

# Executive Summary

## ES.1 Introduction and Background

In September 2014, the City of Tacoma initiated an environmental review of the Tacoma Liquefied Natural Gas (LNG) Project (referred to herein as the Project) proposed by Puget Sound Energy (PSE). The Project would be one of the nation's first marine vessel bunkering facilities, with on-site LNG liquefaction and storage (bunkering) at the Port of Tacoma. To meet natural gas demand for the LNG facility, the Project would also include the construction of two new segments of pipeline connecting the LNG facility to PSE's existing natural gas distribution system. The construction, operation, and decommissioning of the proposed Project is referred to herein as the Proposed Action.

This environmental review process, performed under the authority of Revised Code of Washington chapter 43.21C (State Environmental Policy Act [SEPA]), was triggered when PSE formally applied for a Shoreline Substantial Development Permit with the City of Tacoma (SHR2015-40000246123). Public notice of that permit application was issued on May 12, 2015, with a comment period extending through June 11, 2015.

On September 12, 2014, the City of Tacoma issued a SEPA Determination of Significance, indicating the City's intention to require an Environmental Impact Statement (EIS) to assess the environmental impacts of the Project at the Port of Tacoma and the surrounding area.

On September 12, 2014, the City of Tacoma also began a scoping process to solicit input from the public on the issues that should be addressed in the environmental review. The City accepted comments through October 13, 2014. Eight letters were received and considered, in addition to the comments of attendees of a public scoping meeting on September 24, 2014. The City of Tacoma is issuing this Draft EIS (DEIS) for further public comments, which will be considered in preparation of the Final EIS.

An EIS is an informational and evaluative tool. It does not mandate approval or disapproval of a project, but informs the public and decision-makers of a project's potential substantial and minor adverse impacts, along with its beneficial effects to both the built and natural environment and suggests to decision-makers the means by which those impacts could be avoided or reduced through mitigation.

This DEIS is organized as follows.

**Chapter 1** describes the purpose and need of the Project in the context of the analyses conducted by the City of Tacoma to comply with SEPA.

**Chapter 2** describes the Project and construction procedures.

**Chapter 3** evaluates the Project's potential impacts on the surrounding region and on specific elements of the environment. It also offers mitigation measures to reduce or eliminate identified environmental impacts.

**Chapter 4** provides a list of sources used to develop the analyses presented in this DEIS.

## ES.2 Project Objectives, Purpose, and Need

The purpose of the Proposed Action is to receive natural gas from PSE's distribution system, chill natural gas to produce approximately 250,000 to 500,000 gallons LNG daily, and store up to 8 million gallons of LNG on site. Eighty-five thousand decatherms of peak-day gas supply would also be re-injected and diverted into PSE's distribution system when needed to supply consumers. Finally, LNG would be distributed for use as maritime transportation fuel by Totem Ocean Trailer Express (TOTE) at its Port of Tacoma facility, along with other potential future regional LNG marine vessel customers. LNG would also be loaded onto trucks or barges for use by other regional markets seeking a cleaner fuel source.

The Proposed Action would address a long-term need for new peak-day resources as identified through PSE's 2013 biennial integrated resource plan. The Project was evaluated against long-haul interstate pipeline capacity, regional underground natural gas storage service combined with interstate pipeline storage redelivery service, and a stand-alone LNG peaking facility in other locations. PSE determined that the most cost effective way of meeting its resource needs would be the combination of additional regional underground storage, the Tacoma LNG facility, and refurbishment of an existing, on-system, peak-day resource. The Tacoma LNG facility would fill approximately 50 percent of the anticipated deficit.

In addition to meeting long-term resource needs, the Proposed Action would enable TOTE to meet new fuel standards for maritime vessels in response to the North American Emission Control Area (ECA), which established more stringent emission standards within 200 miles of the United States and Canadian coasts. A significant portion of the LNG to be produced at the Tacoma LNG Facility will be consumed by TOTE. However, additional fuel switching by other companies from petroleum products to LNG in response to ECA will provide further demand for LNG in the region.

## **ES.3 Project Alternatives and Review**

This document evaluates two alternatives: the Preferred Alternative (the Project) and the No Action Alternative. Several potential alternatives were considered during the development of this DEIS, but were not analyzed in detail because they were not deemed reasonable or they did not meet the Project objectives.

This DEIS addresses direct and indirect Project impacts, as well as the cumulative impacts of other reasonably foreseeable projects in the Project vicinity. It also evaluates potential impacts of the Project that would result from its construction, operation and maintenance, and decommissioning at the end of its design life.

One result of the environmental review is the development of potential mitigation measures whose implementation may avoid or reduce impacts to the built and natural environment, as well as help identify significant unavoidable impacts that cannot be mitigated.

Mitigation measures recommended in this DEIS are actions PSE would undertake to reduce the impacts of the Project or they are measures that would be incorporated as conditions in permits issued by the City and other state and local jurisdictions.

## **ES.4 Significant Areas of Interest and Issues Considered in the Analysis**

This DEIS considered the following significant issues to be resolved through environmental and permit review:

- Changes to emergency service needs at the Port of Tacoma manufacturing/industrial center;
- Potential spill of LNG and impacts on human health and safety;
- Disruption of traffic during new pipeline construction, particularly on Taylor Way;
- Effects of the Project related to seismic and other geologic hazards;

- Management of on-site subsurface contamination during construction;
- Effects of the Project on regional air quality, including greenhouse gas emissions; and
- Visual and aesthetic impact of the facility, particularly the LNG storage tank.

## ES.5 Major Conclusions

Based on the analyses presented in this DEIS, the following major conclusions have been drawn:

- The Project would allow PSE to provide new peak-day resources to its retail natural gas customers, the demand for which is expected to grow to a deficit over the next two decades. The Project would also enable TOTE vessels to meet new emissions standards detailed in the ECA. Natural gas has been identified as a key resource to implement greenhouse gas emission reductions for commercial truck, bus, rail, and marine transportation. The Proposed Action would address this need as the transportation industry and other industrial markets seek to comply with updated emissions policies and reduce operational costs.
- The Proposed Action as mitigated would have nominal adverse effects on water resources, soils and geology, vegetation, climate and air quality, health and safety, socioeconomics, and cultural resources. Impacts to these resources would be minimized because the Project footprint would be contained in previously developed areas and paved road rights-of-way and would be mitigated as described herein.
- The Proposed Action would have an unavoidable adverse impact to visual resources due to the size of the LNG storage tank. However, proposed mitigation measures would reduce the visual impacts such that they are less than significant.

The preliminary LNG design, construction, and integrity testing are compliant to 49CFR Part 193, NFPA 59A, and USCG regulations. However, the design should be reviewed when complete to confirm all conditions for the installation have been met.

Preliminary siting studies were performed for Tacoma LNG using basic modeling tools, Degadis for vapor dispersion, and LNG FireIII for thermal radiation. More advanced modeling is required later in detailed engineering when the design is further defined using Computational Fluid Dynamic (CFD) software. The updated CFD models should be reviewed when they are complete to confirm that all vapor dispersion and thermal radiation conditions for the installation have been met and accepted by PHMSA.

The Project does introduce a major new risk factor into an area with one of the City's lowest emergency response times. The City and other stakeholders have prepared a draft Emergency Response/Intelligent Transportation Systems Study (ER/ITS Study) that seeks to address area-wide ER/ITS improvements needed to support projects such as PSE's. The DEIS proposes mitigation measures that would provide additional resources for the Tacoma Fire Department in the vicinity of the Project and improve response times along Taylor Way.

## ES.6 Mitigation and Minimization Measures

Table ES-1 summarizes all recommended mitigation measures to address the Project's potential impacts. This table will be revised and updated to reflect any additional mitigation measures needed to address concerns raised in public comments. Major mitigation measures discussed here are reasonably calculated to reduce, at times eliminate, and, in several instances, enhance the beneficial impacts of the Project to the

built and natural environment. The mitigation measures listed in Table ES-1 are both those inherent in the Project design and those developed separately from the Project design to reduce potential impacts.

Avoidance will continue to be utilized to prevent many types of impacts from occurring in the first instance, and best management practices (BMPs) will be applied to minimize impacts where appropriate. Application of all of these measures, especially during construction, would limit and, in most instances, eliminate adverse impacts that could result from the Project.

**Table ES-1 Mitigation Measures Addressing the Potential Impacts of the Tacoma LNG Project**

Resource	Important Topics Addressed	Summary of Mitigation and Minimization Measures	Significant and Unavoidable Adverse Impacts
<b>Section 3.1: Earth</b>			
<ul style="list-style-type: none"> <li>• Impacts associated with seismic effects and volcanic activity</li> <li>• Potential for Project to contribute to slope instability, topographic alterations, and erosion</li> <li>• Potential for subsurface contamination to migrate from nearby sites (see also Section 3.3: Water)</li> </ul>	<ul style="list-style-type: none"> <li>• Project facilities would be sited to avoid potential geologic hazard areas, to the maximum extent practicable.</li> <li>• Due to the area’s seismic activity and high liquefaction potential, ground improvements would be required throughout the Project, particularly beneath the LNG storage tank.</li> <li>• All elements of the Project would be designed to withstand an Operational Basis Earthquake and continue functioning in its aftermath.</li> <li>• The facility would be designed to prevent catastrophic failure in the case of a Safe Shutdown Earthquake, but would not be required to remain operational in its aftermath.</li> <li>• Engineering controls would be employed to stabilize the slopes along the Hylebos and Blair shorelines, which would be unstable during a seismic event.</li> <li>• During construction and operation, the Project would maintain strict emergency response protocol to prepare for tsunami or volcanic hazards/lahar.</li> <li>• Consistent sampling of soil and groundwater throughout construction, especially near known contamination sites, would determine measures for removal of contaminated material.</li> <li>• Properly designed and constructed shoring systems would be used to prevent caving of excavation faces from temporary construction excavations.</li> <li>• Appropriate methods to remove, contain, and discharge groundwater accumulated would be used in excavations to mitigate dewatering impacts. Extracted groundwater would be handled and discharged using BMPs to prevent erosion and degradation of surface water. Groundwater extracted from known areas of contamination would be analyzed to determine treatment and disposal options.</li> <li>• Excavated soils would be used on site, to the extent practical, to reduce the volume of material exported from the site and requirements for importing material.</li> <li>• Criteria would be developed for controlling the quality of fill materials imported to the site.</li> <li>• A work plan would be prepared for actions to be taken if soil contamination is found during construction.</li> <li>• During construction, contractors would employ temporary erosion and sedimentation control measures and BMPs.</li> </ul>	<ul style="list-style-type: none"> <li>• With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project would have no significant unavoidable adverse impacts.</li> </ul>	

**Table ES-1 Mitigation Measures Addressing the Potential Impacts of the Tacoma LNG Project**

Resource	Important Topics Addressed	Summary of Mitigation and Minimization Measures	Significant and Unavoidable Adverse Impacts
<b>Section 3.2: Air Quality</b>			
	<ul style="list-style-type: none"> <li>• Construction and operational impacts on air quality (i.e., particulates/fugitive dust and vehicle emissions)</li> <li>• Hazardous and toxic air pollutants</li> <li>• Greenhouse gas emissions</li> </ul>	<ul style="list-style-type: none"> <li>• Standard dust control measures would be applied throughout the course of construction.</li> <li>• To reduce air emissions, PSE would require contractors to implement measures to reduce emissions from vehicles and construction equipment during construction.</li> <li>• Construction equipment would be regularly maintained in accordance with manufacturer’s specification or standard practices.</li> <li>• Carpooling by construction workers would be encouraged.</li> <li>• Ultra-low sulfur diesel would be used for the emergency generator during Project operations.</li> <li>• PSE would implement a leak detection and repair program for fugitive volatile organic compound emissions.</li> </ul>	<ul style="list-style-type: none"> <li>• With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project would have no significant unavoidable adverse impacts.</li> </ul>
<b>Section 3.3: Water</b>			
	<ul style="list-style-type: none"> <li>• Stormwater runoff effects on water quality</li> <li>• Spread of existing contamination through groundwater during construction</li> <li>• Water quality impacts from spills during construction and operation</li> <li>• Water consumption for Project construction and operation</li> <li>• Sedimentation and erosional effects on water quality</li> </ul>	<ul style="list-style-type: none"> <li>• Wet or uncured concrete would not be allowed to enter waters of the state.</li> <li>• Excess or waste materials generated during construction would not be disposed of or allowed to enter waters of the state.</li> <li>• Land-based staging areas for activities such as storage of machinery, equipment, materials, and stockpiled soils in shoreline areas or waterward of shoreline areas would be prohibited. A silt fence would be installed around the perimeter of the upland locations where machinery, materials, and stockpiled soils are situated.</li> <li>• Any temporary soil stockpiles would be covered when not in use.</li> <li>• Work barges would not be allowed to ground on the shoreline during construction.</li> <li>• All equipment that would operate over water or below the mean high higher water mark would be cleaned of accumulated grease, oil, or mud. All leaks would be repaired prior to arriving on site. Equipment would be inspected daily for leaks, accumulations of grease, etc., and any identified problems would be fixed before operating over water or below the mean high higher water mark.</li> <li>• Vessels, construction equipment, fuel hoses, oil drums, oil or fuel transfer valves and fittings, and other equipment components would be checked regularly for drips or leaks and would be maintained and stored properly to prevent spills;</li> <li>• The contractor would have a spill kit with oil-absorbent materials on site to be used in the event of a spill or in the event that any petroleum product is observed</li> </ul>	<ul style="list-style-type: none"> <li>• With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project would have no significant unavoidable adverse impacts.</li> </ul>

**Table ES-1 Mitigation Measures Addressing the Potential Impacts of the Tacoma LNG Project**

Resource	Important Topics Addressed	Summary of Mitigation and Minimization Measures	Significant and Unavoidable Adverse Impacts
		<p>in the water.</p> <ul style="list-style-type: none"> <li>• Fueling of upland and land-based construction equipment would not occur within 100 feet of surface water.</li> <li>• The following mitigation measures would be implemented to minimize potential impacts to the Hylebos and Blair waterways:               <ul style="list-style-type: none"> <li>- Visible turbidity anywhere at or beyond the 150-foot point of compliance from activity would be considered an exceedance of the standard.</li> <li>- During demolition, including removal of existing piles in both the Hylebos and Blair waterways, containment booms would be used to surround the work areas. All accumulated debris would be collected daily and disposed of at an approved upland site.</li> <li>- A silt curtain may be installed around the pile removal area to prevent sediment from migrating beyond the existing project footprint.</li> <li>- Existing piles would either be fully extracted in a single slow and continuous motion using a vibratory hammer or cut 2 feet below the mud line should the piling break during extraction. If cut 2 feet below the mud line, the resulting holes would be filled with clean sand or other habitat mix approved by the Washington Department of Fish and Wildlife.</li> <li>- All creosote-treated wood would be contained during and after removal to preclude the entrance of sediments and any contaminated materials to the aquatic environment.</li> <li>- The work surface on the uplands or barge would include a containment basin for piles and any liquid or sediment removed during pulling of the piling.</li> <li>- Creosote-treated wood and piles from demolition of existing structures would be disposed of at an appropriate upland facility.</li> <li>- Sediments spilled on work surfaces would be contained and disposed of with the pile debris at an approved upland disposal site.</li> <li>- Hydraulic water jets would not be used to remove or place piles.</li> <li>- Spill impoundments for collection of spilled LNG, mixed-refrigerant, heavy hydrocarbons, WPG, amine, and equipment lubrication system and transformer oil design features would minimize impacts to surface water during operations.</li> <li>- Promptly remove motor oil and hydraulic fluids as a good housekeeping practice.</li> </ul> </li> </ul>	

**Table ES-1 Mitigation Measures Addressing the Potential Impacts of the Tacoma LNG Project**

Resource	Important Topics Addressed	Summary of Mitigation and Minimization Measures	Significant and Unavoidable Adverse Impacts
		<ul style="list-style-type: none"> <li>- Vehicle washing and maintenance would occur offsite.</li> <li>- Contaminated groundwater encountered during construction would be contained and disposed of at an appropriate facility.</li> <li>- Regular spill prevention measures would be implemented during construction, including regular equipment inspection and maintenance. Workers would refuel vehicles and machinery 100 feet upland of surface waterbodies.</li> <li>- Marine turbidity minimization measures would be implemented during construction. The water column would be continuously monitored for turbidity discharges during and immediately after construction.</li> <li>- BMPs would be implemented during construction to manage sedimentation and erosional effects on water quality.</li> <li>- During replacement of a creosote-treated bulkhead structure with a new steel sheet pile bulkhead, the existing structure would remain in place to provide erosion and sediment control.</li> </ul>	

**Table ES-1 Mitigation Measures Addressing the Potential Impacts of the Tacoma LNG Project**

Resource	Important Topics Addressed	Summary of Mitigation and Minimization Measures	Significant and Unavoidable Adverse Impacts
<b>Section 3.4: Plants and Animals</b>			
<ul style="list-style-type: none"> <li>• Impacts to aquatic habitat</li> <li>• Impacts to marine mammals</li> <li>• Pile driving</li> <li>• Disturbance of bird species during construction</li> <li>• Loss of habitat</li> <li>• Wildlife mortality</li> <li>• Coastal and stream bank disturbances</li> <li>• Loss of riparian vegetation</li> </ul>	<ul style="list-style-type: none"> <li>• To limit the amount of noise and vibratory impacts of pile driving, pilings would be installed initially with a vibratory hammer to 90 percent-plus of their design depth (within 10 feet of design tip elevation). Impact hammering would then be employed until load-bearing or pile-tip elevation specifications have been met.</li> <li>• A bubble curtain and one or more other noise attenuation methods (e.g., wood blocks, nylon blocks) would be used during impact installation or proofing of all steel pilings.</li> <li>• Intertidal pilings would be installed during dry or shallow water tide stages to the extent practicable.</li> <li>• Trenchless technology would be used to install pipeline along existing culverts, thereby avoiding impacts to stream habitat along pipelines.</li> <li>• 532 creosote-treated timber piles would be removed from the Blair-Hylebos waterways to be replaced with 142 steel piles, improving water quality as a result.</li> <li>• Intertidal pilings would be installed during dry or shallow water tide stages, to the extent practicable.</li> <li>• Pile removal and installation would be restricted to the in-water work window for Commencement Bay (July 16 to February 14)</li> <li>• Project-associated tugs and bunkering barges would maintain slow speeds (less than 5 miles per hour) to avoid striking marine mammals.</li> <li>• During pile-driving, a qualified observer would monitor marbled murrelet activity. Observers would have authority to halt pile driving if marbled murrelet are observed within distances in which behavior disturbance may occur.</li> </ul>	<ul style="list-style-type: none"> <li>• No significant, permanent, unavoidable impacts to animals are anticipated because the majority of the Project footprint would be contained in existing developed areas, largely port-industrial sites and paved road rights-of-way. Potential impacts to aquatic/marine habitat would be mitigated with proposed avoidance and minimization measures.</li> </ul>	
<b>Section 3.5: Health and Safety</b>			
<ul style="list-style-type: none"> <li>• Fire/explosion risk due to construction and/or operation of the Project</li> <li>• Risks to workers from existing on-site contamination</li> <li>• Spill potential during Project construction</li> <li>• Increased traffic accidents as a result of construction</li> </ul>	<ul style="list-style-type: none"> <li>• A Fire Risk Assessment (NFPA 59A) would be completed prior to construction that includes an assessment of the Tacoma Fire Department's capability to respond to emergencies at the Tacoma LNG facility.</li> <li>• The LNG facility design would incorporate mitigation measures to ensure that thermal radiation and vapor dispersion does not extend beyond the land portions of the PSE and TOTE property lines.</li> <li>• During LNG fueling in the Blair Waterway or barge loading activities on the Hybelos Waterway PSE should consider establishing public exclusion zones around the operating area.</li> </ul>	<ul style="list-style-type: none"> <li>• With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project would have no significant unavoidable adverse impacts.</li> </ul>	

**Table ES-1 Mitigation Measures Addressing the Potential Impacts of the Tacoma LNG Project**

Resource	Important Topics Addressed	Summary of Mitigation and Minimization Measures	Significant and Unavoidable Adverse Impacts
		<ul style="list-style-type: none"> <li>• A Contaminated Media Management Plan would be developed, outlining the proper protocol that would be implemented should contaminated media be encountered during installation of the distribution system.</li> <li>• Hazardous materials would be stored, handled, and used in accordance with best practices for storage and management of hazardous materials.</li> <li>• A construction worker health and safety plan would be implemented to address health and safety during construction.</li> <li>• A Joint Emergency Response Plan would be prepared by local first responders and facility owners/operators that would detail emergency response command system and procedures.</li> <li>• Fueling and maintenance of construction-related equipment would occur within dedicated areas equipped with spill kits.</li> <li>• PSE would strictly adhere to local jurisdictional traffic control requirements to minimize traffic impacts, which may include night-time work or reduced-duration daytime schedules to avoid rush-hour traffic.</li> <li>• The facility and equipment would be laid in such a way as to separate the public from hazardous material dispersion.</li> <li>• Fire and gas monitoring and protection systems would be installed throughout the facility.</li> <li>• The facility would be provided with an emergency shutdown system designed to leave the facility in a safe state in case of an incident.</li> </ul>	
<b>Section 3.6: Noise</b>			
	<ul style="list-style-type: none"> <li>• Noise impacts from the construction and operation of the Project</li> </ul>	<ul style="list-style-type: none"> <li>• In-water and air noise during pile driving would be minimized using a vibratory hammer, followed by limited impact hammering.</li> <li>• Sound-reducing design measures would be implemented during construction and operation</li> <li>• Haul trucks and other engine-powered equipment would be equipped with adequate mufflers.</li> <li>• PSE would establish a phone number or other effective means for the public to report significant undesirable noise conditions associated with construction and operation of the Tacoma LNG Facility.</li> <li>• Throughout Project construction and operation, PSE would document, investigate, evaluate, and attempt to resolve noise complaints related to the Project.</li> </ul>	<ul style="list-style-type: none"> <li>• With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project would have no significant unavoidable adverse impacts.</li> </ul>

**Table ES-1 Mitigation Measures Addressing the Potential Impacts of the Tacoma LNG Project**

Resource	Important Topics Addressed	Summary of Mitigation and Minimization Measures	Significant and Unavoidable Adverse Impacts
<b>Section 3.7: Land Use and Recreation</b>			
	<ul style="list-style-type: none"> <li>Construction-related impacts to recreational resources</li> <li>Project's consistency with existing zoning regulations</li> </ul>	<ul style="list-style-type: none"> <li>Temporary limitations on active recreational waterway uses within the Project Area would not be significant enough to require mitigation</li> <li>Facilities would be landscaped to be reasonably compatible with existing development. To this end, existing vegetation bordering the site of the proposed Golden Given Limit Station should be maintained, or new, densely planted row vegetation should be placed along edges of proposed fence.</li> </ul>	<ul style="list-style-type: none"> <li>With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project would have no significant unavoidable adverse impacts.</li> </ul>
<b>Section 3.8: Aesthetics/Light, and Glare</b>			
	<ul style="list-style-type: none"> <li>Permanently changed views from residential, recreational and roadway viewpoints</li> <li>Light and glare impacts</li> </ul>	<ul style="list-style-type: none"> <li>The LNG storage tank would be non-reflective concrete finish and dark gray color.</li> <li>To minimize visual impacts and add texture and structure around the LNG storage tank, PSE would include a combination of gravel, larger boulders, and intermittent stands of drought resistant trees and shrubs. PSE would also keep this area free of invasive and noxious plants.</li> <li>To minimize impacts from street views along 11th Street and Alexander Way, to the degree possible, existing trees should be retained and additional landscaping provided.</li> <li>PSE would maintain the appearance of all construction and operation sites and would ensure that vehicles are located as inconspicuously as possible.</li> <li>To minimize nighttime visibility of lights associated with the Tacoma LNG Facility site, PSE would use minimum lighting necessary for security at construction areas, and orient lighting in a way to minimize the effects of increased light pollution.</li> <li>Lighting would be located and oriented to minimize horizontal radiation or light spillover.</li> <li>Lighting would be provided with switches or automatic controls that would turn off lights when not required for operations.</li> </ul>	<ul style="list-style-type: none"> <li>Due to the size of the LNG storage tank, overall visual impact of the Project would be unavoidable, but not significant. Minimization measures in the form of aesthetic alterations would greatly reduce its visual impact.</li> <li>With implementation of design and other measures, the impacts of light and glare would not be significant or unavoidable.</li> </ul>
<b>Section 3.9: Cultural Resources</b>			
	<ul style="list-style-type: none"> <li>Impacts of construction on existing historic and cultural resources or potential resources.</li> </ul>	<ul style="list-style-type: none"> <li>No properties within the Proposed Action area of potential effect have been determined or are eligible for listing on the National Register for Historic Places.</li> <li>An Unanticipated Discovery Plan would outline procedures in the event of an unanticipated discovery of cultural resources and human skeletal remains. This would help minimize the potential for, and degree of, impacts.</li> </ul>	<ul style="list-style-type: none"> <li>With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project would have no significant unavoidable adverse impacts.</li> </ul>

**Table ES-1 Mitigation Measures Addressing the Potential Impacts of the Tacoma LNG Project**

Resource	Important Topics Addressed	Summary of Mitigation and Minimization Measures	Significant and Unavoidable Adverse Impacts
<b>Section 3.10: Transportation</b>			
<ul style="list-style-type: none"> <li>• Impacts related to additional traffic trips generated by Project</li> <li>• Impacts on roadways related to construction and delivery of oversized loads</li> <li>• Impacts related to road maintenance and public access</li> <li>• Damage to roadways</li> </ul>	<ul style="list-style-type: none"> <li>• A construction traffic management plan would be developed.</li> <li>• Applicable governmental permits or approvals would be obtained.</li> <li>• Public involvement and outreach efforts would be undertaken prior to construction to help minimize access disruptions</li> <li>• Carpooling among construction workers and personnel would be encouraged to reduce traffic volume to and from the Tacoma LNG Facility site.</li> <li>• When slow or oversized wide loads are hauled, workers would deploy appropriate vehicle and roadside signing and warning devices.</li> <li>• Workers would deploy appropriate detour signage in advance of any planned traffic disturbances or lane closures for construction.</li> <li>• Flaggers would be employed as necessary to direct traffic and minimize risk of accidents when large equipment is exiting or entering public roads.</li> <li>• Traffic control requests would be coordinated through the Washington State Department of Transportation Traffic Engineers, City of Fife, City of Tacoma, Pierce County, Tacoma Rail, and Port of Tacoma, as necessary.</li> <li>• Pipeline Segment A would be constructed without disturbing rail tracks by using a horizontal drill or bore construction technique.</li> <li>• All roads and other transportation infrastructure impacted by construction would be videotaped prior to construction to document pre-construction conditions.</li> <li>• Following installation of the pipeline, with the exception of Taylor Way, roads would be restored by repaving the travel lane impacted by the pipeline construction to the specifications of Tacoma Public Works, City of Fife Public Works, and Pierce County Public Works.</li> <li>• For the 2 miles of Taylor Way from SR 509 to the project site, City Right-of-Way Restoration Policy requirements would vary depending upon the design of the project’s new gas line design. Utility conflicts and separation requirements would determine the alignment of the gas main within the Taylor Way roadway. Standard Plan SU-15A requires the full trench to be repaired including a 2-foot-wide cut back zone on both sides of the trench. Transverse joints cannot fall within the wheel path; therefore, the pavement restoration would include one full lane, at a minimum, but likely two full lanes would require restoration. Additionally, if the pipeline changes alignment within the roadway, the required width of the restoration shall be continuous for the full length of the project. Ultimately, the location of the pipeline may require full restoration of Taylor Way. Standard Plan PD-01 requires that the pavement design section satisfy the</li> </ul>	<ul style="list-style-type: none"> <li>• With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project would have no significant unavoidable adverse impacts.</li> <li>• Construction and operation of the Project would not significantly impact maritime activity in either the Hylebos or Blair waterways.</li> </ul>	

**Table ES-1 Mitigation Measures Addressing the Potential Impacts of the Tacoma LNG Project**

Resource	Important Topics Addressed	Summary of Mitigation and Minimization Measures	Significant and Unavoidable Adverse Impacts
		<p>specifications for a Heavy Haul Industrial Corridor. The method of construction would also impact restoration requirements. If bore pits are being proposed, Section 2.3 of the Restoration Policy requires the consolidation of roadway excavations. This is typically accomplished with a grind and overlay. Significant emergency response time improvements are gained by a complete rebuild of Taylor Way.</p>	
<b>Section 3.11: Public Services</b>			
	<ul style="list-style-type: none"> <li>• Increase in demand for public services (police, emergency services, medical services, education)</li> <li>• Increased response time for emergency services</li> <li>• Impacts to the distribution of regional fire protection services.</li> <li>• Impacts related to wastewater and solid waste generation</li> </ul>	<ul style="list-style-type: none"> <li>• A new unit of the Tacoma Fire Department with fire response and EMS response capabilities and hazardous materials awareness could be stationed in proximity to the site of the Tacoma LNG Facility for the duration of construction.</li> <li>• PSE would provide emergency response agencies with regularly updated maps of the facilities and current access points, relevant contact information, and site procedures for fire protection and rescue operations.</li> <li>• The emergency preparedness, emergency access, and construction health and safety measures proposed by PSE and described in Section 3.5 (Health and Safety) would reduce potential impacts to fire protection and EMS throughout the construction period for the Tacoma LNG Facility and TOTE Marine Vessel LNG Fueling System.</li> <li>• Security would be provided throughout the construction period for each separate component of the Project.</li> <li>• Temporary security fencing would be erected around the construction sites to prevent trespassing and vandalism.</li> <li>• PSE or its selected contractor would notify the relevant fire department or district prior to initiating work within that department or district's service area.</li> <li>• PSE would obtain permits before hydrostatic testing of Pipeline Segment A and Segment B begins, in accordance with the provisions of local codes for the use of fire hydrants.</li> <li>• During post-construction hydrostatic testing, the contractor would communicate with fire protection services prior to drawing water from any fire hydrant.</li> <li>• A new unit of the Tacoma Fire Department with fire response, EMS, and hazardous materials operations capabilities would be stationed in proximity to the site of the Tacoma LNG Facility.</li> <li>• PSE would provide regular orientation to the site to relevant responders at the</li> </ul>	<ul style="list-style-type: none"> <li>• The Proposed Action could have significant impact on local fire protection services. However, this would be mitigated by reintroducing a staffed fire station in advance of the Project's opening in late 2017.</li> <li>• With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project would have no significant unavoidable adverse impacts.</li> </ul>

**Table ES-1 Mitigation Measures Addressing the Potential Impacts of the Tacoma LNG Project**

Resource	Important Topics Addressed	Summary of Mitigation and Minimization Measures	Significant and Unavoidable Adverse Impacts
		<p>Tacoma Fire Department, and operations personnel and the Fire Department would consult to develop and implement an ongoing training regime that integrates best practices for responding to fire and emergencies at the Tacoma LNG Facility.</p> <ul style="list-style-type: none"> <li>• The Tacoma LNG Facility would contain fire and hazardous gas detectors, fire-extinguishing systems, and an extensive firewater system, as well as new pier and access trestles that would provide firetruck access to the loading platform.</li> <li>• The intrusion detection system would monitor the perimeter for the facility and alarm when the perimeter is disturbed.</li> <li>• Security cameras would be installed along the perimeter and other select locations for maximum viewing coverage.</li> <li>• Closed-circuit television system components would be powered by an uninterruptible power system.</li> <li>• The perimeter of the Tacoma LNG Facility and TOTE Marine Vessel LNG Fueling System sites would be enclosed by a chain-link security fence to ensure public safety, welfare, and site security.</li> <li>• Phase I of the Intelligent Transportation System study would be implemented.</li> <li>• PSE would implement measures to plan for and minimize emergencies, such as LNG and facility-specific safety and emergency response training to raise the level of preparedness in case of an emergency.</li> <li>• Security measures would be implemented during construction and operation, including policies for security procedures, protective enclosures, security communications, security monitoring, and warning signs.</li> <li>• New firefighting, emergency medical services, and hazardous material capacity would be added in the vicinity of the Project.</li> </ul>	
<b>Section 3.12: Socioeconomics</b>			
	<ul style="list-style-type: none"> <li>• Increases in population growth</li> <li>• Increases in employment opportunities and wage/payroll impacts</li> <li>• Long-term positive revenue growth with some potential for short-term reduction in state equality payment for schools</li> </ul>	<ul style="list-style-type: none"> <li>• No mitigation measures are required or proposed because there are no negative socioeconomic impacts associated with the proposed Action.</li> </ul>	<ul style="list-style-type: none"> <li>• The Project would have no significant or unavoidable adverse impacts.</li> </ul>