater to ensure it is properly detained and treated prior to release. 		Phase I
<p><u>During Operations</u></p> <p>None</p>		Final

Mitigation Measures (Construction)	Related Resources	Phase/ Source
Plants and Animals		
<u>Prior to Construction</u>		
None		Final
<u>During Construction</u>		
<ul style="list-style-type: none"> • 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. (<i>Regulatory Requirements</i>) 	Water	Final
<ul style="list-style-type: none"> • 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: (<i>Regulatory Requirements</i>) <ul style="list-style-type: none"> ○ Limit work to allowable “fish window” time periods. ○ Limit work during sensitive nesting and breeding seasons for protected wildlife species occurring in the area. ○ Implement PSE’s established bird protection programs and procedures. ○ Provide fish exclusion if required to prevent harm to protected species. ○ Replant and stabilize disturbed construction and staging areas with native trees, shrubs, and grasses. ○ Implementation of temporary erosion control measures. ○ Utilize a Spill Prevention and Control Plan. 		Final, Phase II
<ul style="list-style-type: none"> • Minimize impacts to critical areas and buffers, including Fish and Wildlife Conservation Areas, to the extent practicable. (<i>Regulatory Requirements</i>) 	Water	Phase II
<ul style="list-style-type: none"> • Mitigate impacts to critical areas to the levels established by the appropriate jurisdictions and environmental permit requirements. (<i>Regulatory Requirements</i>) 	Water	Phase II
<ul style="list-style-type: none"> • Flag the limits of construction, trees to be retained, and critical habitat areas and associated buffers to be avoided. 		Final, Phase II
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • Avoid removal of mature trees in all construction areas, where possible. 		Phase I

Mitigation Measures (Construction)	Related Resources	Phase/ Source
<ul style="list-style-type: none"> Facilities, access roads, and staging areas should be located in areas of disturbed vegetation cover if possible. 	Visual Resources	Phase I
<ul style="list-style-type: none"> If vegetation is removed for construction, where possible, replace with appropriate native plant species. 	Visual Resources	Phase I
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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		
<u>During Construction</u> <ul style="list-style-type: none"> 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). 		
<ul style="list-style-type: none"> Use non-petroleum lubricants for construction equipment. 		Final, Phase II
<ul style="list-style-type: none"> Replant disturbed construction and staging areas with native trees, shrubs, and grasses. 	Visual Resources	Final, Phase II
<u>During Operations</u> None		

Mitigation Measures (Construction)	Related Resources	Phase/ Source
Recreation		
<u>Prior to Construction</u>		
<ul style="list-style-type: none"> Coordinate with potentially affected park districts/departments. 		Final, Phase II
<ul style="list-style-type: none"> Provide alternative access points to recreation sites and trail detours. 		Final, Phase II
<ul style="list-style-type: none"> Avoid construction during months when recreation sites are busier, when possible. 		Final, Phase II
<ul style="list-style-type: none"> Avoid vegetation clearing for construction activities where possible. 	Visual Resources, Plants and Animals, GHG, Economics	Final, Phase II
<ul style="list-style-type: none"> Avoid replacing poles at Rose Hill Middle School and Tyee Middle School while school is in session. 		Final, Phase II
<ul style="list-style-type: none"> Notify local jurisdictions, schools, or private owners (including the Somerset Recreation Club), 60 days in advance of work within recreation sites. 		Final, Phase II
<ul style="list-style-type: none"> Notify the public of any temporary closure of trails or recreations sites 2 weeks in advance. 		Final, Phase II
<ul style="list-style-type: none"> Provide signage along trails or park entrances at least 1 week prior to closures. 		Final, Phase II
<ul style="list-style-type: none"> 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
<u>During Construction</u>		
<ul style="list-style-type: none"> 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). (<i>Regulatory Requirements</i>) 	Noise	Final, Phase II, Phase 1
<ul style="list-style-type: none"> Recreation facilities and access to recreation activities (e.g., water access points) would be avoided to the extent practicable. 		Phase I
<u>Post Construction</u>		
<ul style="list-style-type: none"> Restore recreation sites or trails after construction. 		Final, Phase II, Phase I

Mitigation Measures (Construction)	Related Resources	Phase/ Source
Cultural Resources		
<u>Prior to Construction</u> None		Final, Phase II, Phase I
<u>During Construction</u> <ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Best management practices would be implemented during construction to minimize impacts from dust, noise, and vibration. 	Noise	Phase I
<ul style="list-style-type: none"> Vibration monitoring may be conducted at historic buildings to document that vibration does not exceed acceptable levels. 		Phase I
<u>During Operations</u> None		Final, Phase II
EMF		
<u>Prior to Construction</u> <ul style="list-style-type: none"> No adverse impacts from magnetic fields are expected; therefore, no mitigation is proposed. 		Final, Phase II, Phase I
<u>During Construction</u> <ul style="list-style-type: none"> No adverse impacts from magnetic fields are expected; therefore, no mitigation is proposed. 		Final, Phase II, Phase I
<u>During Operations</u> <ul style="list-style-type: none"> 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		
<p><u>Prior to Construction</u></p> <ul style="list-style-type: none"> • 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 (<i>Regulatory Requirements</i>): <ul style="list-style-type: none"> ○ 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: <ul style="list-style-type: none"> ▪ 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). 		Final, Phase II

Mitigation Measures (Construction)	Related Resources	Phase/ Source
<ul style="list-style-type: none"> Prior to permit issuance of the Energize Eastside project, prepare a preliminary plan detailing measures PSE will require of its contractor to protect the pipeline during construction. 		Final, Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<p><u>During Construction</u></p>		Final, Phase II
<ul style="list-style-type: none"> 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 (<i>Regulatory Requirements</i>): <ul style="list-style-type: none"> 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. 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. 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 		

Mitigation Measures (Construction)	Related Resources	Phase/ Source
<p>excavation that exposes or significantly reduces the cover over a pipeline may have to be delayed until the reduced operating pressures are achieved.</p> <ul style="list-style-type: none"> ○ 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. 		
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> 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
<p><u>During Operations</u></p> <p>None</p>		
Economics		
<p><u>Prior to Construction</u></p> <ul style="list-style-type: none"> The economic aspects of the project that are evaluated in this Final EIS do not relate to construction impacts. 		Final, Phase II
<p><u>During Construction</u></p> <ul style="list-style-type: none"> The economic aspects of the project that are evaluated in this Final EIS do not relate to construction impacts 		Final, Phase II
<p><u>During Operations</u></p> <ul style="list-style-type: none"> The economic aspects of the project that are evaluated in this Final EIS do not relate to construction impacts 		Final, Phase II
Earth Resources		
<p><u>Prior to Construction</u></p> <ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Avoid construction on steep slopes, known and potential landslide zones, and areas with organic or liquefiable soils, where feasible. 		Phase I

Mitigation Measures (Construction)	Related Resources	Phase/ Source
<ul style="list-style-type: none"> 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
<u>During Construction</u>		Final
<ul style="list-style-type: none"> Implementation of construction BMPs as required by local codes would ensure that impacts are minor and not significant. 		
<ul style="list-style-type: none"> Use appropriate shoring during construction. 		Phase I
<ul style="list-style-type: none"> Use erosion and runoff control measures, including retention of vegetation, replanting, ground cover, etc. 		Phase I
<ul style="list-style-type: none"> Comply with relevant state and local critical areas codes and other applicable requirements. 		Phase I
<ul style="list-style-type: none"> Dispose of soils at approved disposal sites. 		Phase I
<ul style="list-style-type: none"> Conduct settlement and vibration monitoring, as applicable, during construction to identify potential adverse conditions to critical structures and local facilities. 		Phase I
<u>During Operations</u>		Final
<ul style="list-style-type: none"> Implementation of construction BMPs as required by local codes would ensure that impacts are minor and not significant. 		
Energy and Natural Resources (Phase I Only)		
<u>Prior to Construction</u>		Phase I
None		
<u>During Construction</u>		Phase I
None		
<u>During Operations</u>		Phase I
None		

Mitigation Measures (Construction)	Related Resources	Phase/ Source
Noise (Phase I Only)		
<u>Prior to Construction</u> None		Phase I
<u>During Construction</u> <ul style="list-style-type: none"> 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
<u>During Operations</u> None		Phase I
Transportation (Phase I Only)		
<u>Prior to Construction</u> <ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<p><u>During Construction</u></p> <ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<p><u>During Operations</u></p> <p>None</p>		Phase I

Mitigation Measures (Construction)	Related Resources	Phase/ Source
Public Services (Phase I Only)		
<u>Prior to Construction</u> Emergency Response Service <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> Notify service providers and neighborhood residents of construction schedules, street closures, and utility interruptions as far in advance as possible. 		Phase I
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Coordinate with law enforcement agencies to implement crime prevention plans for construction sites and staging areas. 		Phase I
<u>During Construction</u> Emergency Response Service <ul style="list-style-type: none"> An OPLC representative is to be present to observe excavation activities around buried pipelines during construction. 	Pipeline Safety	Phase I
<u>During Operations</u> None		

Mitigation Measures (Construction)	Related Resources	Phase/ Source
Utilities (Phase I only)		
<p><u>Prior to Construction</u></p> <ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<p><u>During Construction</u></p> <p>None</p>		Phase I
<p><u>During Operations</u></p> <p>None</p>		Phase I

Table M-2. Operations Mitigation Measures

Mitigation Measures (Operations)	Related Resources	Phase/ Source
Land Use		
<u>Prior to Construction</u> <ul style="list-style-type: none"> Design and operate regional utility facilities to minimize impacts on the surrounding uses, the environment, and the city (NMC 18.44.052.C.1). <i>(Regulatory Requirements)</i> 	Visual Resources	Final
<ul style="list-style-type: none"> 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). <i>(Regulatory Requirements)</i> 	Visual Resources	Final
<ul style="list-style-type: none"> Consolidate utility facilities and co-locate multiple utilities (City of Newcastle Plan Policy UT-P3). 	Visual Resources	Final
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Design, construct, and maintain facilities to minimize their impact on surrounding neighborhoods (City of Bellevue Plan Policy UT-8). 	Visual Resources	Final
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Underground sections of the transmission lines where inconsistencies with the comprehensive plan policies regarding aerial facilities would otherwise occur. 	Visual Resources	Final, Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Use existing utility corridors or properties already in PSE-ownership to the extent feasible. 	Visual Resources	Phase I
<ul style="list-style-type: none"> Provide relocation assistance for any residents displaced or businesses purchased. 		Phase I
<p><u>During Construction</u></p> <p>None</p>		Final, Phase II
<p><u>During Operations</u></p> <ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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		
<p><u>Prior to Construction</u></p> <ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Consolidate utility facilities and co-locate multiple utilities (City of Newcastle Plan Policy UT-P3). 	Land Use	Final, Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Design, construct, and maintain facilities to minimize their impact on surrounding neighborhoods (City of Bellevue Plan Policy UT-8). 	Land Use	Final, Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> New development should install a dense visual vegetative screen along Richards Road (City of Bellevue Plan Policy S-RV-31). 		Final, Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Underground sections of the transmission lines where unavoidable significant impacts to scenic views or the aesthetic environment would otherwise occur. 		Final, Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Choosing routes that are already developed with power lines and where minimal vegetation clearing is necessary. 		Phase I
<ul style="list-style-type: none"> Consulting with Cities and affected residents when locating structures, rights-of-way, and other disturbed areas to minimize visual impacts. 		Phase I
<ul style="list-style-type: none"> Complying with applicable plans and policies within potentially affected jurisdictions. 	Land Use	Phase I
<ul style="list-style-type: none"> Placing and designing structures to minimize impacts on specific visual resources and popular public viewpoints. 		Phase I
<ul style="list-style-type: none"> Using aesthetically pleasing materials and landscaping to shield electrical equipment from public view. 		Phase I
<ul style="list-style-type: none"> For steel poles, using paint colors that reduce the contrast of the poles with the surrounding environment. 		Phase I
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<p><u>During Construction</u></p> <ul style="list-style-type: none"> Retain or replace trees to the greatest extent possible. 	Plants and Animals, GHG, Economics	Final, Phase II
<p><u>During Operations</u></p> <ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Use landscape screening of above-ground utility facilities to diminish visual impacts (City of Newcastle Plan Policy UT-P20). 		Final, Phase II
Water Resources		
<p><u>Prior to Construction</u></p> <p>Before any direct wetland impacts occur, PSE would obtain the necessary state and federal authorizations. To obtain state and federal authorization, PSE must provide:</p> <ul style="list-style-type: none"> A jurisdictional determination from the U.S. Army Corps of Engineers stating whether the delineated wetlands are under federal jurisdiction. 		Final
<ul style="list-style-type: none"> An application and report presenting impacts to jurisdictional wetlands. 		Final
<ul style="list-style-type: none"> A mitigation plan for unavoidable wetland impacts following the standards in <i>Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance</i> (Ecology, 2006). 	Plants and Animals	Final
<p>The project would also need to comply with the following regulations of the Partner Cities:</p> <ul style="list-style-type: none"> Stormwater regulations of the Partner Cities, which are based on the standards set by Ecology’s <i>Stormwater Management Manual for Western Washington</i> (Ecology, 2014). 		Final, Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Requirements of each applicable Partner City’s critical areas ordinance (see Appendix D). Typical mitigation measures suggested in the ordinances include: <ul style="list-style-type: none"> Replacement of wetland acreage based on replacement ratios in critical areas ordinances. Replacement of lost buffer area. Enhancement or restoration of buffers. 	Plants and Animals	Final, Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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>		
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Manage stormwater to ensure it is properly detained and treated prior to release. 		Phase I
<u>During Operations</u>		
<ul style="list-style-type: none"> 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>		
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Partner with local, state, and federal agencies to identify potential off-site mitigation areas that are currently degraded. 	Water	Final, Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Pay an in-lieu fee to the City of Renton if tree replacement ratios cannot be met within the corridor. 		Final, Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<p><u>During Construction</u></p> <ul style="list-style-type: none"> 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. <i>(Regulatory Requirements)</i> 		Final, Phase II
<ul style="list-style-type: none"> In the Bridle Trails Subarea in the City of Bellevue, plant replacement trees as required under the City’s Tree Retention and Replacement Code. <i>(Regulatory Requirements)</i> 	Visual	Final, Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Avoid removal of mature trees in all construction areas, where possible. 		Phase I

Mitigation Measures (Operations)	Related Resources	Phase/ Source
<ul style="list-style-type: none"> Facilities, access roads, and staging areas should be located in areas of disturbed vegetation cover if possible. 	Visual	Phase I
<ul style="list-style-type: none"> If vegetation is removed for construction, where possible, replace with appropriate native plant species. 		Phase I
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Timing of construction work would occur outside of critical time periods for listed species such as nesting and spawning seasons. 		Phase I
<p><u>During Operations</u></p> <ul style="list-style-type: none"> Trees removed from critical areas in Bellevue and Renton may require mitigation monitoring. (<i>Regulatory Requirements</i>) 		Final, Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Revegetated areas would be monitored to ensure success and invasive species would be controlled. 		Phase I
GHG		
<u>Prior to Construction</u>		
<ul style="list-style-type: none"> 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>		
<ul style="list-style-type: none"> 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. (<i>Regulatory Requirements</i>) 	Plants and Animals, Economics	Final, Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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>		
<ul style="list-style-type: none"> Carbon credits may be purchased to offset operational emissions generated by permitted sources. 		Phase I

Mitigation Measures (Operations)	Related Resources	Phase/ Source
Recreation		
<u>Prior to Construction</u>		
<ul style="list-style-type: none"> Avoid placement of infrastructure within or adjacent to recreation sites where there is none currently to the extent possible. (<i>Regulatory Requirements</i>) 		Final, Phase II
<ul style="list-style-type: none"> Meet site-specific agency requirements regarding acquisition of easements that require conversion of recreation land to a non-recreation use. (<i>Regulatory Requirements</i>). (Applies only to Bypass 1, Bypass 2, Oak 1, Oak 2, and Willow 2 Options). 		Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Work with each Partner City to determine mitigation for tree removal within recreation sites in its jurisdiction. 		Final, Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<p><u>During Construction</u></p> <p>None</p>		Final, Phase II
<p><u>During Operations</u></p> <p>None</p>		Final, Phase II
Cultural Resources		
<p><u>Prior to Construction</u></p> <ul style="list-style-type: none"> 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. <i>(Regulatory Requirements)</i> 		Final, Phase II
<ul style="list-style-type: none"> Apply for an archaeological excavation permit from DAHP (WAC 25-48-060) if impacts to a protected archaeological resource cannot be avoided. <i>(Regulatory Requirements)</i> 		Final, Phase II
<ul style="list-style-type: none"> 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. <i>(Regulatory Requirements)</i> 		Final, Phase II
<ul style="list-style-type: none"> Obtain a Certificate of Appropriateness (COA) from KCHPP (KCC 20.62) if there are potential impacts to a designated KC Landmark. <i>(Regulatory Requirements)</i> 		Final, Phase II
<ul style="list-style-type: none"> Avoid cemeteries in accordance with state law (Chapters 68.60 RCW and 68.50 RCW). <i>(Regulatory Requirements)</i> 		Final, Phase II
<ul style="list-style-type: none"> Avoid graves outside of the dedicated boundaries of a cemetery in accordance with state law (Chapters 27.44 RCW and 68.60.050). <i>(Regulatory Requirements)</i> 		Final, Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Prepare an Inadvertent Discovery Plan (IDP) for the project and discuss the IDP during pre-construction meeting(s). 		Final, Phase II, Phase I
<ul style="list-style-type: none"> Conduct subsurface testing. 		Final, Phase II
<ul style="list-style-type: none"> Consult with DAHP and any other appropriate stakeholders to develop resource-specific mitigation measures for impacts to significant cultural resources. 		Final, Phase II
<ul style="list-style-type: none"> Preserve or add screening at proposed pole sites to minimize potential impacts to the viewsheds of historic cemeteries. 		Final, Phase II
<ul style="list-style-type: none"> Adjust the proposed pole locations to reduce potential direct impacts to historic cemeteries. 		Final, Phase II
<ul style="list-style-type: none"> Conduct ground penetrating radar analysis in areas adjacent to Newcastle Cemetery, if conditions are determined appropriate. 		Final, Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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> <ul style="list-style-type: none"> 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(<i>Regulatory Requirements</i>) 		Final, Phase II
<ul style="list-style-type: none"> Follow procedures dictated by state law (RCW 27.44) if human skeletal remains are discovered. (<i>Regulatory Requirements</i>) 		Final, Phase II
<ul style="list-style-type: none"> Obtain an excavation permit from DAHP if unmarked graves would be disturbed. (<i>Regulatory Requirements</i>) 		Final, Phase II
<ul style="list-style-type: none"> 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> <ul style="list-style-type: none"> No adverse impacts from magnetic fields are expected; therefore, no mitigation is proposed. 		Final, Phase II
<u>During Construction</u> <ul style="list-style-type: none"> No adverse impacts from magnetic fields are expected; therefore, no mitigation is proposed. 		Final, Phase II
<u>During Operations</u> <ul style="list-style-type: none"> 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, <i>Mitigation Measures</i> (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) (DENV 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		
<u>Prior to Construction</u>		Final, Phase II
<ul style="list-style-type: none"> 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. 		
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Fully assess the safety and AC corrosion risks under steady state operating conditions on the powerline. 		Final, Phase II
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Install Optical Ground Wire (OPGW) shield wire on the transmission line poles. 		Final
<ul style="list-style-type: none"> Apply the results and recommendations of the <i>AC Interference Study</i> (DNV GL, 2016) to the design of pole locations, layout, and configuration. 		Phase II
<ul style="list-style-type: none"> Optimize conductor geometry, where a true delta configuration provides the greatest level of field cancellation. 		Phase II
<ul style="list-style-type: none"> During project design, field verify the distances between the pipelines and transmission line poles grounding rods. 		Phase II
<ul style="list-style-type: none"> Design AC mitigation (as required) to ensure that all safety and integrity risks have been fully mitigated along the collocated pipelines. 		Phase II
<ul style="list-style-type: none"> Design monitoring systems to monitor the AC corrosion risks along the pipelines. 		Phase II
<p><u>At Project Startup</u></p>		Final, Phase II
<ul style="list-style-type: none"> 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.) 		
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Install and commission the AC mitigation and monitoring systems prior to energization of the 230 kV powerline. 		Phase II
<ul style="list-style-type: none"> Install Optical Ground Wire (OPGW) shield wire on the transmission line poles. 		Phase II
<ul style="list-style-type: none"> After energization, perform a site survey to ensure that all AC interference risks have been fully mitigated under steady-state operation of the powerline. 		Phase II
<ul style="list-style-type: none"> 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
<p><u>During Operations</u></p>		Final
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Provide the Partner Cities with PSE monitoring data on maximum currents under peak winter operating conditions. 		Final
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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 <i>AC Interference Study</i> (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
<ul style="list-style-type: none"> 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		
<u>Prior to Construction</u>		
<p>None</p> <p><u>During Construction</u></p> <ul style="list-style-type: none"> 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
<u>During Operations</u>		
<ul style="list-style-type: none"> 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		
<u>Prior to Construction</u>		
<ul style="list-style-type: none"> 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 been incorporated into project design. 		Final
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Where liquefiable deposits are present, extend foundations below the loose to medium density liquefiable deposits into underlying dense, non-liquefiable soils. 		Final
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> For the one location where soil test results indicated a moderate to high potential for corrosion consider engaging a corrosion engineer. 		Final
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> The contractor should submit a detailed direct embedment pole installation plan describing both uncased and temporary casing methods. 		Final
<p><u>During Construction</u></p> <ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Where sensitive structures may be present within about 100 feet of the work area, vibration should be monitored. 		Final
<p><u>During Operations</u></p> <ul style="list-style-type: none"> Develop a monitoring and maintenance program that includes inspection and reporting on structural stability. 		Final
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> If changes are identified during inspection and monitoring of conditions, implement additional measures to reduce or minimize those impacts. 		Final
<ul style="list-style-type: none"> Monitor all improvements for changes in conditions such as cracking foundations, slumping slopes, or loss of vegetative cover. 		Phase I
<ul style="list-style-type: none"> Implement inspection and maintenance programs for all improvements to ensure consistent performance and stability. 		Phase I
<ul style="list-style-type: none"> Comply with relevant state and local critical areas codes. 		Phase I
<h3>Energy and Natural Resources (Phase I Only)</h3>		
<p><u>Prior to Construction</u></p> <p>None</p>		Phase I
<p><u>During Construction</u></p> <p>None</p>		Phase I
<p><u>During Operations</u></p> <p>None</p>		Phase I

Mitigation Measures (Operations)	Related Resources	Phase/ Source
Noise (Phase I Only)		
<p><u>Prior to Construction</u></p> <ul style="list-style-type: none"> 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
<p><u>During Construction</u></p> <ul style="list-style-type: none"> 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
<p><u>During Operations</u></p> <ul style="list-style-type: none"> 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)		
<u>During Operations</u>		Phase I
<p>Substation Fire Risk. In order to reduce the risk of substation fire, PSE would routinely do the following:</p> <ul style="list-style-type: none"> • 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 (SF₆) gas for closely spaced equipment. SF₆ is a nonflammable gas and an excellent insulator. 		
<ul style="list-style-type: none"> • Monitor oil insulation for evidence of <i>arcing</i> and gassing. Monitor substations for evidence of overloading, overheating, or malfunctions. 		Phase I
Utilities (Phase I only)		
<u>Prior to Construction</u>	Pipeline Safety	Phase I
<ul style="list-style-type: none"> • 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. 		
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> 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