EFSEC
WASHINGTON

Programmatic Environmental Impact Statement

High-Voltage Transmission Facilities in Washington

Chapter 4 - Cumulative Impacts

October 2025

This Page Intentionally Left Blank

Table of Contents

TABLES

FIGURES

APPENDICES

4.0 Chapter 4 – Cumulative Impacts

The Washington State Environmental Policy Act (SEPA) requires consideration of how a project or projects could contribute to cumulative impacts when combined with impacts caused by other developments in the region over time. Although the adverse environmental effects of an individual project may not be significant when considered separately, the combined effects of several projects may be significant when considered collectively. Under the Revised Code of Washington (RCW) 43.21C.405, the nonproject environmental review must include a cumulative impact analysis. This cumulative impact analysis was prepared pursuant to Washington Administrative Code (WAC) 197-11-060 in response to RCW 43.21C.405.

Cumulative impacts could result from the development associated with transmission facilities combined with the effects of many different types of development or other activities occurring on land within the state. The development associated with transmission facilities could include any of the facility options (e.g., overhead or underground) or stages of development (e.g., new construction, operation and maintenance, upgrade, and modification) described in Chapter 2, Overview of Transmission Facilities, Development Considerations, and Regulations, of this Programmatic Environmental Impact Statement (EIS). The geographic scope for this cumulative analysis is the Study Area, which includes all lands across Washington except for Tribal Lands,[1] and areas requiring oceanic or undersea transmission.[2] In-water trenching or burial within fresh waterbodies (e.g., lakes and rivers) are also not included in the technical analysis of this Programmatic EIS.

[1] For the purposes of this scoping document, Tribal lands are not included in the proposed Study Area. Tribal lands are sovereign territories, and decisions regarding their use typically fall under the jurisdiction of the pertinent Tribal Government. Tribal lands often have their own regulatory processes and environmental review requirements, which may differ from state or federal processes. Federal agencies are required to engage in government-to-government consultation with Tribes. This process ensures that Tribal concerns and perspectives are adequately addressed.

[2] Programmatic EIS documents address broad, overarching policies, plans, or programs rather than specific projects. Sea cables are considered to be too specific or detailed for the broad focus of this nonproject review. Additionally, sea cables, especially those that cross international water or state boundaries, may fall under different regulatory frameworks or jurisdictions, requiring separate, more specific environmental reviews. Lastly, the environmental impacts and technical considerations of sea cables can be significantly different from those of land-based transmission facilities. These differences might necessitate a distinct, focused EIS to adequately address the unique challenges and impacts.

The analysis of cumulative impacts was accomplished using the following general methodology:

1. Identify environmental resources that could be cumulatively affected by transmission facility development in combination with other actions.
2. Identify present projects and reasonably foreseeable actions (collectively referred to herein as RFAs) that could contribute to cumulative impacts on the environmental resources identified in Step 1.
3. Analyze each environmental resource identified in Step 1 in combination with the development of transmission facilities and the RFAs identified in Step 2.

At this broad scale of analysis, most cumulative impacts cannot be accurately quantified and are therefore discussed in more general qualitative terms. Although this Programmatic EIS does not establish a limit on the number of subsequent projects that may conduct a phased environmental review from this document, each project-specific application would be required to undergo the appropriate SEPA environmental review process.

It is assumed that all project-specific applications that adopt this Programmatic EIS would comply with General Measure Gen-7, Cumulative Impact Assessment. This General Measure requires each project-specific application to prepare an updated RFA list and complete a project-specific cumulative impact assessment. The SEPA Lead Agency would consider the incremental effects of the project in combination with the identified RFAs. The SEPA Lead Agency would identify additional Mitigation Measures for implementation should the project-specific application and their analysis identify probable adverse cumulative impacts.

4.1 Potentially Affected Resources

Although cumulative impacts could originate from actions beyond the Washington State boundary, the geographic scope for this cumulative impact analysis is the same as the geographic scope, or Study Area, for the Action Alternative identified in this Programmatic EIS as described in Chapter 1, Introduction, and summarized in Section 4.0 above.

Within the Study Area, numerous and diverse actions are ongoing or may occur in the future, potentially contributing to cumulative impacts on the same resources as transmission facility development. Therefore, this cumulative impact analysis expands

upon the analysis by evaluating the direct and indirect effects of present and reasonably foreseeable future actions when combined with the effects identified in Chapter 3, Affected Environment, Significant Impacts, and Mitigation.

4.2 Reasonably Foreseeable Actions

The cumulative effects of past projects and actions are not individually identified or considered in this chapter, as they are addressed as part of the baseline conditions in the affected environment for each resource discussed in Chapter 3, Affected Environment, Significant Impacts, and Mitigation. RFAs include the following:

- Actions that are formally being proposed or planned, where published planning documents or public notifications are readily available.
- Those about which a formal decision has been made, including those that have undergone a federal, state, and/or local approval or application process(es), such as environmental clearance, application review, and/or permitting process(es).
- Developments currently under construction.

This analysis does not include speculative future projects or actions, such as those that are not formally proposed or do not have adequate detail to be sufficiently analyzed in this chapter and thus are not reasonably foreseeable.

Because the Study Area encompasses a majority of the state, it is not possible to identify and evaluate all cumulative actions in the Study Area, nor would that be meaningful at a programmatic level. A desktop review of federal, state, and local websites was conducted to identify a broad list of RFAs that have the potential to impact the same resources analyzed in this Programmatic EIS. RFAs were considered for inclusion in this cumulative impact analysis if they met the following general criteria:

- They are or would be located in Washington.
- Their construction and operation have or would have a potentially adverse impact on the same or similar resources as those affected by transmission facility development.
- They are currently undergoing, or have undergone, a federal, state, or local agency permitting or approval process, or the agency has publicly noticed the proposed action.

Common themes were then developed to further refine and organize the list of RFAs to be incorporated into this cumulative impact analysis. Themes are categories of RFAs based on industry, trend, or type and are made up of individual actions that could result in the greatest cumulative impact in combination with the development of transmission facilities. Each theme has criteria for the RFAs that were identified and used in this cumulative impact analysis. Natural breaks[3] in data—specifically, the size or scale of an RFA—were used to determine the criteria of each theme. By focusing on RFAs with a higher degree of certainty and impact, this Programmatic EIS can provide a more accurate and reliable assessment of cumulative impacts. The themes and their associated criteria are discussed in more detail below.

- **Energy Transmission** – This theme includes RFAs related to transmission facility new construction, upgrade, and/or modification. Only transmission facilities with RFAs 15 miles long or greater are included in this cumulative impact analysis.
- **Energy Generation** – This theme includes new energy-generating facilities. Only energy-generating RFAs that produce 100 megawatts of electricity or more, or are 1,000 acres or greater, are included in this cumulative impact analysis.
- **Community Growth** – This theme includes RFAs related to residential, commercial, and/or industrial development. Only development RFAs 200 acres or greater are included in this cumulative impact analysis.
- **Land-Based Transportation** – This theme includes RFAs that propose new, expanded, and/or modified linear transportation improvements. Linear transportation improvement RFAs 10 miles or greater are included in this cumulative impact analysis.
- **Water-Based Transportation** – This theme includes a variety of RFAs where water resources overlap with transportation improvements, such as water crossings and marine transportation. The criteria for an RFA to be included are based on cost.[4] Water-based transportation RFAs that are over $10 million are included in this cumulative impact analysis.

[3] A method used in data classification to divide data into distinct classes based on natural groupings inherent in the data. This technique, also known as the Jenks Natural Breaks method, identifies gaps or breaks in the data distribution to create class intervals. These breaks occur at points where there are relatively large differences in data values, effectively grouping similar values together and maximizing the differences between classes.

[4] While it would be beneficial to conduct this analysis based on length, this information could not be obtained for every project.

- **Agriculture** – This theme represents the agricultural industry and includes RFAs that propose new or modified agricultural land use designations, activities, and/or the development of supporting facilities. Only agriculture-related RFAs that impact or modify 40 acres or greater are used in this analysis.
- **Forestry** – This theme includes RFAs related to timber harvesting, associated new construction or maintenance activities, and forest conservation actions. Only timber harvesting and forest conservation RFAs that are 300 acres or greater are included in this cumulative impact analysis.
- **Mining** – This theme includes RFAs that propose new or expanded mining operations. Only mining RFAs that involve 150 acres or greater for new or expanded mining operations are used in this cumulative impact analysis.
- **Water Infrastructure** – This theme includes RFAs related to water infrastructure projects, such as dam improvements and removing fish barriers. Water infrastructure RFAs that total over $10 million, and fish passage RFAs, are used in this cumulative impact analysis.

Providing a comprehensive review of probable cumulative impacts, both adverse and beneficial, helps stakeholders understand the full range of effects on the environment. While beneficial RFAs are not considered when determining whether there is a probable cumulative impact on a specific element of the environment, understanding the potential benefits of RFAs may help decision-makers better evaluate project-specific mitigation for probable cumulative adverse environmental impacts.

RFAs based on the criteria described previously in this section that could contribute to a cumulative impact are discussed in **Table 4.2-1** and presented in **Figure 4.2-1**. As previously stated, projects or actions that have been completed and constructed are considered part of the baseline conditions used to describe the affected environment throughout Chapter 3, Affected Environment, Significant Impacts, and Mitigation. Therefore, past projects and actions are not included in **Table 4.2-1** and **Figure 4.2-1**.

This Page Intentionally Left Blank

Table 4.2-1: Reasonably Foreseeable Actions

Theme	Theme Description	Project ID	Project Name	Project Description	Project Location (County)	Project Size	Current Project Stage (Planning/ Development or Under Construction)
Energy Transmission	Development and/or modification of transmission facilities and systems.	1	Double Circuit MidC-White River 500 kV Lines and Longhorn-MidC 500 kV Line	The project would start at BPA's proposed 500 kV Longhorn Substation. A new approximately 90-mile 500 kV single circuit transmission line in a greenfield ROW will connect the Longhorn 500 kV Substation to a new PSE-owned 500 kV substation (referred to as "MidC" until a naming convention is selected) near BPA's existing Vantage Substation. A new double circuit 500 kV transmission line would cross the Cascade mountain range, traveling approximately 130 miles in a new greenfield ROW, from PSE's new MidC substation to PSE's White River Substation, located in Pierce County. The project's greenfield development could occur, in part, in existing transmission line corridors and will be the subject of future routing analyses. A new 500 kV yard at White River would be built to terminate the new transmission lines. The 230 kV and 115 kV yards at White River would be rebuilt for the addition of new 500 / 230 kV transformation and to increase reliability (PSE 2024a).	Multi-County	220 miles	Planning/Development
		N/A[5]	Underground Electric Cable Replacement Program	Operators proactively monitor the performance of underground distribution (low-voltage) cables approaching the end of their useful lives, typically 20 years, and often replace them. In 2024, approximately 105 miles of electric cable were replaced, and in 2025, Puget Sound Energy anticipates replacing an additional 100 miles. Due to varying needs of replacement based on monitoring, locations are not identified in Figure 4.2-1 (PSE 2024b).	Multi-County	100 miles	Under Construction
		2	Grand Coulee-Columbia-Schultz 500 kV Line Upgrade	The proposed project would involve rebuilding the existing Grand Coulee-Olympia 287 kV circuit to 500 kV. To loop into Columbia, the project would also build a new Columbia 500 kV substation yard, with a 500/230 kV transformer bank. This section of the line would terminate at Schultz Substation (BPA 2024a; WPP 2024).	Multi-County; Kittitas, Chelan, Douglas, and Grant	84 miles	Planning/Development
		3	Cascade Renewable Transmission Project	The Cascade Renewable Transmission Project is a proposed underwater and underground transmission line capable of transferring approximately 1,100 MW of large-scale wind, solar, and other renewables to help meet renewable energy public policy requirements in Oregon and Washington. The project would start in The Dalles, Oregon, and run approximately 79 miles beneath the Columbia River to the Portland, Oregon area (EFSEC 2024).	Multi-County: Clark, Skamania, and Klickitat	79 miles	Planning/Development
		4	Cross-Cascades North Reinforcement project	(Formerly Schultz-Raver 500 kV Series Capacitors). This project involves the following: ▪ Both Schultz-Raver #3 and #4 500 kV lines would be re-conductored; ▪ The 500 kV series capacitor on the Schultz-Raver #4 500 kV line would be upgraded to its ultimate rating to match the 500 kV series capacitor on the Schultz-Raver #3 500 kV line. ▪ A new +350/-300 Mvar STATCOM would be installed at Olympia 230 kV; and A new 221 Mvar shunt capacitor bank would be installed at Paul 500 kV (BPA 2023, BPA 2024b, OLIS 2024).	Multi-County: Kittitas, King, Lewis, and Thurston	77 miles	Planning/Development
		5	Schultz-Olympia 500 kV Line Rebuild	The proposed project would rebuild the Schultz-Olympia portion of the Coulee-Olympia 287 kV to 500 kV. The project would also include an expansion of an Olympia 500 kV yard, a	Multi-County: Thurston,		

[5] This program does not have a Project ID, nor is it presented in Figure 4.2-1, due to the varying locations of replacement needs across the state.

Theme	Theme Description	Project ID	Project Name	Project Description	Project Location (County)	Project Size	Current Project Stage (Planning/ Development or Under Construction)
				new 500/230 kV transformer bank, and three new 500 kV shunt capacitors (BPA 2024a, WPP 2024).	Pierce, King, and Kittitas		
		6	Shelton-Fairmount No. 1 Transmission Line Rebuild Project	The proposed project would rebuild the Shelton-Fairmount No. 1 transmission line—replacing existing H-frame structures, conductors, and hardware, and adding two optical ground wires for the entire length of the line—and upgrade the fiber optic system from a 36-count to 72-count over the 60 miles of the Shelton-Fairmount No. 1 transmission line ROW. Energization is slated for late 2028 (BPA 2024c).	Multi-County: Clallam, Jefferson, Mason, and Thurston	60 miles	Planning/Development
		7	Chehalis-Cowlitz Tap Rebuild	The project would involve upgrading a portion of the existing Chehalis-Covington #1 230 kV line. The work would consist of replacing the conductor on 35 miles of line between BPA's Chehalis Substation (Chehalis, WA) and Cowlitz Tap (Frederickson, WA) (OLIS 2024).	Multi-County: Lewis, Thurston, and Pierce	35 miles	Planning/Development
		8	Wanapum to Mountain View	The Grant County Public Utility District plans to build a new 31-mile, 230 kV transmission line from the Wanapum Dam to the Mountain View Substation near Quincy. The new transmission line will be aligned along existing roadways and utility corridors (Grant PUD n.d.).	Grant County	31 miles	Planning/Development
		9	Swift to Troutdale	This proposed project would involve constructing a new 230 kV transmission line beginning at the Swift substation at the Merwin Dam facility. The 230 kV transmission line would continue south until reaching a proposed substation. From there, the transmission line would turn due west until reaching a second proposed substation. The line would then be converted to 115 kV and continue around the city of Camas, eventually reaching the Troutdale substation (Clark County 2025; PacifiCorp 2024).	Clark County	30 miles	Planning/Development
		10	Sedro Woolley – Bellingham #4 115 kV Rebuild and Reconductor	This project would increase capacity and reliability between Whatcom and Skagit counties by rebuilding the 24-mile-long Sedro Woolley - Bellingham #4 115 kV Line with a higher capacity conductor (PSE 2024a).	Multi-County: Skagit and Whatcom	24 miles	Planning/Development
		11	South of Tri-Cities Reinforcement	The Bonneville Power Administration is proposing to build a new substation and 115 kV transmission line in the Tri-Cities area of Washington. The 18.5-mile-long line would connect the proposed new Webber Canyon Substation near County Well Road to BPA's existing Badger Canyon Substation off Leslie Road (BPA 2025).	Benton County	19 miles	Planning/Development
Energy Generation	Development and/or modification of energy facilities and systems.	12	Goldendale Energy Project	The Goldendale Energy Project would involve building an off-channel energy storage system 8 miles south of Goldendale next to the Columbia River. The system would release water from an upper reservoir downhill to a lower reservoir to generate energy. The project is expected to generate up to 1,200 MW of electricity (Ecology 2022a).	Klickitat County	1,200 MW; 682 acres	Planning/Development
		13	Horse Heaven Wind Farm	The Horse Heaven Wind Farm project would involve constructing a renewable energy generation facility that would utilize both wind turbines and solar photovoltaic panels to achieve a generating capacity of up to 1,150 MW (Ecology 2023a).	Benton County	1,150 MW; 11,850 acres	Planning/Development
		14	Hanford Clean Energy Development Area	The Hanford Clean Energy Development Area would involve a solar project capable of delivering up to one gigawatt of clean energy within an 8,000-acre area of DOE-owned land at the Hanford site as part of the Cleanup to Clean Energy Initiative (DOE 2024).	Benton County	1,000 MW; 8,000 acres	Planning/Development

Theme	Theme Description	Project ID	Project Name	Project Description	Project Location (County)	Project Size	Current Project Stage (Planning/ Development or Under Construction)
		15	Xe-100 Small Modular Reactor Project	The project would involve constructing up to 12 Xe-100 advanced SMR units on the Department of Energy's Hanford Reservation, at a site adjacent to Columbia Generating Station in Benton County, Washington, for the purpose of addressing electrical demand in the Pacific Northwest. The project could generate up to 960 MW of electricity (NRC 2025; Energy Northwest n.d.).	Benton County	960 MW	Planning/Development
		16	Hop Hill Solar Energy Project	The Hop Hill Solar Energy Project would involve developing a utility-scale photovoltaic solar power plant on approximately 11,000 acres. The project could consist of up to 500 MW of solar power interconnected to the BPA system at the Midway Substation, with an alternative potential interconnect at the BPA Wautoma Substation. The project would also include up to 500 MW of battery storage (Ecology 2022b).	Benton County	500 MW; 11,000 acres	Planning/Development
		17	Badger Mountain Pumped Storage Project	The proposed closed-loop Badger Mountain Pumped Storage Project would consist of the following: ▪ A 15- to 75-foot-high, 8,000-foot-long earthen embankment forming a 78-acre upper reservoir with a storage capacity of 3,090 acre-feet ▪ A 40-foot-high, 650-foot-long earthen dam and a 15-foot-high, 900-foot-long, secondary earthen embankment forming an 80-acre lower reservoir with a storage capacity of 3,380 acre-feet ▪ Underground tunnels connecting the upper and lower reservoirs consisting of: ○ A 17-foot-diameter, 200-foot-high vertical shaft ○ A 17-foot-diameter, 5,600-foot-long concrete/steel-lined headrace tunnel ○ A 17-foot-diameter, 200-foot-long tailrace tunnel ▪ A powerhouse located in a vertical 220-foot-high, 100-foot-diameter shaft, next to the lower reservoir containing two 250 MW reversible pump-turbines/motor generators, for a total installed capacity of 500 MW ▪ Emergency backup groundwater wells No. 4 and 5, located in East Wenatchee, and a new groundwater well located approximately 5 miles southeast of East Wenatchee to provide the initial fill and make-up water for the reservoirs ▪ An 11-mile-long transmission line connecting to BPA's Sickler substation ▪ Appurtenant facilities (FERC 2022).	Douglas County	500 MW	Planning/Development
		18	Saddle Mountain Pumped Storage Project	The proposed Saddle Mountain Pumped Storage Project would be a closed-loop, pumped storage hydroelectric generating facility consisting of the following: ▪ An upper reservoir with enough storage for operating 8 hours of electrical generation ▪ A lower reservoir ▪ A single powerhouse ▪ Pumping/generating units with a maximum capacity of approximately 500 MW ▪ A penstock and/or tunnel connecting the upper and lower reservoirs ▪ A new transmission line connecting the powerhouse switchyard with the regional transmission grid ▪ A new underground pipeline for water for construction, initial fill, and maintenance fill of the project (PacifiCorp 2021)	Grant County	500 MW	Planning/Development

Theme	Theme Description	Project ID	Project Name	Project Description	Project Location (County)	Project Size	Current Project Stage (Planning/ Development or Under Construction)
		19	Wautoma Solar Energy Project	The proposed Wautoma Solar Energy Project would be a 470 MW solar photovoltaic facility, including a BESS (Ecology 2024a).	Benton County	470 MW; 2,974 acres	Planning/Development
		20	Dry Falls Solar Project	The proposed Dry Falls Solar Project would consist of a 400 MW solar photovoltaic array, BESS (anticipated 100 MW), and supporting facilities, located in unincorporated Grant County, Washington (Grant County n.d.[a]).	Grant County	400 MW; 2,515 acres	Planning/Development
		21	Cloudwalker Wind Project	The Cloudwalker Wind Project would consist of constructing and operating up to 100 wind turbines, with a height not to exceed 699 feet. The project would have a nameplate generating capacity of up to 380 megawatts (MW) of energy (Garfield County 2025).	Multi-County: Garfield and Asotin County	380 MW; 21,000 acres	Planning/Development
		22	Appaloosa Solar	The Appaloosa Solar Project would consist of 300 MW of alternating current solar photovoltaic arrays with a battery storage facility capable of storing up to 150 MW of energy. The solar panel array system will be interconnected with underground AC electrical lines to a project substation. A new above-ground transmission line approximately 2.5 miles long will interconnect to Puget Sound Energy's Phalen Gulch 230-kilovolt substation. The project will require approximately 27 miles of new and improved roads for project construction and maintenance (Garfield County 2024).	Garfield County	300 MW; 7,000 acres	Planning/Development
		23	Appledale Energy Center	The Appledale Energy Center would involve building and operating a 300 MW solar photovoltaic energy generation facility and associated 300 MW BESS. The project would be located on 3,000 acres in Grant County (Grant County n.d.[b]).	Grant County	300 MW; 3,000 acres	Planning/Development
		24	Badger Mountain Solar Energy Project	The proposed Badger Mountain Solar Energy Project would involve a 200 MW solar photovoltaic generation facility with an optional 200 MW BESS located in unincorporated Douglas County, Washington (Ecology 2022c).	Douglas County	200 MW; 2,390 acres	Planning/Development
		25	Carriger Solar Project	The proposed Carriger Solar Project would involve constructing a solar photovoltaic electric generating facility with a capacity of 160 MW of alternating current solar energy and 63 MW of battery energy storage (EFSEC 2023).	Klickitat County	160 MW; 1,323 acres	Planning/Development
		26	Quincy Valley Solar Photovoltaic and BESS Project	The proposed Quincy Valley Solar Photovoltaic and BESS Project would involve constructing a solar facility capable of generating up to 130 alternating current MW of photovoltaic solar energy. The project's proposed boundary encompasses 1,773 acres (Grant County n.d.[c]).	Grant County	130 MW; 1,773 acres	Planning/Development
		27	Golden Solar	The Golden Solar Energy Project would involve constructing a solar photovoltaic energy facility on approximately 1,238 acres of public and private lands in unincorporated Klickitat County (Huppert 2023).	Klickitat County	1,238 acres	Planning/Development

Theme	Theme Description	Project ID	Project Name	Project Description	Project Location (County)	Project Size	Current Project Stage (Planning/ Development or Under Construction)
		N/A – See Figure Legend	Programmatic Environmental Impact Statement on Utility-Scale Onshore Wind Energy Facilities in Washington State	The SEPA Programmatic EIS evaluates utility-scale onshore wind energy facilities in Washington. A Programmatic EIS is a type of nonproject environmental review used for planning; it is not an evaluation of a specific project. The Programmatic EIS considers potentially significant adverse environmental impacts at a broad level. It analyzes general types of facilities—but not individual projects—to identify probable significant adverse environmental impacts and possible ways to avoid, minimize, or mitigate those impacts (Ecology 2024b).	The geographic scope for the wind Programmatic EIS includes areas throughout Washington where utility-scale onshore wind facilities are likely to be developed based on available wind energy and proximity to transmission lines.	N/A	Published[6]
		N/A - See Figure Legend	Programmatic Environmental Impact Statement on Utility-Scale Solar Energy Facilities in Washington State	The SEPA Programmatic EIS evaluates utility-scale solar energy facilities in Washington. A Programmatic EIS is a type of nonproject environmental review used for planning; it is not an evaluation of a specific project. This Programmatic EIS considers potentially significant adverse environmental impacts of utility-scale solar facilities at a broad level. It analyzes general types of facilities—but not individual projects—to identify probable significant adverse environmental impacts and possible ways to avoid, minimize, or mitigate those impacts (Ecology 2024c).	The geographic scope for the solar Programmatic EIS includes areas throughout Washington where utility-scale solar facilities are likely to be developed based on available solar energy, the topographic slope, and proximity to	N/A	Published[7]

[6] Although this is a nonproject action, the evaluation identifies areas throughout Washington where utility-scale onshore wind facilities are likely to be developed.
[7] Although this is a nonproject action, the evaluation identifies areas throughout Washington where utility-scale solar energy facilities are likely to be developed.

Theme	Theme Description	Project ID	Project Name	Project Description	Project Location (County)	Project Size	Current Project Stage (Planning/ Development or Under Construction)
					transmission lines.		
		N/A - See Figure Legend	Programmatic Environmental Impact Statement on Green Hydrogen Energy Facilities in Washington State	The SEPA Programmatic EIS evaluates green electrolytic and renewable hydrogen facilities (referred to as "green hydrogen facilities") in Washington. It considers potential significant adverse environmental impacts of green hydrogen facilities at a broad level. It analyzes general types of facilities—but not individual projects—to identify probable significant adverse environmental impacts and possible ways to avoid, minimize, or mitigate those impacts (Ecology 2024d).	The geographic scope for the green hydrogen Programmatic EIS includes areas throughout Washington where green hydrogen facilities are likely to be developed based on proximity to transmission lines, proximity to freight highway routes, and industrial or industrial-use supporting zoning.	N/A	Published[8]
Community Growth	Land use development, including residential, commercial, and industrial uses.	28	Tehaleh New Town	This proposed project includes a total of approximately 4,756 acres of residential, employment, public facility, and park development in Pierce County. Phase I constructed approximately 534 acres of residential housing units, while phase II proposes to construct a further 1,479 acres of residential housing units (Pierce County n.d.[a], [b]).	Pierce County	4,756 acres	Planning/Development
		29	Wallula Gap Business Park	The proposed Wallula Gap Business Park project would involve constructing a 1,280-acre heavy industrial site in the western portion of Walla Walla County (Port of Walla Walla n.d.).	Walla Walla County	1,280 acres	Planning/Development
		30	Bullfrog Flats Development	The proposed Bullfrog Flats Development project would be a mixed-use phased development in the western portion of the City of Cle Elum between Bullfrog Road and SR 903. The project would consist of multiple parcels to be developed in multiple phases, including 1,100 acres to be subdivided into 1,334 residential dwellings, a business park, and land set aside for various public uses. Portions of the Development Agreement have	Kittitas County	919 acres	Planning/Development

[8] Although this is a nonproject action, the evaluation identifies areas throughout Washington where green hydrogen energy facilities are likely to be developed

Theme	Theme Description	Project ID	Project Name	Project Description	Project Location (County)	Project Size	Current Project Stage (Planning/ Development or Under Construction)
				been executed since it was originally approved on October 30, 2002, with the construction of utility infrastructure, including a power substation and water treatment plant, dedication of land to the Cle Elum/Roslyn School District and City of Cle Elum and recording of a subdivision in the proposed business park. The remaining parcels—918.90 acres—are the subject of the current project submittal package (City of Cle Elum n.d.).			
		31	Northwest Advanced Clean Energy Park	The project focuses on site readiness planning studies and infrastructure planning for 837 acres of the Northwest Advanced Clean Energy Park. Engineering studies will determine whether infrastructure can accommodate large-capacity developments (WADOC 2024).	Benton County	837 acres	Planning/Development
		32	Midvale Industrial Park	Surveying, an engineering study, and design plans will be conducted to further enhance the project, which the Port of Sunnyside leads. Recent project interests in this area include vital industries such as food processing and biogas production within the 511-acre site (WADOC 2023).	Yakima County	511 acres	Planning/Development
		33	Mission Ridge Expansion	The Mission Ridge Expansion Project proposes a Master Planned Resorts Overlay District on approximately 502 acres of land that is directly adjacent to the existing Mission Ridge Ski and Board Resort. A Development Agreement has been applied to guide the development process. The Master Planned Resort would provide a mixture of commercial, residential (single-family, condo, town homes), and recreational opportunities. It would consist of five phases and is expected to be built out over a 20-year timeframe (Chelan County 2020).	Chelan County	502 acres	Planning/Development
		34	Tri-Cities Airport - Aerospace Innovation and Manufacturing Center	The AIM Center project proposes a Master Plan development at the Tri-Cities Airport. The Port of Pasco released the AIM Center Master Plan in June 2023, which encompasses a total of approximately 460 acres. The plan outlines goals to build the AIM Center within the existing Tri-Cities Airport boundary, adjacent to the current runway system (Tri-Cities Airport 2023).	Franklin County	460 acres	Planning/Development
		35	Columbia Gorge Regional Airport	Plans for the aviation business park within the 430-acre site include aerospace manufacturing, aviation research and development, and aviation schools. The grant would fund civil engineering work regarding traffic, waterlines, sanitary sewer and stormwater, drainage, grading, and preparation (WADOC 2024).	Klickitat County	430 acres	Planning/Development
		36	East Omak	Site planning, a corridor study, and rail, water, wastewater, and electrical grid assessments will be conducted by the Confederated Tribes of the Colville Reservation. The tribally designated land has partial construction underway, and further development will focus on manufacturing, biomass, and other industry sectors on this 386-acre site (WADOC 2023).	Okanogan County	386 acres	Under Construction
		37	Port of Shelton: Johns Prairie Industrial Park	As part of community economic revitalization efforts, the 385-acre site is planned to support large-scale projects, including aviation-related industrial development. The site readiness project would address infrastructure resource needs in the industrial park through sewage capacity and conveyance improvements (WADOC 2024).	Mason County	385 acres	Planning/Development
		38	FRED310 Industrial Development	The proposed FRED310 Industrial Development project would surround the current Boeing fabrication facility on two parcels consisting of approximately 310 acres. The development would consist of seven buildings, totaling approximately 4 million square feet. The	Pierce County	310 acres	Planning/Development

Theme	Theme Description	Project ID	Project Name	Project Description	Project Location (County)	Project Size	Current Project Stage (Planning/ Development or Under Construction)
				proposed buildings would be used for industrial, warehouse, distribution, and office spaces (Pierce County n.d.[c]).			
		39	Copperstone Planned Development	The proposed Copperstone Planned Development would be a planned development subdivision in rural Okanogan County along the Methow River. The proposal is to develop the site into 56 detached single-family homes, open spaces, recreational facilities, and a storage facility (Okanogan County 2023).	Okanogan County	277 acres	Planning/Development
		40	Rocky Pond Master Planned Resort Comprehensive Plan Amendment	This is a proposed amendment to the comprehensive plan and development regulation to designate approximately 215 acres of land in unincorporated Douglas County as a Master Planned Resort. The site is currently a mix of vineyards, pear orchards, undeveloped open space, and an event center (Ecology 2024[e]).	Douglas County	215 acres	Planning/Development
Transportation	New, expanded, modified, or reconstructed land-based transportation facilities and infrastructure.	41	Cascadia High-Speed Rail Project	Cascadia High-Speed Rail is part of WSDOT's Cascadia High-Speed Rail and I-5 Program to address the future transportation needs of western Washington communities. WSDOT, in partnership with Oregon and British Columbia, is studying how high-speed rail might serve as a catalyst for a stronger, better-connected economic megaregion — stretching from Greater Vancouver, British Columbia, to Metro Seattle, Washington, and Portland, Oregon (WSDOT 2025). This corridor could stretch approximately 345 miles (Perkins & Will 2025).	Multi-County	345 miles	Planning/Development
		42	I-405/SR 167 Corridor Program	The I-405/SR 167 Corridor Program stems from the I-405 Master Plan and SR 167 Master Plan, foundational documents that guide project development, funding, and delivery. The I-405 Master Plan alone includes more than 150 projects designed to improve travel between Lynnwood and the Renton/Tukwila area. When combined with SR 167, this north-south corridor will form a 50+-mile transportation system providing travelers with a reliable trip in the express toll lanes, regular lanes, and high-capacity transit (bus rapid transit) (WSDOT n.d.[a]).	King County, Snohomish County	50 miles	Under Construction
		43	I-405/Renton to Bellevue Widening and Express Toll Lanes Project	The I-405/Renton to Bellevue Widening and Express Toll Lanes (ETLs) project includes multimodal transportation and safety improvements to offer more reliable travel choices and keep drivers, transit riders, and freight moving. The new ETLs will connect to the existing express toll lane system between Bellevue and Lynnwood, as well as the SR 167 High-Occupancy Toll lanes via the I-405/SR 167 Interchange Direct Connector, to create a 40-mile ETL system (WSDOT n.d.[b]).	King County	40 miles	Under Construction
		44	East Link Extension	The East Link Project is an extension of the Link light rail system, providing urban transportation improvements in the central Puget Sound metropolitan region. The East Link project will connect to the existing light rail system in downtown Seattle and extend the system east to Mercer Island, Bellevue, and Redmond. The East Link Extension will be 14 miles long and include 10 stations from Seattle's International District to Judkins Park (Sound Transit 2024).	King County	14 miles	Under Construction
		45A; 45B	Puget Sound Gateway Program	The Puget Sound Gateway Program combines the SR 509 Completion Project in King County and the SR 167 Completion Project in Pierce County to complete critical missing links in Washington's highway and freight network. The SR 509 Completion Project involves constructing 3 new miles of SR 509, which includes a four-lane expressway between I-5 and SR 509's current end near Sea-Tac Airport, new I-5 ramps, improved I-5 interchanges in south King County, and construction of new bridges.	King County, Pierce County	9 miles of freeway, 14 miles of new bike/ pedestrian paths,	Under Construction

Theme	Theme Description	Project ID	Project Name	Project Description	Project Location (County)	Project Size	Current Project Stage (Planning/ Development or Under Construction)
				The SR 167 Completion Project involves constructing 6 new miles of tolled highway between Puyallup and the Port of Tacoma and building sidewalks and shared-use paths for nonmotorized travelers (WSDOT n.d.[c]).		and 4.5 miles of new sidewalks	
		46	North Spokane Corridor	The NSC involves constructing a 10.5-mile multimodal corridor. When complete, the NSC will be a 60-mile-per-hour, north/south limited-access facility that connects to I-90 at the south (just west of the existing Thor/Freya interchange) and US 2 (at Farwell Road) and US 395 (at Wandermere) on the north end (WSDOT n.d.[d]).	Spokane County	11 miles	Under Construction
		47	Interstate Bridge Replacement Program	The proposed Interstate Bridge Replacement Program is a joint effort between Oregon and Washington to replace the aging Interstate Bridge across the Columbia River and related interchange improvements within the 5-mile corridor. Improvements would include: ▪ Replacing the Columbia River and North Portland Harbor bridges ▪ Providing three through lanes on the bridge and at least one auxiliary lane in each direction ▪ Creating a safer shared-use path ▪ Extending light rail from the Portland Expo Center to Vancouver's Evergreen Boulevard and adding three new transit stations ▪ Implementing bus-on-shoulder service ▪ Providing a new arterial bridge from Hayden Island to Marine Drive for local traffic ▪ Modifying seven interchanges within 5 miles ▪ Implementing variable rate tolling (IBR 2024)	Clark County	$6 billion	Planning/Development
		48	SR 520 Portage Bay Bridge and Roanoke Lid Project	The proposed Portage Bay Bridge and Roanoke Lid Project would replace the aging Portage Bay Bridge with a seismically resilient structure that includes improved bus/carpool travel and an extension of the SR 520 Trail. This project would also build a landscaped lid between Seattle's Roanoke Park and North Capitol Hill neighborhoods (WSDOT n.d.[e]).	King County	$1.375 billion	Planning/Development
		49	SR 9 – Marsh Road to 2nd Street Vicinity – Widening & Bridge Painting	This proposed project would widen SR 9 between Marsh Road and 2nd Street near the City of Snohomish, build southbound bridges directly to the west of the existing bridges—which would become northbound lanes—over the Snohomish River; and rebuild the on-ramp from 2nd Street to southbound SR 9. It would also include repainting the existing bridge (WSDOT n.d.[f]).	Snohomish County	$142 million	Planning/Development
		50	I-5 East Fork Lewis River Northbound Bridge Replacement	The proposed I-5 East Fork Lewis River NB Bridge Replacement project would remove and replace the NB I-5 East Fork Lewis River Bridge, located south of Woodland in Clark County. The bridge crosses over the East Fork of the Lewis River, Paradise Point State Park, and Northwest Toenjes Road, near milepost 18.21 (WSDOT n.d.[g]).	Clark County	$100 million	Planning/Development
		51	US 395 – NSC Spokane River Crossing	The US 395 – NSC Spokane River Crossing project will construct the North Spokane Corridor bridge that crosses the Spokane River and connects the skyway portion near Spokane Community College to the south and at Carslie Avenue to the north of the river (WSDOT n.d.[h]).	Spokane County	$91 million	Under Construction
		52	SR 155 Spur/Okanogan River Bridge Replacement	The proposed SR 155 Spur/Okanogan River Bridge Replacement project would involve demolishing the existing concrete arch bridge over the Okanogan River and replacing it with a new, 422-foot-long curved bridge slightly north. The new bridge deck would	Okanogan County	$29.3 million	Planning/Development

Theme	Theme Description	Project ID	Project Name	Project Description	Project Location (County)	Project Size	Current Project Stage (Planning/ Development or Under Construction)
				accommodate two 12-foot vehicle lanes with 4-foot shoulders and a 14-foot-wide shared-use path. Utilities would also be relocated onto the new bridge. New stormwater facilities would be added to treat roadway runoff before it enters the Okanogan River (WSDOT n.d.[i]).			
		53	Replacement of Granite Falls Bridge #102	The proposed Granite Falls Bridge #102 spans the Stillaguamish River and is part of the 52-mile Mountain Loop Scenic Byway between Granite Falls and Darrington. This proposed project would replace the existing bridge, which is 340 feet long and 20 feet wide, with a new bridge that would be 350 feet long and 47 feet wide with bike lanes and sidewalks. The wider and longer design would meet current bridge standards and allow motorists, bicycles, and pedestrians a safer route of travel (Snohomish County 2025).	Snohomish County	$28.7 million	Planning/Development
Agriculture	New or modified agricultural land use designations, activities, and/or the development of supporting facilities.	54	Flying A Land Rezone	The Flying A Land Rezone is proposing to rezone its 47 parcels, equaling 197.4 acres, currently zoned Agriculture 5, to Planned Unit Development. The rezone would allow the current use of the property to be consistent and compatible with the zoning code, as well as allow future expansion of existing uses (Ecology 2024f).	Kittitas County	198 acres	Planning/Development
		55	US Golden Farm Irrigation Pond	The US Golden Farm Irrigation Pond project proposes the creation of an “Irrigation Pond” at the site of a decommissioned manure lagoon to support agricultural needs during the growing season. The project also proposes the installation of approximately 850 feet of buried 8-inch-diameter HDPE or PVC pipe between the irrigation pond and the temporary floating pump placed in the Skagit River during in-water work window times. The proposed pond would be approximately 350 feet wide and 350 feet long, on three parcels totaling 81.63 acres in Skagit County (Ecology 2024g).	Skagit County	82 acres	Planning/Development
		56	Swift Creek Poultry Farm	This proposed project would construct a poultry farm on a 59.52-acre parcel adjacent to Swift Creek (the former Ostrom Mushroom Farm site). The development would include the construction of four breeder/broiler barns, three rearing barns, a spiker barn, an attached office building, and a manure bunker. The project would result in the construction of approximately 151,225 square feet of new buildings. The proposed buildings and site would be used for raising young chicks and roosters (Ecology 2024h).	Whatcom County	60 acres	Planning/Development
		57	Jungquist Farms Depth of Cover	Trans Mountain has identified two areas where the amount of soil cover over the 16-inch-diameter, welded steel, crude oil conveyance pipeline is low in agricultural fields in Skagit County. The proposed Jungquist Farms Depth of Cover project would increase the depth of soil over the pipeline in both areas (Ecology 2024i).	Skagit County	57 acres	Planning/Development
		58	Kang/Nazarene Church/Lange Rezone	The City of Grandview received applications from PLSA Engineering & Surveying, First Church of the Nazarene, and Gretchen Lange for a proposed rezone from Agriculture to R-2 Medium Density Residential District. The proposed rezone would change approximately 46.78 acres of land in the City of Grandview (Ecology 2024j).	Yakima County	47 acres	Planning/Development
		59	Gibson Rezone	The Gibson Rezone proposes to rezone one parcel equaling 42 acres, currently zoned Agriculture 20 to Forest and Range, due to the lack of capacity on the subject site to carry out agricultural uses. The subject site lacks water sources and suitable soils for agricultural uses. The rezone would allow the current use of the property to be consistent and compatible with the zoning code; a comprehensive plan amendment is not required to complete the rezone (Ecology 2024k).	Kittitas County	42 acres	Planning/Development

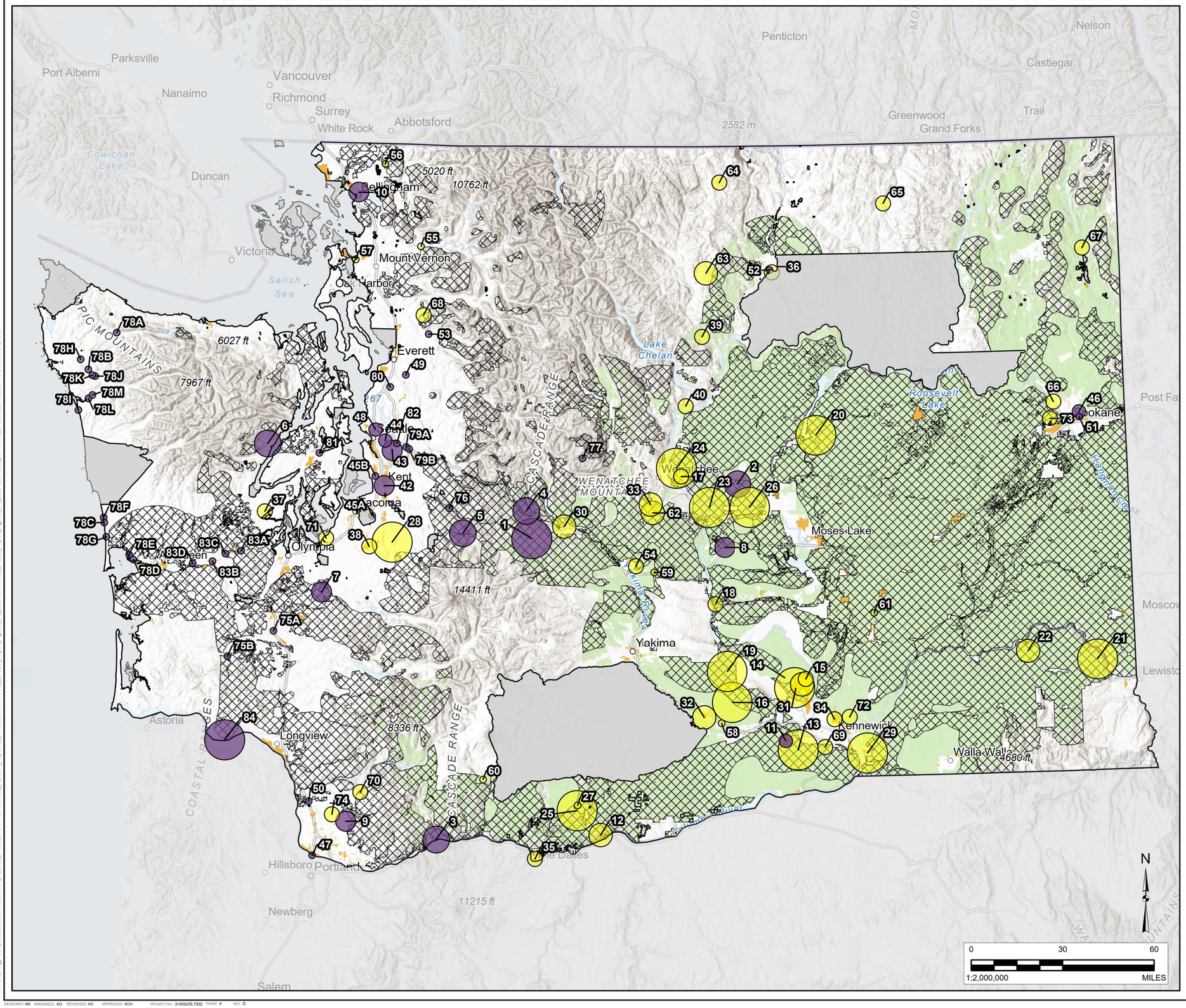
Theme	Theme Description	Project ID	Project Name	Project Description	Project Location (County)	Project Size	Current Project Stage (Planning/ Development or Under Construction)
		60	Walton Rezone	The Walton Rezone proposes to rezone a 40-acre tract from Extensive Agriculture to Rural Center, located within the community of Trout Lake (Ecology 2023b).	Klickitat County	40 acres	Planning/Development
		61	New Hatton Rezone	The New Hatton Rezone project proposes to change the zoning of approximately 99.41 acres from Prime Agriculture to Rural Residential (Ecology 2022d).	Adams County	99 acres	Planning/Development
Forestry	New or modified timber harvesting projects and associated construction or maintenance activities.	62	Fly By Night Timber Sale	The Fly By Night Timber Sale proposal involves a 629 gross acre timber sale consisting of 13 harvest units, removing approximately 3,265 MBF of commercial timber utilizing a variable retention harvest prescription (Ecology 2024l).	Chelan County, Kittitas County	629 acres	Under Construction
		63	Conk Timber Sale	The Forest Practice Application #3026927 and Conk Timber Sale #106237 propose the sale of approximately 5,500 MBF of timber on 592 acres. The proposal would also include 2,026 feet of road construction, 2,477 feet of road abandonment, and 53,050 feet of road maintenance (Ecology 2024m).	Okanogan County	592 acres	Planning/Development
		64	Portrait Timber Sale	The Portrait Timber Sale #106261 and Forest Practice Application #3026986 propose the sale of approximately 3,000 MBF of timber on 351 acres. The proposal would also include 7,322 feet of road construction, 1,839 feet of road abandonment, and 31,247 feet of road maintenance (Ecology 2024n).	Okanogan County	351 acres	Planning/Development
		65	Klondike Timber Sale	The Klondike Timber Sale #106084 and Forest Practice Application #3026866 propose the sale of approximately 2,800 MBF of timber on 348 acres. The proposal would also include 19,856 feet of road construction and 31,358 feet of road maintenance (Ecology 2024o).	Ferry County	348 acres	Planning/Development
		66	Forest Practice Application #3027124	The Forest Practice Application #3027124 proposes 341.6 acres of uneven-aged harvest, which would remove 1,045 MBF of timber in Riverside State Park (Ecology 2024p).	Spokane County	341 acres	Planning/Development
		67	Forest Practice Application #3027198	The Forest Practice Application #3027198 proposes to harvest 1,400 MBF of timber on 327 acres (Ecology 2024q).	Pend Oreille County	327 acres	Planning/Development
		68	Syndrome SWT Timber Sale	The Syndrome SWT Timber Sale #106448 and Forest Practice Application #2819440 propose a variable-density thinning of 3,453 MBF of timber from 310 acres. The proposal would also include 1,858 feet of road construction, 12,754 feet of road reconstruction, and 46,952 feet of pre-haul maintenance (Ecology 2024r).	Snohomish County	310 acres	Planning/Development
Mining	New or expanded mining operations.	69	JUB Engineering Quarry	The JUB Engineering Quarry Conditional Use Permit Application proposes to expand an existing mining operation in the Growth Management Act Agricultural District to include the excavation and crushing of approximately 18 million cubic yards of basalt. The property is approximately 360 acres and is located in the Kennewick area of unincorporated Benton County (Benton County 2024).	Benton County	360 acres	Planning/Development
		70	Chelatchie Bluff Surface Mine Overlay Annual Review	The Chelatchie Bluff Surface Mine Overlay Annual Review project proposes to amend the comprehensive and zoning maps to add a surface mining overlay on four parcels totaling 330 acres with a current zoning designation of FR-80 and a comprehensive plan designation of Forest Tier - 1. The addition of the SMO designation to these parcels would be followed by an application for a mining permit with the county, upon approval of the proposal (Ecology 2023c).	Clark County	330 acres	Planning/Development
		71	Pioneer Aggregates South Parcel Mine Expansion	The proposed Pioneer Aggregates South Parcel Project would be developed on an approximately 313-acre site located on and to the southeast of the existing Pioneer Aggregates Mine in the City of DuPont, Pierce County. The site includes areas previously	Pierce County	313 acres	Planning/Development

Theme	Theme Description	Project ID	Project Name	Project Description	Project Location (County)	Project Size	Current Project Stage (Planning/ Development or Under Construction)
				undisturbed by mining (termed the "Expansion Area") and mining deeper within a portion of the existing mine, referred to as the "Re-Mine Area." The Expansion Area is approximately 188 acres and consists of three subareas. The Re-Mine Area consists of 125 acres in the southeastern portion of the existing mine where current mining activities are permitted above current groundwater levels (Ecology 2024s).			
		72	Pasco Gravel Pit Mine	The Pasco Gravel Pit Mine project proposes to develop a mining operation that would extract available sand, gravel, and rock for commercial use. Initial mining, or phase 1, would take place based on the sample results and include the first 25 acres. Future phases would progress in 25-acre increments over the lifetime of the mine (Ecology 2024t).	Franklin County	200 acres	Planning/Development
		73	Pronghorn LLC, Zone Change	This project proposes a zone change of approximately 168 acres of Rural Traditional-zoned land to Mineral Land designation. The future use of this project would be determined by market conditions, but is anticipated to become a basalt and granite open-pit mine for the purpose of extracting aggregate and producing basalt-aggregate asphalt and granite-aggregate concrete (Ecology 2024u).	Spokane County	168 acres	Planning/Development
		74	Lewisville Mine Expansion	The Lewisville Mine Expansion project proposes to expand the existing mining operation to a new area (Phase 3) (Ecology 2024v).	Clark County	150 acres	Planning/Development
Water Resources	Water infrastructure projects	75A; 75B	Chehalis River Basin Flood Damage Reduction Project and Airport Levee Improvements	The Chehalis River Basin Flood Control Zone District is proposing to construct a flood-retention dam and associated temporary reservoir on the Chehalis River near Pe Ell and make changes to the Chehalis-Centralia Airport levee. The district's objective for the project is to reduce damage from major floods from Pe Ell to Centralia triggered by rainfall in the Willapa Hills. The project would raise and widen the Chehalis-Centralia Airport levee and nearby roads to improve the levee protection level during catastrophic floods. The project is not intended to address flooding in all parts of the Chehalis River basin and would not stop regular annual flooding (Chehalis Basin Strategy 2024).	Lewis County	$628 million	Planning/Development
		76	Howard A. Hanson Dam Additional Water Storage Project	This project would involve the construction of a downstream fish passage facility that would allow juvenile salmon and steelhead to safely pass downstream through the Howard A. Hanson Dam. The facility would consist of vertically stacked ports on the dam's upstream side, allowing fish to enter at varying reservoir water levels. Smolt then travel through water-filled conduits, passing at safe velocities below the dam (USACE 2024, n.d.).	King County	$500 million	Planning/Development
		77	Eightmile Dam Rebuild and Restoration	The Eightmile Dam Rebuild and Restoration project is being proposed in response to a state of emergency that was declared in the watershed, after flood damage and erosion at the dam caused by impacts of the Jack Creek Fire in 2017. Emergency repairs made in the summer of 2018 stabilized the dam, but these repairs do not meet current dam safety standards (Ecology n.d.).	Chelan County	$350 million	Planning/Development
		78A through 78M	US 101 - SR 109 Grays Harbor, Jefferson, and Clallam Counties - Remove Fish Barriers	The proposed project would improve fish passages at 29 identified streams and culverts that cross under US 101 and SR 109 in Grays Harbor, Jefferson, and Clallam Counties. Once complete, this project will restore nearly 37 miles of potential habitat across the Olympic Peninsula (WSDOT n.d.[j]).	Grays Harbor County, Jefferson County, and Clallam County	$481 million	Under Construction

Theme	Theme Description	Project ID	Project Name	Project Description	Project Location (County)	Project Size	Current Project Stage (Planning/ Development or Under Construction)
		79A; 79B	I-90 – Lewis, W. Village Park, Schneider Creeks – fish passage projects	The proposed project would involve building multiple structures that may include new bridges on I-90 and local roads near Issaquah to restore natural stream conditions in Lewis, West Village Park, and Schneider Creeks. Improvements along Lewis Creek would result in a potential habitat gain of 4,350 meters, as well as potentially 820 meters of habitat gain along West Village Park Creek, and potentially 1,077 meters along Schneider Creek would result in a potential habitat gain of 1,077 meters (WSDOT n.d.[k]).	King County	$289 million	Planning/Development
		80	SR 527 - Penny Creek - Fish Passage	The proposed project would involve building a 26-foot fish-passable structure under SR 527 just south of 164th Street Southeast in Mill Creek. The current 9-foot culvert causes water to flow too fast for fish to continue upstream. The new bridge span would open more than 8 miles of habitat (WSDOT n.d.[l]).	Snohomish County	$8 million	Planning/Development
		81	SR 3, SR 16, and SR 166, Gorst Vicinity - Remove Fish Barriers	This proposed project would remove barriers to fish migration under SR3, SR 16, and SR 166 in Kitsap County. New bridges or larger culverts would replace five outdated culverts. It would also include the construction of a roundabout at the SR 3, SR 16, and West Sam Christopherson Avenue intersection (WSDOT n.d.[m]).	Kitsap County	$192.6 million	Planning/Development
		82	I-90 - Sunset Creek - Fish Passage	This proposed project would involve building bridges over Sunset Creek along both directions of I-90, Southeast Eastgate Way, and Southeast 36th Street in Bellevue. These bridges would replace culverts that block fish passage and allow natural stream conditions to return in Sunset Creek (WSDOT n.d.[n]).	King County	$109.5 million	Under Construction
		83A through 83D	US 12 - SR 8 - Grays Harbor County Fish Passage Barriers - Remove Fish Barriers	This proposed project would involve replacing five outdated culverts under US 12 and SR 8 in Grays Harbor County between Montesano and the Thurston County line for improved fish migration (WSDOT n.d.[o]).	Grays Harbor County	$109 million	Under Construction
		84	Lower Columbia River Channel Maintenance Plan, Dredged Material Management Plan	The U.S. Army Corps of Engineers, in partnership with the Ports of Portland, Vancouver, Woodland, Kalama, and Longview, is developing a joint EIS and a long-term maintenance plan for the Lower Columbia River. This portion of the river is a 102-mile-long section from Vancouver, Washington, to Astoria, Oregon, and is a critical connection for international commerce. The Lower Columbia River Channel Maintenance Plan, Dredged Material Management Plan is a coordinated, long-term plan for managing dredged material generated by the continued operation and maintenance of the Lower Columbia River Federal Navigation Channel for a minimum of 20 years to continue to provide a 43-foot-deep, 600-foot-wide channel (Columbia River Ports n.d.).	Multi-Jurisdictional, Lower Columbia River	102 miles	Planning/Development

AIM = Aerospace Innovation Manufacturing; **BESS** = battery energy storage system; **BPA** = Bonneville Power Administration; **dba** = doing business as; **DOE** = Department of Energy; **DNR** = Washington State Department of Natural Resources; **EIS** = environmental impact statement; **ETL** = Express Toll Lane; **FR** = Forest; **HDPE** = high-density polyethylene; **I** = Interstate; **kV** = kilovolts; **MBF** = thousand board feet; **MW** = megawatts; **N/A** = not applicable; **NB** = Northbound; **NSC** = North Spokane Corridor; **PVC** = polyvinyl chloride; **ROW** = right of way; **SEPA** = State Environmental Policy Act; **SMO** = Surface Mining Overlay; **SPU** = Seattle Public Utilities; **SR** = State Route; **SMR**= small modular reactor; **US** = US Highway; **WSDOT** = Washington State Department of Transportation

This Page Intentionally Left Blank



LEGEND

- Study Area
- Exclusion Areas

Site Based RFAs - US Acres

- 40 - 100 acres
- 100 - 500 acres
- 500 - 1,000 acres
- Greater than 1,000 acres

Linear Based RFAs - Miles

- Less than 10 miles
- 10 - 20 miles
- 20 - 50 miles
- 50 - 100 miles
- Greater than 100 miles

- Green Hydrogen Energy Facilities Programmatic EIS Study Area
- Solar Energy Facilities Programmatic EIS Study Area
- Wind Energy Facilities Programmatic EIS Study Area

REFERENCES AND NOTES

1. THE RFAS WERE SELECTED BASED ON THE STUDY AREA FOR THIS PROGRAMMATIC EIS.
2. THE SYMBOL OF EACH PROJECT IS POSITIONED AT THE APPROXIMATE CENTER OF THE PROJECT LOCATION.
3. LINEAR PROJECTS INCLUDE: DAM CONSTRUCTION AND IMPROVEMENTS, FISH PASSAGEWAY IMPROVEMENTS AND BARRIER REMOVAL, TRANSPORTATION, MULTIMODAL TRANSPORTATION PROJECTS, BRIDGE CONSTRUCTION AND IMPROVEMENTS, AND TRANSMISSION LINE PROJECTS
4. SITE BASED PROJECTS INCLUDE: AGRICULTURE, COMMUNITY GROWTH AND LAND DEVELOPMENT, ENERGY GENERATION, FORESTRY, AND MINING.
5. GREEN HYDROGEN, SOLAR, AND WIND STUDY AREAS ARE NOT SPECIFIC PROJECTS. THESE STUDY AREAS ARE RELATED TO PROGRAMMATIC EISS AND REPRESENT AREAS WHERE THESE PROJECTS ARE MORE LIKELY TO BE DEVELOPED.
6. REFERENCE LAYER CREDITS: SOURCES: ESRI, TOMTOM, GARMIN, FAO, NOAA, USGS, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, ESRI, USGS
7. REFER TO TABLE 4.2-1, RESONABLY FORESEEABLE ACTIONS, AND CHAPTER 6, REFERENCES, FOR PROJECT DETAILS AND REFERENCES.

Washington State Energy Facility Site Evaluation Council

PROJECT

PROGRAMMATIC EIS
HIGH-VOLTAGE TRANSMISSION

TITLE

REASONABLY FORESEEABLE ACTIONS (RFAS)

YYYY-MM-DD 2025-09-25 CONSULTANT wsp FIGURE 4.2-1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

1 in

0

PATH: G:\Energy\Facility\SiteEvaluationCouncil\WA_PEIS\99_PROJECTS\314054357302_PEIS\04_Report\02_PRODUCTION\FINAL_EFSEC_Report_Figures_04_2025\Rev0\Final_EFSEC_Report_Figures_04_2025_2nd Half.aprx PRINTED: 9/25/2025 at 2:06 PM BY: USKO127099

DESIGNED MK PREPARED KO REVIEWED KO APPROVED SCH PROJECT NO. 314054357302 PHASE 4 REV 0

This Page Intentionally Left Blank

4.3 Analysis of Cumulative Impacts

Cumulative impacts for this Programmatic EIS are not quantifiable given the broad size and scale of the Study Area and are, therefore, discussed in general qualitative terms. This cumulative impact analysis assumes that all laws, regulations, siting and design considerations, best management practices (BMPs), General Measures, and Avoidance Criteria, identified throughout this Programmatic EIS would be met. When impact determinations are identified as "Medium" or "High," it is assumed that the appropriate Mitigation Measures from this Programmatic EIS would be adopted.

4.3.1 Criteria for Assessing a Probable Significant Adverse Cumulative Impact

This Programmatic EIS has established broad, qualitative thresholds for evaluating and determining potentially significant adverse cumulative impacts related to the development of transmission facilities, in combination with the effects of other RFAs. As previously discussed, the adverse environmental impacts from one project may not be significant, but when combined with the effects of other nearby or concurrent projects, the collective impacts may rise to a significant level.

For instance, if twenty projects involving minor earthwork activities are conducted simultaneously and located near each other, the total loss of vegetation could lead to significant adverse cumulative impact on earth resources due to substantial soil erosion. This soil erosion could also result in severe sediment transport, causing high concentrations of suspended solids and sedimentation in surface waterbodies, which could lead to a significant adverse cumulative impact on water quality.

The descriptions for potentially significant cumulative impacts when considering transmission facility development in combination with other RFAs are presented in **Table 4.3-1**.

Table 4.3-1 Criteria for Assessing Probable Significant Adverse Cumulative Impacts

Chapter Section	Element of the Environment	Probable Significant Adverse Cumulative Impact Description
Section 3.2	Earth Resources	A project, in combination with RFAs, would result in potentially significant adverse cumulative impacts on earth resources if they collectively result in noticeable or extensive soil disturbance, including substantial erosion, compaction, and potential loss of soil fertility. Probable significant adverse cumulative impacts could also result from changes to geological formations, which could affect stability, thereby increasing the risk of landslides or other geotechnical issues. Additionally, the projects would be highly vulnerable to existing geohazards, requiring extensive design and construction measures to address these risks. These adverse environmental impacts may affect a larger area, not just localized to the construction site, and may be either short or long-term in duration.
Section 3.3	Air Quality	A project, in combination with RFAs, would result in potentially significant adverse cumulative impacts on air quality if considerable amounts of emissions are released and there is a risk of exceeding relevant air quality standards and regulations. These adverse environmental impacts may affect a larger area, not just localized to the construction site, and may be either short or long-term in duration.
Section 3.4	Water Resources	A project, in combination with RFAs, would result in potentially significant adverse cumulative impacts on water resources if they collectively cause extensive degradation of water quality, water quantity limitations, flow alterations, wetland destruction, or loss of hydrological features. Probable significant adverse cumulative impacts on water resources could include adverse changes to watershed or river basins, wetlands and floodplains, or groundwater aquifers. These adverse environmental impacts may affect a larger area, not just localized to the construction site, and may be either short or long-term in duration.
Section 3.5	Vegetation	A project, in combination with RFAs, would result in potentially significant adverse cumulative impacts on vegetation if they collectively result in severe changes to the resiliency and adaptability of the species or populations, thereby impacting the viability of the species or populations. Populations may be at risk of extirpation. Probable significant adverse cumulative impacts could also result from substantial impacts on the functionality and ecosystem services provided by the ecosystem, rendering the ecosystem non-functional. These adverse environmental impacts may affect a larger area, not just localized to the construction site, and may be either short or long-term in duration.

Chapter Section	Element of the Environment	Probable Significant Adverse Cumulative Impact Description
Section 3.6	Habitat, Wildlife, and Fish	A project, in combination with RFAs, would result in potentially significant adverse cumulative impacts on habitat, wildlife, and fish if they collectively result in an incremental change that is expected to exceed the resiliency and adaptability of the species or populations, thereby impacting the viability of the species or populations. These adverse environmental impacts may affect a larger area, not just localized to the construction site, and may be either short or long-term in duration.
Section 3.7	Energy and Natural Resources	A project, in combination with RFAs, would result in potentially significant adverse cumulative impacts if they collectively consume energy and natural resources such that they affect the availability of resources or have substantial impacts on the environment. These adverse environmental impacts may affect a larger area, not just localized to the construction site, and may be either short or long-term in duration.
Section 3.8	Public Health and Safety	A project, in combination with RFAs, would result in potentially significant adverse cumulative impacts if they may collectively cause frequent occupational safety hazards, including severe or fatal accidents, elevated EMF levels that exceed recommended safety thresholds, or substantial exposure to hazardous materials through major spill events. Probable significant adverse cumulative impacts could substantially increase the risk of wildfires, potentially leading to excessive damage and decreased air quality, with widespread impacts on the region. These adverse environmental impacts may affect a larger area, not just localized to the construction site, and may be either short or long-term in duration.
Section 3.9	Land and Shoreline Use	A project, in combination with RFAs, would result in potentially significant adverse cumulative impacts on land and shoreline use if they collectively result in severe changes to existing land and shoreline uses or inconsistencies with relevant goals or policies. Probable significant adverse cumulative environmental impacts on military utilized airspace or civilian airfield operations could affect the ability to conduct flight training and/or continued operations. Probable significant adverse cumulative environmental impacts on agricultural production or loss of GMA Agricultural lands could affect the ability of a farm to remain profitable and continue operations. These adverse environmental impacts may affect a larger area, not just localized to the construction site, and may be either short or long-term in duration.
Section 3.10	Transportation	A project, in combination with RFAs, would result in potentially significant adverse cumulative impacts on transportation if changes to transportation infrastructure or operations have measurable consequences on supply chains or the management

Chapter Section	Element of the Environment	Probable Significant Adverse Cumulative Impact Description
		and distribution of people or materials. Probable significant adverse cumulative impacts would also result when prolonged road closures or detours cause major inconvenience to commuters. Probable significant adverse cumulative impacts would occur when there is substantial interference with electronic devices and communication systems, or when there is an increased risk of accidents and hazards. These impacts may affect a larger area, not just localized to the construction site, and may be either short or long-term in duration.
Section 3.11	Public Services and Utilities	A project, in combination with RFAs, would result in potentially significant adverse cumulative impacts on public services and utilities if they collectively cause severe increases in demand for public services or utilities, substantial emergency response time delays, power outages at public service facilities, or substantial conflicts with existing utility infrastructure. These impacts may affect a larger area, not just localized to the construction site, and may be either short or long-term in duration.
Section 3.12	Visual Quality	A project, in combination with RFAs, would result in potentially significant adverse cumulative impacts on visual quality if they collectively cause uncharacteristic and extensive changes to existing aesthetics and/or scenic characters. These impacts may affect a larger area, not just localized to the construction site, and may be either short or long-term in duration.
Section 3.13	Noise and Vibration	A project, in combination with RFAs, would result in potentially significant adverse cumulative impacts on noise and vibration if they collectively result in severe adverse noise or vibration impacts on sensitive receptors or structures. These impacts may affect a larger area, not just localized to the construction site, and may be either short or long-term in duration.
Section 3.14	Recreation	A project, in combination with RFAs, would result in potentially significant adverse cumulative impacts on recreational resources if they collectively result in the closure of all or parts of a recreational facility; substantial increases in use, leading to overuse of the recreational facility; major degradation of environmental and natural landscapes; or persistent hazards to aerial recreational activities. These impacts may affect a larger area, not just localized to the construction site, and may be either short or long-term in duration.
Section 3.15	Historic and Cultural Resources	A project, in combination with RFAs, would result in potentially significant adverse cumulative impacts on historic and cultural resources if they collectively cause extensive ground disturbance, vegetation removal, physical destruction, modern intrusions, or damage to all or part of a historic or cultural property, and these impacts are unavoidable. Probable significant adverse cumulative impacts could include physical or visual impacts on NHLs, Tribal

Chapter Section	Element of the Environment	Probable Significant Adverse Cumulative Impact Description
		Resources, or TCPs that result in changes to the character of the property's use or of physical features within the property's setting that contribute to its historic significance, or the introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features. These impacts may affect a larger area, not just localized to the construction site, and may be either short or long-term in duration.
Section 3.16	Socioeconomics	A project, in combination with RFAs, would result in potentially significant adverse cumulative impacts on socioeconomics if they collectively result in substantial changes to the general welfare, social conditions, and economic environment of residents. Additionally, a potentially significant adverse cumulative impact on environmental justice would occur if these changes collectively result in a disproportionate impact on vulnerable populations or overburdened communities in comparison to the same impact on other populations or communities.

EIS = Environmental Impact Statement; **EMF** = electromagnetic fields; **GMA** = Growth Management Act; **RFA** = reasonably foreseeable action; **TCP** = Traditional Cultural Place

4.3.2 Cumulative Impact Significance Rating

This Programmatic EIS provides an assessment of potential cumulative impacts and a cumulative impact significance rating[9] for each element of the environment. The cumulative impact determination identifies whether transmission facility development would result in a probable significant adverse cumulative impact. This determination is a qualitative assessment of potential compounding and incremental impacts from the development of transmission facilities.

This assessment identifies probable significant adverse cumulative environmental impacts based on professional expertise and information available at the time of writing. Identification of environmental impacts and assignment of discipline-specific ratings are based on a structured evaluation consistent with the criteria outlined in WAC 197-11-330. Significance determinations consider the context and intensity of potential impacts, using qualitative information. Professional expertise informs this evaluation, but does not substitute for regulatory compliance. In cases where data are

[9] An assessment of whether transmission facility development would result in a probable significant adverse cumulative impact. This determination is a qualitative assessment of potential compounding and incremental impacts from the development of transmission facilities when added to other past, present, and reasonably foreseeable actions.

incomplete or unavailable, a precautionary approach has been applied to ensure that potential impacts are not underestimated.

4.3.3 No Action Alternative

Although no significant adverse environmental impacts were identified for the No Action Alternative, this cumulative impact analysis evaluated what is likely to occur if this Programmatic EIS were not implemented. Under the No Action Alternative, project-specific applications would be evaluated according to the current regulatory framework and permitting procedures. Cumulative impacts for each element of the environment would continue to be evaluated on a project-specific basis, and permits would be issued based on project-specific conditions.

4.3.4 Action Alternative

This section evaluates probable significant adverse cumulative impacts resulting from the Action Alternative for each element of the environment. **Table 4.3-2** identifies the impacts on each element of the environment that could contribute to an adverse environmental impact. As evaluated in Chapter 3, Affected Environment, Significant Impacts, and Mitigation, all direct and indirect adverse environmental impacts could be reduced to a less than significant level with the implementation of applicable Mitigation Strategies.

Table 4.3-2: Summary of Resource Impacts from Transmission Facilities

Chapter Section	Element of the Environment	Impact Identified
Section 3.2	Earth Resources	▪ Alteration of topography and drainage patterns ▪ Soil Erosion and/or accretion ▪ Compaction of soil ▪ Damage from a geological hazard
Section 3.3	Air Quality	▪ Increased fugitive dust emissions ▪ Increased emissions from fuel-burning equipment ▪ Increased SF_6 emissions ▪ GHG emissions ▪ Odor
Section 3.4	Water Resources	▪ Impacts on water quality, including: o Changes in sedimentation o Changes in water chemistry

Chapter Section	Element of the Environment	Impact Identified
		▪ Impacts on water quantity, including: ○ Increased water usage ○ Altered hydrology ○ Temporary water diversions ○ Groundwater extraction ○ Damage to infrastructure
Section 3.5	Vegetation	▪ Loss of native ecosystems and plants ▪ Fragmentation ▪ Degradation of soils ▪ Edge effects ▪ Introduction or spread of invasive plants or noxious weeds ▪ Surface runoff ▪ Impacts from increased dust ▪ Introduction of hazardous materials ▪ Increased fire risk
Section 3.6	Habitat, Wildlife, and Fish	▪ Direct habitat loss ▪ Indirect habitat loss ▪ Mortality ▪ Barriers to movement ▪ Fragmentation
Section 3.7	Energy and Natural Resources	▪ Consumption of non-renewable resources ▪ Consumption of renewable resources ▪ Consumption of energy
Section 3.8	Public Health and Safety	▪ Increase in accidents and injuries ▪ Exposure to hazardous materials ▪ Increased risk of wildfire ▪ Exposure to EMF ▪ Excess heat generation
Section 3.8	Land Use	▪ Incompatibility with land use ▪ Conflict with relevant goals and policies ▪ Loss of function and value of shorelines ▪ Loss of function and value of agricultural lands and rangelands ▪ Conflicts with military utilized airspace and civilian airfield operations
Section 3.10	Transportation	▪ Impacts on vehicular transportation and infrastructure, including: ○ Closures and diversions ○ Increased traffic and increased collision risk ○ Impacts from access road construction ○ Impacts on road authority

Chapter Section	Element of the Environment	Impact Identified
		▪ Impacts on waterborne vessels and infrastructure, including: o Closures and diversions o Increased collision risk o Impacts from infrastructure modification ▪ Impacts on rail transportation and infrastructure, including: o Closures and diversions o Increased collision risk o Impacts on rail stability o Impacts from infrastructure modification ▪ Impacts on air transportation and infrastructure[10], including: o Impacts from airspace restrictions o Increased collision risk o Decreased visibility
Section 3.11	Public Services and Utilities	▪ Conflicts with existing utility infrastructure ▪ Increased solid waste production ▪ Increased water demand ▪ Increased demand for fire protection services, law enforcement, and emergency responders ▪ Increased emergency response times ▪ Increased risk of power outages at public service facilities
Section 3.12	Visual Quality	▪ Degradation of scenic natural resources ▪ Degradation of aesthetics ▪ Degradation of night sky
Section 3.13	Noise and Vibration	▪ Increased noise at sensitive receptors ▪ Ground-borne vibration at off-site structures ▪ Hearing loss
Section 3.14	Recreation	▪ Temporary closure or restricted access ▪ Permanent closure ▪ Increase in use ▪ Change in integrity ▪ Increased risk of wildfire ▪ Physical hazard to aerial recreation
Section 3.15	Cultural and Historic Resources	▪ Physical impacts ▪ Visual impacts ▪ Physical impacts on tribal resources and TCPs ▪ Visual impacts on tribal resources and TCPs

[10] Section 3.9, Land and Shoreline Use analyzes impacts on military utilized airspace and civilian airfield operations.

Chapter Section	Element of the Environment	Impact Identified
Section 3.16	Socioeconomics	▪ Degradation of the natural and built environment, including: ○ Noise and vibration ○ Air quality ○ Visual quality ○ Land and shoreline use, and recreation ▪ Changes in housing availability ▪ Changes in home values ▪ Changes in economic and fiscal conditions or employment

EMF = electromagnetic field; **GHG** =Greenhouse Gas; **SF_6** = sulfur hexafluoride; **TCP** = Traditional Cultural Place

4.3.4.1 Earth Resources

The new construction, operation and maintenance, upgrade, and modification of overhead and underground transmission facilities could impact earth resources through alteration of topography and drainage patterns, soil erosion and/or accretion, compaction, and geological instability. As discussed in Section 3.2, Earth Resources, there are many factors associated with these activities that could contribute to potential impacts, including vegetation removal, grading, stormwater runoff, sediment transport, soil composition, water infiltration, and seismic activity. New construction of transmission facilities often involves alterations to the topography or drainage patterns during clearing and grading, new construction of access roads, and foundation excavation, thereby leading to increased soil erosion and accretion. The duration of these impacts would be short-term and could generally be controlled through the implementation of standard BMPs and Mitigation Measures outlined in Section 3.2, Earth Resources. Impacts on earth resources are generally anticipated to be greater with the new construction of underground transmission facilities due to the extensive surface disruption involved with open trenching.

Cumulative impacts from RFAs could also affect earth resources. As shown in **Table 4.2-1**, this Programmatic EIS considers a variety of RFAs that are underway or could occur in the state. Transmission facility development, combined with other RFAs related to energy generation and transmission, mining, forestry, agriculture, community growth, and both land- and water-based transportation, could contribute to adverse cumulative impacts on earth resources. These RFAs could directly and/or

indirectly increase soil erosion and compaction, resulting in potential adverse environmental impacts. These RFAs include, but are not limited to, the following:

- Horse Heaven Wind Farm
- Hop Hill Solar Energy Project
- Shelton-Fairmount No. 1 Transmission Line Rebuild Project
- Wanapum to Mountain View
- JUB Engineering Quarry
- Pioneer Aggregates South Parcel Mine Expansion
- Fly By Night Timber Sale
- Conk Timber Sale
- Swift Creek Poultry Farm
- Jungquist Farms Depth of Cover
- Tehaleh New Town
- Wallula Gap Business Park
- Interstate (I) 405/State Route (SR) 167 Corridor Program
- I-405/Renton to Bellevue Widening and Express Toll Lanes Project
- Lower Columbia River Channel Maintenance Plan
- Interstate Bridge Replacement Program

Cumulative Impact Significance Rating: The cumulative impact on earth resources would depend on the size, scale, location, and timing of each specific project in combination with RFAs within the geographic setting and timeframe of that project. Adverse environmental impacts from transmission facilities on earth resources are primarily associated with construction activities. These adverse environmental impacts from transmission facilities are expected to be localized and minimized with the implementation of applicable Mitigation Strategies outlined in this Programmatic EIS. The new construction, operation and maintenance, upgrade, and modification of transmission facilities would not be likely to contribute to a probable significant adverse cumulative impact on earth resources.

4.3.4.2 Air Quality

The new construction, operation and maintenance, upgrade, and modification of overhead and underground transmission facilities could impact air quality in several ways. Potential adverse environmental impacts could include temporary increases in pollutant emissions from the use of mobile sources with diesel internal combustion engines, including heavy equipment. These mobile sources would emit pollutants such as carbon monoxide (CO), carbon dioxide (CO_2), particulate matter ($PM_{2.5}$), nitrogen oxide (NO_X), sulfur oxide (SO_X), volatile organic compound (VOC), and others. Construction emissions associated with exhaust from heavy equipment, delivery vehicles, and haul trucks could also increase pollutant emissions. New construction could increase fugitive dust emissions resulting from grading, vegetation clearing and removal, building access roads, traveling on site using unpaved surfaces, and blasting for tower footings. Additionally, fugitive emissions from sulfur hexafluoride (SF_6) can be linked to electricity transmission and distribution equipment of overhead facilities (EPA 2024). SF_6 can be emitted from the seals and joints of the equipment if not properly installed, maintained, or managed. Adverse environmental impacts would be minimized with the implementation of the Mitigation Measures identified in Section 3.3, Air Quality.

Furthermore, according to the Washington State Department of Ecology, smoke from wildfires is the largest source of air particulate pollution in Washington. In recent years, Washington has experienced extended smoke events from regional wildfires in the Pacific Northwest (Ecology n.d.[b]). The risk of wildfires could increase from hot-work activities, operation of combustion engines, operation of motor vehicles over vegetated areas, clearing vegetation, workers smoking, and other practices associated with transmission facility development that could inadvertently ignite vegetation. An increase in the number and size of wildfires could continue to contribute to the degradation of air quality.

Other RFAs, including those related to community growth, energy generation and transmission, land- and water-based transportation, water infrastructure, forestry, and mining projects, could contribute to cumulative impacts on air quality. Construction activities associated with these RFAs, such as the use of heavy equipment, demolition, grading, vegetation clearing and removal, and building access roads, may increase air pollutants and greenhouse gas (GHG) emissions, and wildfire

risks, similar to the impacts identified for the Action Alternative. These RFAs include, but are not limited to:

- Wallula Gap Business Gap
- Northwest Advanced Clean Energy Park
- Horse Heaven Wind Farm
- Hop Hill Solar Energy Project
- Double Circuit MidC-White River 500 kV Lines and Longhorn-MidC 500 kV Line.
- Puget Sound Energy electric program - Underground electric cable replacement program
- Cascadia High-Speed Rail Project
- I-405/Renton to Bellevue Widening and Express Toll Lanes Project
- Interstate Bridge Replacement Program
- Replacement of Granite Falls Bridge #102
- Chehalis River Basin Flood Damage Reduction Project
- Eight-Mile Dam Rebuild & Restoration
- Fly By Night Timber Sale
- Conk Timber Sale
- JUB Engineering Quarry
- Pioneer Aggregates South Parcel Mine Expansion

Cumulative Impact Significance Rating: The cumulative impact on air quality would depend on the size, scale, location, and timing of each specific project in combination with RFAs within the geographic setting and timeframe of that project. Adverse environmental impacts from transmission facilities on air quality are primarily associated with construction activities. These adverse environmental impacts from transmission facilities are expected to be localized and minimized with the implementation of applicable Mitigation Strategies outlined in this Programmatic EIS. The new construction, operation and maintenance, upgrade, and modification of transmission facilities would not be likely to contribute to a probable significant adverse cumulative impact on air quality.

4.3.4.3 Water Resources

The new construction, operation and maintenance, upgrade, and modification of overhead and underground transmission facilities could impact water quality and quantity. Temporary water diversions, altered hydrology, and the increased use of water for construction activities, such as concrete mixing and dust control, can impact water availability. If not managed properly, increased soil erosion and sediment transport from erodible sources, such as blasting sites and soil stockpiles, can increase the concentration of suspended solids and sedimentation in surface waterbodies.

Spills that occur near waterbodies can change water quality through the introduction of deleterious substances such as lubricants, oils, and fuel. Spills to land can also impact groundwater quality if spilled material is allowed to seep into the ground. Overhead and underground transmission facility infrastructure or construction sites could also cause the release of pollutants due to inundation during a flood event or storm surge.

There is a potential for overhead and underground transmission facilities to change dam operations depending on the energy production. New transmission facilities may bring more intermittent energy, and the hydropower may be ramped up or down more frequently to stabilize the grid (Pracheil et al. 2022). This can lead to altered flow regimes that may not align with existing environmental flow agreements or fish passage needs. Altered flow timing and magnitude can cause bird nests to flood (van Oort et al. 2015), fish stranding, and disrupt fish migration, spawning, and rearing habitat, especially for species like salmon or steelhead (Clarke et al. 2008). Cultural and treaty rights of Tribes may be impacted if fish populations or access to traditional fishing areas are affected.

RFAs could also affect water resources, including the quantity and quality. RFAs related to energy generation and transmission, community growth, forestry, mining, agriculture, land and water-based transportation, and water infrastructure could contribute to both direct and indirect adverse cumulative impacts on water resources. Direct impacts could include increased water usage, temporary water diversions, groundwater extraction, and altered hydrology. Indirect impacts could include increased impervious areas, resulting in soil erosion and sediment transport, which could have adverse environmental impacts on water quality. These RFAs may include, but are not limited to, the following:

- Horse Heaven Wind Farm

- Hop Hill Solar Energy Project
- Cascade Renewable Transmission Project
- Shelton-Fairmount No. 1 Transmission Line Rebuild
- Wallula Gap Business Park
- Midvale Industrial Park
- Fly by Night Timber Sale
- Conk Timber Sale
- JUB Engineering Quarry
- Pioneer Aggregates South Parcel Mine Expansion
- Flying A Land Rezone
- Swift Creek Poultry Farm
- I-405/SR 167 Corridor Program
- I-405/Renton to Bellevue Widening and Express Toll Lanes Project
- Lower Columbia River Maintenance Plan
- Interstate Bridge Replacement Program
- Chehalis River Basin Flood Damage Reduction Project
- Eight-Mile Dam Rebuild & Restoration

Cumulative Impact Significance Rating: The cumulative impact on water resources would depend on the size, scale, and timing of a project-specific application in combination with RFAs within the geographic setting and timeframe of that project. Adverse environmental impacts from transmission facilities on water resources are primarily associated with construction activities. These adverse environmental impacts from transmission facilities are expected to be localized and minimized with the implementation of applicable Mitigation Strategies outlined in this Programmatic EIS. The new construction, operation and maintenance, upgrade, and modification of transmission facilities would not be likely to contribute to a probable significant adverse cumulative impact on water resources.

4.3.4.4 Vegetation

The new construction, operation and maintenance, upgrade, and modification of overhead and underground transmission facilities would require vegetation clearing for permanent structure placement, access and maintenance roads, rights-of-way (ROWs), and substations. Underground transmission facilities may require more grubbing and excavation to facilitate new construction than overhead transmission facilities. Vegetation clearing and grubbing are the main impacts on vegetation resources and could lead to the loss of native ecosystems and priority plant species. Vegetation ecosystems, such as alpines, forests and woodlands, riparian areas, steppe and prairies, sparsely vegetated ecosystems, and wetlands, could be impacted by vegetation clearing.

Impacts from vegetation clearing typically occur near the onset of construction and often persist through operation and maintenance until the project is decommissioned and ecological communities can be restored. For example, following new construction, some vegetative communities may be compatible with restoration objectives in the transmission ROWs, such as grasslands; however, deep-rooted species would be incompatible with underground facilities, and tall shrub and tree-dominated ecosystems would be incompatible with overhead facilities.

Other impacts on vegetation that can occur from the construction of overhead and underground transmission facilities include fragmentation, edge effects, degradation of soils, surface runoff, increased dust, the introduction or spread of invasive plant species, and the introduction of hazardous materials.

Indirect impacts on vegetation may result from the spread of invasive plants, sedimentation, dust, accidental spill of hazardous material, and use of herbicides. These impacts could extend beyond the active construction or maintenance site into adjacent areas, resulting in degradation of adjacent ecosystems. Additionally, new construction of transmission facilities could create new fragmentation on the vegetative landscape, increasing edge effects where ecosystems were previously intact. Creating new transmission ROW through natural ecosystems is expected to result in long-term ecological changes by dividing larger vegetation patches into smaller, fragmented habitats.

Other RFAs throughout the state, such as those related to community growth, energy generation and transmission, forestry, mining, and transportation, could contribute to cumulative impacts on vegetation. These RFAs could result in direct and indirect

impacts similar to those described above for transmission facilities. Many development projects require vegetation clearing for construction and have the potential to spread invasive plants, increase sedimentation, and use herbicides for maintenance. Such RFAs include, but are not limited to, the following:

- Mission Ridge Expansion
- Copperstone Planned Development
- Wautoma Solar Energy Project
- Dry Falls Solar Project
- Double Circuit MidC-White River 500 kV Lines and Longhorn-MidC 500 kV Line
- Wanapum to Mountain View
- Fly By Night Timber Sale
- Conk Timber Sale
- JUB Engineering Quarry
- Pioneer Aggregates South Parcel Mine Expansion
- I-405/SR 167 Corridor Program
- North Spokane Corridor

Cumulative Impact Significance Rating: The cumulative impact on vegetation would depend on the size, scale, location, and timing of each specific project in combination with RFAs within the geographic setting and timeframe of that project. Adverse environmental impacts from transmission facilities on vegetation are expected to be localized and minimized with the implementation of applicable Mitigation Strategies outlined in this Programmatic EIS. However, despite efforts to minimize adverse environmental impacts, the long-term incremental loss and impacts on vegetation from the new construction, operation and maintenance, upgrade, and modification of transmission facilities are likely to contribute to probable significant adverse cumulative environmental impacts.

4.3.4.5 Habitat, Wildlife, and Fish

The new construction, operation and maintenance, upgrade, and modification of overhead and underground transmission facilities could impact habitat, wildlife, and

fish resources in several ways. Adverse environmental impacts on habitat, wildlife, and fish can include direct and indirect habitat loss, mortality, barriers to wildlife movement, and habitat fragmentation.

Direct habitat loss could occur as a result of clearing and grubbing for the construction and development of transmission facilities. Direct habitat loss is expected to be more pronounced in the western portion of the state, in ecoregions such as the Coast Range, Puget Lowland, Cascades, North Cascades, Eastern Cascade Slopes and Foothills, and Northern Rockies. Naturally open ecosystems generally found in central and eastern Washington in the Columbia Plateau ecoregion and portions of the Blue Mountain ecoregion are likely to be less impacted by direct habitat loss because portions of these habitats can be spanned by transmission facilities. Direct habitat loss could impact many different wildlife groups, including birds, mammals, amphibians and reptiles, invertebrates, fish, and special status species. Direct habitat removal, either temporary or permanent, and loss or changes of important features required for denning, nesting, or foraging may have a greater impact on special status species. This is due to special species' habitats already being limited or fragmented by human influence or limited range, making changes to their habitat or habitat features more detrimental (WDFW 2015).

Indirect habitat loss could occur as a result of a change in habitat quality or a perceived change associated with the development of a project. Transmission facility development could require clearing forests or portions of a forest for ROW or access roads. This activity would create a new forest edge that can change light regimes and changes in exposure to wind, thereby affecting soil conditions and vegetation composition, and, ultimately, habitat quality. Indirect impacts on habitat, wildlife, and fish could result from construction-related noise, light, increased human presence and vehicle traffic, the spread of invasive species, or structures in the landscape that change wildlife movement or behavior.

Transmission facility development could create both physical and perceived barriers to wildlife movement. Physical barriers, such as construction fencing, sediment and erosion control measures, and material laydowns, would be removed at the end of construction. However, permanent barriers could include fencing, roads, vehicle traffic, and overhead transmission facilities. Furthermore, transmission facility development could result in the loss of habitat and microhabitat features that support important linkages between habitats that are used by wildlife, resulting in habitat fragmentation and barriers to movement. Similar to the loss of other habitat types, conversion of treed habitat to low-growing or no vegetation near transmission

facilities could be considered a loss of habitat for species that will not use open habitat for movement.

Vegetation clearing and grubbing are likely to pose the greatest risk for wildlife mortality. Wildlife-vehicle collisions could also occur when wildlife crosses roads to access habitat patches. The operation of overhead transmission facilities is the primary cause of electrocution and collisions with wildlife, particularly for aerial species such as birds and bats. Wildlife mortality could also occur through changes in predator-prey dynamics and collisions with maintenance equipment and vehicles. The risk of wildlife mortality during the operation and maintenance of an underground transmission facility is expected to be limited to vehicle strikes and crushing during maintenance activities.

Many other RFAs identified in **Table 4-1** could also contribute to cumulative impacts on habitat, wildlife, and fish. RFAs such as those related to community growth, energy generation and transmission, forestry, mining, and land- and water-based transportation, and water infrastructure could result in direct and indirect impacts related to habitat loss, mortality, barriers to wildlife movement, and habitat fragmentation. Specifically, RFAs include, but are not limited to, the following:

- Bullfrog Flats Development
- Mission Ridge Expansion
- Horse Heaven Wind Farm
- Hop Hill Solar Energy Project
- Cascade Renewable Transmission Project
- Wanapum to Mountain View
- Fly By Night Timber Sale
- Conk Timber Sale
- JUB Engineering Quarry
- Pioneer Aggregates South Parcel Mine Expansion
- I-405/SR 167 Corridor Program
- North Spokane Corridor
- Lower Columbia River Maintenance Plan

- Interstate Bridge Replacement Program
- Howard A. Hanson Dam Additional Water Storage Project
- Eight-Mile Dam Rebuild & Restoration

Cumulative Impact Significance Rating: The cumulative impact on habitat, wildlife, and fish would depend on the size, scale, location, and timing of each specific project in combination with RFAs within the geographic setting and timeframe of that project. Adverse environmental impacts from transmission facilities on habitat, wildlife, and fish are expected to be localized and minimized with the implementation of applicable Mitigation Strategies outlined in this Programmatic EIS. However, despite efforts to minimize adverse environmental impacts on habitat, wildlife, and fish, the long-term incremental loss and impacts from the new construction, operation and maintenance, upgrade, and modification of transmission facilities are likely to contribute to probable significant adverse cumulative impacts.

4.3.4.6 Energy and Natural Resources

The construction of overhead and underground transmission facilities would result in the consumption of renewable and non-renewable resources, including metal, aggregate, concrete, fuel, oil, water, and electricity. As described in Section 3.7, Energy and Natural Resources, the construction of underground transmission facilities would generally require more raw materials than overhead transmission facilities. Raw materials are expected to be globally abundant. The increased demand due to the construction of overhead and underground transmission facilities is not expected to hinder the distribution of natural resources.

RFAs related to community growth, energy generation and transmission, land- and water-based transportation, and water infrastructure are likely to require large quantities of renewable and non-renewable resources, including aggregate, concrete, fuel, oil, water, and electricity for construction and operation. These RFAs could result in impacts on energy and natural resources similar to those identified for the Action Alternative. Such RFAs may include, but are not limited to, the following:

- Wallula Gap Business Park
- Bullfrog Flats Development
- Horse Heaven Wind Farm
- Hops Hill Solar Energy Project

- Cascade Renewable Transmission Project
- Wanapum to Mountain View
- I-405/SR 167 Corridor Program
- I-405/Renton to Bellevue Widening and Express Toll Lanes Project
- Lower Columbia River Maintenance Plan
- SR 155 Spur/Okanogan River Bridge Replacement
- Chehalis River Basin Flood Damage Reduction Project
- Eight-Mile Dam Rebuild & Restoration

Cumulative Impact Significance Rating: The cumulative impact on energy and natural resources would depend on the size, scale, location, and timing of each specific project in combination with RFAs within the geographic setting and timeframe of that project. Adverse environmental impacts on energy and natural resources are primarily associated with construction activities. These adverse environmental impacts from transmission facilities are expected to be localized and minimized with the implementation of applicable Mitigation Strategies outlined in this Programmatic EIS. The new construction, operation and maintenance, upgrade, and modification of transmission facilities would not be likely to contribute to a probable significant adverse cumulative impact on energy and natural resources.

4.3.4.7 Public Health and Safety

The new construction, operation and maintenance, upgrade, and modification of overhead and underground transmission facilities has the potential to impact public health and safety in several ways. Adverse environmental impacts could result from increases in potential occupational injuries during new construction, maintenance, upgrade, and modification activities. Other potentially adverse environmental impacts could include increased risk of wildfires and power outages; the generation or release of solid, hazardous, and toxic materials and waste; and exposure to electromagnetic fields (EMF). Additionally, impacts could result from the leakage of insulating fluids, excess heat generation, and inundation of vaults located in floodplains. Transmission facility development would be required to comply with current design standards and applicable laws and regulations regarding hazardous waste and occupational safety.

RFAs identified in **Table 4.2-1**, including those related to community growth, energy generation and transmission, land- and water-based transportation, forestry, mining, agriculture, and water infrastructure, have the potential to contribute to adverse cumulative impacts on public health and safety. These RFAs could result in impacts on public health and safety similar to those identified for the Action Alternative. RFAs that have the potential to contribute to adverse cumulative impacts on public health and safety include, but are not limited to:

- Northwest Advanced Clean Energy Park
- Bullfrog Flats Development
- Hanford Clean Energy Development Area
- Horse Heaven Wind Farm
- Cascade Renewable Transmission Project
- Grand Coulee-Columbia-Schultz 500 kV Line Upgrade
- I-405/SR 167 Corridor Program
- I-405/Renton to Bellevue Widening and Express Toll Lanes Project
- Interstate Bridge Replacement Program
- SR 520 Portage Bay Bridge and Roanoke Lid Project
- Fly By Night Timber Sale
- Klondike Timber Sale
- JUB Engineering Quarry
- Pioneer Aggregates South Parcel Mine Expansion
- Swift Creek Poultry Farm
- Jungquist Farms Depth of Cover
- Chehalis River Basin Flood Damage Reduction Project
- Eightmile Dam Rebuild and Restoration

Cumulative Impact Significance Rating: The cumulative impact on public health and safety would depend on the size, scale, location, and timing of each specific project in combination with RFAs within the geographic setting and timeframe of that project.

Adverse environmental impacts from transmission facilities on public health and safety are expected to be localized and minimized with the implementation of applicable Mitigation Strategies outlined in this Programmatic EIS. The new construction, operation and maintenance, upgrade, and modification of transmission facilities would not be likely to contribute to a probable significant adverse cumulative impact on public health and safety.

4.3.4.8 Land and Shoreline Use

The new construction, operation and maintenance, upgrade, and modification of overhead and underground transmission facilities could impact land and shoreline uses in several ways. Adverse environmental impacts could result from being incompatible with adjacent land uses—particularly, military and civilian airfields, shorelines, agricultural lands, recreation facilities, and natural resource lands. Using outdated parcel, ROW, and easement boundaries could also create a land use incompatibility.

The conversion of an existing land use that substantially reduces the overall amount available within the region of the land use type could result in adverse impacts. The overall reduction and severity of the impact may depend on the given abundance of the land use type or total disturbance in the city or county. This may be particularly important if local jurisdictions are unable to accommodate the projected growth over the next 20 years required under the Growth Management Act. Another instance where the conversion of one land use to another is particularly important is when Washington State Department of Natural Resources (DNR)-administered lands are involved. The conversion of agricultural land to a non-agricultural use could reduce the overall land use classification below a county's established baseline or target. The requirement for new ROWs could also limit the desirability and productivity of the land, as well as restrict allowable uses for future development of the subject parcel and adjacent properties, particularly in areas with ongoing agricultural or grazing operations. See Section 4.3.4.15 for a discussion regarding impacts on the underlying lease holder and beneficiaries.

Overhead and underground transmission facilities could degrade the function or value of shorelines from activities such as vegetation clearing, trenching, new foundation construction, and material laydown within shoreline areas. New overhead and underground transmission facility construction activities could also impact the function and value of agricultural land and rangelands. These impacts could include

damaging agricultural crops, productivity, and soils, as well as restricting crop types and presenting obstacles for natural resource operations or activities.

Overhead transmission facilities could interfere with or degrade military utilized airspaces and civilian airfield operations by creating a vertical obstruction that limits an aircraft's maneuverability or military training route boundaries. The use of helicopters to access the site, deliver materials, and place structures or wires could interfere with civilian airport operations, military readiness, and low-altitude aircraft training across the state.

RFAs related to community growth, energy generation and transmission, and agriculture are likely to have the greatest adverse cumulative impact on land and shoreline uses across the state. These RFAs could require the conversion of large parcels of land to another land use designation, affect the function and value of agricultural lands, rangeland, and shorelines, and require easements on incompatible land uses. These RFAs may include, but are not limited to, the following:

- Tehaleh New Town
- Copperstone Planned Development
- Hop Hill Solar Energy Project
- Wautoma Solar Energy Project
- Double Circuit MidC-White River 500 kV Lines and Longhorn-MidC 500 kV Line
- Wanapum to Mountain View
- Flying A Land Rezone
- Kang/Nazarene Church/Lange Rezone

Cumulative Impact Significance Rating: The cumulative impact on land and shoreline use would depend on the size, scale, location, and timing of each specific project in combination with RFAs within the geographic setting and timeframe of that project. Adverse environmental impacts from transmission facilities on land and shoreline use are expected to be minimized with the implementation of applicable Mitigation Strategies outlined in this Programmatic EIS. However, despite efforts to minimize adverse environmental impacts on land and shoreline use, the long-term incremental loss and impacts from the new construction, operation and maintenance, upgrade, and modification of transmission facilities would likely contribute to a probable significant adverse cumulative impact.

4.3.4.9 Transportation

The new construction, operation and maintenance, upgrade, and modification of overhead and underground transmission facilities could have adverse environmental impacts on vehicular, waterborne, rail, and air traffic. Construction activities could require temporary closures or detours of roads and navigable waterways, resulting in delays and increased vehicular congestion. Delays and disruptions could have economic repercussions, particularly for industries that rely on the timely shipping of goods. Construction activities could create visual obstructions and interfere with navigational aids. This could be particularly challenging during poor weather conditions or for low-flying aircraft. Similarly, vibration from construction equipment could affect nearby airports and air traffic control operations, leading to temporary disruptions in navigational aids. Construction activities near rail lines or airfields could lead to temporary disruptions and delays for passengers and operators.

Overhead transmission facilities could increase collision risks by creating a physical obstruction that drivers, aircraft operators, or ship crews may inadvertently strike. Repairs and maintenance activities associated with overhead and underground transmission facilities could require temporary road or lane closures, leading to increased travel times and congestion in affected areas.

Overhead transmission facilities could generate EMF that may interfere with communication systems associated with waterborne vessels, railroads, and aircraft.

RFAs related to land- and water-based transportation, community growth, energy generation and transmission, and forestry are anticipated to have the greatest potential for contributing to adverse cumulative impacts on transportation. These RFAs would likely require road closures, detours, delays, and/or increased congestion on roadways and could increase the risk of collisions. Cumulatively contributing RFAs may include, but are not limited to, the following:

- I-405/SR 167 Corridor Program
- I-405/Renton to Bellevue Widening and Express Toll Lanes Project
- Lower Columbia River Maintenance Plan
- Interstate Bridge Replacement Program
- Bullfrog Flats Development
- FRED310 Industrial Development

- Horse Heaven Wind Farm
- Hop Hill Solar Energy Project
- Shelton-Fairmount No. 1 Transmission Line Rebuild Project
- Puget Sound Energy - Underground Electric Cable Replacement Program
- Fly By Night Timber Sale
- Conk Timber Sale

Cumulative Impact Significance Rating: The cumulative impact on transportation would depend on the size, scale, location, and timing of each project in combination with RFAs within the geographic setting and timeframe of that project. Adverse environmental impacts from transmission facilities on transportation are primarily associated with construction activities. These adverse environmental impacts from transmission facilities are expected to be localized and minimized with the implementation of applicable Mitigation Strategies outlined in this Programmatic EIS. The new construction, operation and maintenance, upgrade, and modification of transmission facilities would not be likely to contribute to a probable significant adverse cumulative impact on transportation.

4.3.4.10 Public Services and Utilities

The new construction, operation and maintenance, upgrade, and modification of overhead and underground transmission facilities could impact public services and utilities in a variety of ways. Adverse environmental impacts could include creating conflicts with existing utilities and obstacles for emergency responders, increasing the demand for emergency responders, increasing solid waste production and water demand, and increasing the risk of power outages at public service facilities.

Although there is a statewide emphasis on improving electricity service and reliability, RFAs could have an adverse impact on public services and utilities. RFAs related to community growth, energy generation and transmission, land- and water-based transportation, and water infrastructure, are likely to have the greatest adverse impact on public services and utilities. Impacts from these RFAs would likely result in an increased demand for utilities and public services, conflicts with existing utilities, or an increase in emergency response service times. RFAs that may contribute to an

adverse cumulative impact on public services and utilities may include, but are not limited to, the following:

- Tehaleh New Town
- Bullfrog Flats Development
- Goldendale Energy Project
- Hanford Clean Energy Development Area
- Cross-Cascades North Reinforcement project
- Grand Coulee-Columbia-Schultz 500 kV Line Upgrade
- Cascadia High-Speed Rail Project
- I-405/SR 167 Corridor Program
- Interstate Bridge Replacement Program
- Replacement of Granite Falls Bridge #102
- SR 527 - Penny Creek - Fish Passage
- US 101 - SR 109 Grays Harbor, Jefferson and Clallam Counties - Remove Fish Barriers

Cumulative Impact Significance Rating: The cumulative impact on public services and utilities would depend on the size, scale, location, and timing of each specific project in combination with RFAs within the geographic setting and timeframe of that project. Adverse environmental impacts from transmission facilities on public services and utilities are primarily associated with construction activities. These adverse environmental impacts from transmission facilities are expected to be localized and minimized with the implementation of applicable Mitigation Strategies outlined in this Programmatic EIS. The new construction, operation and maintenance, upgrade, and modification of transmission facilities would not be likely to contribute to a probable significant adverse cumulative impact on public services and utilities.

4.3.4.11 Visual Quality

The new construction, operation and maintenance, upgrade, and modification of overhead and underground transmission facilities could degrade existing natural landscapes and scenic resources, as well as introduce new sources of light and glare.

During construction, site preparation could include vegetation clearing and grubbing, as well as earthwork and grading that may alter natural topographic variations. The impact of natural vegetation removal may be visually prominent, especially in forested areas where the clearing of the linear ROW corridor may be conspicuous. Construction also has the potential to temporarily introduce lighting related to the transportation of materials and equipment to the project site that may occur at night.

Development of transmission facilities generally requires large, permanently cleared corridors, which could pass through forests, fields, and other natural areas. This can disrupt the visual continuity of the landscape and detract from the natural character of the area. The presence of tall towers and extensive wiring from overhead transmission facilities can also alter the scenic quality of previously undisturbed or minimally impacted areas. Additionally, the large size of transmission towers, combined with their strongly vertical form and their angular geometry, may contrast strongly with the character of nearby rural landscapes, as well as residential communities.

Many RFAs identified in **Table 4.2-1** could contribute to adverse cumulative impacts on visual quality, particularly those related to community growth, energy generation and transmission, and land- and water-transportation. Most new development RFAs would modify the existing landscape character from construction through operation and maintenance. Construction of RFAs could degrade the existing visual setting through the introduction of equipment, materials, and lighting. The implementation of RFAs could result in permanent impacts on the visual landscape, contributing to an overall adverse cumulative impact on the visual quality of the state. These RFAs may include, but are not limited to, the following:

- Mission Ridge Expansion
- Copperstone Planned Development
- Horse Heaven Wind Farm
- Hop Hill Solar Energy
- Double Circuit MidC-White River 500 kV Lines and Longhorn-MidC 500 kV Line
- Wanapum to Mountain View
- Cascadia High-Speed Rail Project
- I-405/SR 167 Corridor Program

- Interstate Bridge Replacement Program
- US 395 – NSC Spokane River Crossing

Cumulative Impact Significance Rating: The cumulative impact on visual quality would depend on the size, scale, location, and timing of each specific project in combination with RFAs within the geographic setting and timeframe of that project. Adverse environmental impacts from transmission facilities on visual quality are expected to be localized and minimized with the implementation of applicable Mitigation Strategies outlined in this Programmatic EIS. However, despite efforts to minimize adverse environmental impacts on visual quality, the long-term incremental impacts on visual quality from the new construction, operation and maintenance, upgrade, and modification of transmission facilities would likely contribute to probable significant adverse cumulative impacts.

4.3.4.12 Noise and Vibration

The new construction, operation and maintenance, upgrade, and modification of overhead and underground transmission facilities could result in adverse environmental impacts related to noise and vibration. Construction activities would require the use of construction equipment similar to that used during typical public works projects; however, some atypical sources of noise may include blasting and rock breaking, implosive devices used during conductor stringing, and helicopter operations. These activities could result in increased noise at sensitive receptors and ground-borne vibration. Operational noise from overhead transmission facilities could result from corona discharge and new substations. Underground transmission facilities would result in similar impacts, except there would be no operational noise impacts. adverse environmental impacts resulting from the development of transmission facilities would be minimized with the implementation of established state and local government noise limits and Mitigation Measures identified in Section 3.13, Noise and Vibration.

Other RFAs could also create new or additive sources of noise and vibration. Noise and vibration could result from RFAs related to community growth, energy generation and transmission, land- and water-transportation, forestry, and mining. RFAs that could result in noise and vibration impacts include, but are not limited to, the following:

- Copperstone Planned Development
- Mission Ridge Expansion

- Horse Heaven Wind Farm
- Hop Hill Solar Energy Project
- Puget Sound Energy - Underground Electric Cable Replacement Program
- East Link Extension
- Puget Sound Gateway Program
- Interstate Bridge Replacement Program
- SR 520 Portage Bay Bridge and Roanoke Lid Project
- Portrait Timber Sale
- Forest Practice Application #3027124
- JUB Engineering Quarry
- Pioneer Aggregates South Parcel Mine Expansion

Cumulative Impact Significance Rating: The cumulative impact on noise and vibration would depend on the size, scale, location, and timing of each specific project in combination with RFAs within the geographic setting and timeframe of that project. Adverse environmental impacts from transmission facilities on noise and vibration are primarily associated with construction activities. These adverse environmental impacts from transmission facilities are expected to be localized and minimized with the implementation of applicable Mitigation Strategies outlined in this Programmatic EIS. The new construction, operation and maintenance, upgrade, and modification of transmission facilities would not be likely to contribute to a probable significant adverse cumulative impact on noise and vibration.

4.3.4.13 Recreation

The new construction, operation and maintenance, upgrade, and modification of overhead and underground transmission facilities could adversely impact recreational resources in several ways. Adverse environmental impacts could include temporary or permanent closures or restricted access to recreational areas, adverse changes to the quality of the recreational experience, adverse environmental impacts on the integrity of the recreational resource, and an increase in health and safety risks for recreational users.

A variety of RFAs may have adverse cumulative impacts on recreational resources, including community growth, land- and water-based transportation, and energy generation and transmission. These RFAs could also affect access to recreational facilities, the integrity of the facility, and create new or worsened safety risks for recreational users. These RFAs may include, but are not limited to, the following:

- Northwest Advanced Clean Energy Park
- Midvale Industrial Park
- I-405/SR 167 Corridor Program
- I-405/Renton to Bellevue Widening and Express Toll Lanes Project
- Lower Columbia River Maintenance Plan
- Interstate Bridge Replacement Program
- Horse Heaven Wind Farm
- Hop Hill Solar Energy Project
- Wanapum to Mountain View
- Shelton-Fairmount No. 1 Transmission Line Rebuild Project

Cumulative Impact Significance Rating: The cumulative impact on recreational resources would depend on the size, scale, location, and timing of each specific project in combination with RFAs within the geographic setting and timeframe of that project. Adverse environmental impacts from transmission facilities on recreational resources are expected to be localized and minimized with the implementation of applicable Mitigation Strategies outlined in this Programmatic EIS. However, despite efforts to minimize adverse environmental impacts on recreational resources, it is expected that the long-term incremental impacts on recreational resources from the new construction, operation and maintenance, upgrade, and modification of transmission facilities would likely contribute to probable significant adverse cumulative environmental impacts.

4.3.4.14 Historic and Cultural Resources

Historic Cultural Resources

The new construction, operation and maintenance, upgrade, and modification of overhead and underground transmission facilities can impact historic resources in a

variety of ways. Construction activities could physically or visually damage or destroy resources or elements that contribute to historic properties, including historic districts, National Historic Landmarks, farmsteads, landscapes, and historic trails/byways. Furthermore, loss of vegetation and construction of transmission facilities within the viewsheds of National Historic Landmarks or properties listed on the National Register of Historic Properties could visually impact these resources if setting is an important aspect of the historic property's integrity.

RFAs related to community growth, land- and water-based transportation, energy generation and transmission, forestry, and mining, are likely to have the greatest adverse impacts on historic resources. RFAs may affect the location, setting, feeling, and/or association of historic resources, resulting in a potential loss of the integrity of the resource. RFAs that may contribute to an adverse cumulative impact on historic resources may include, but are not limited to, the following:

- Wallula Gap Business Park
- Bullfrog Flats Development
- I-405/SR 167 Corridor Program
- North Spokane Corridor
- I-5 East Fork Lewis River NB Bridge Replacement
- Replacement of Granite Falls Bridge #102
- Horse Heaven Wind Farm
- Hop Hill Solar Energy Project
- Double Circuit MidC-White River 500 kV Lines and Longhorn-MidC 500 kV Line
- Wanapum to Mountain View
- Fly By Night Timber Sale
- Conk Timber Sale
- Chelatchie Bluff Surface Mine Overlay Annual Review
- Pioneer Aggregates South Parcel Mine Expansion

Tribal Cultural Resources

Tribal cultural resources are a unique category of resource types that encompasses the tangible and intangible heritage of Tribes in the state. They include the collective rights and access to traditional areas and times for gathering resources associated with a Tribe's sovereignty, as well as the inherent rights or formal treaty rights associated with Usual and Accustomed Areas (U&As) (WSDOT 2007; Ecology 2022[e]). These areas are important to traditional cultural practices, such as plants, wildlife, or fish used for commercial, subsistence, and ceremonial purposes. Tribal cultural resources can also include archaeological or historic sites or Traditional Cultural Places (TCPs) associated with Tribal use and sacred sites. TCPs are properties associated with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community.

As previously described in this chapter, past projects have shaped the existing environment, which this Programmatic EIS describes in the Affected Environment subsection of each environmental resource section. However, it is critical to acknowledge how the historic and continuing effects of an ongoing action can result in potentially significant adverse cumulative impacts on tribal cultural resources. For example, as discussed in the U.S. Department of the Interior's Historic and Ongoing Impacts of Federal Dams on the Columbia River Basin Tribes report, federal dams have impacted species in the Columbia River Basin, thus impeding Tribes' ability to realize the benefits of their reserved rights, including treaty-reserved rights to harvest salmon at U&As, on unoccupied lands, or within reservations. The devastation of once-abundant salmon, steelhead, and other species in the Columbia River Basin has adversely and inequitably impacted Tribes' spiritual, cultural, physical, and economic health (DOI 2024).

Although Tribal reservations are not included in the Study Area for this Programmatic EIS, the development of transmission facilities in combination with other RFAs could result in impacts on tribal cultural resources. Other past projects have also altered the landscape, some of which continue to contribute to cumulative impacts on tribal cultural resources. Collectively, the impacts from these past, present, and RFAs could impact tribal cultural resources in a variety of ways. The cumulative loss of vegetation, ground-disturbing activities, and new structures or roads, located within or in proximity to U&As and other Tribal areas of interest where fishing, hunting, and gathering activities take place, could impact culturally important resources such as fish, food forests and foraging landscapes, and foraging grounds for migratory

populations of game. The implementation of these projects can also create modern intrusions or degrade the visual quality of these resources, which may be important aspects of integrity and significance for a TCP or tribal cultural resource.

RFAs related to community growth, energy generation and transmission, land- and water-based transportation, water infrastructure, agriculture, forestry, and mining could have cumulative impacts on tribal cultural resources. Many RFAs within the Study Area, as identified in **Table 4.2-1,** could contribute to cumulative impacts on tribal cultural resources. These RFAs may include, but are not limited to, the following:

- Mission Ridge Expansion
- Copperstone Planned Development
- Cascade Renewable Transmission Project
- Double Circuit MidC-White River 500 kV Lines and Longhorn-MidC 500 kV Line.
- Horse Heaven Wind Farm
- Cloudwalker Wind Project
- Cascadia High-Speed Rail Project
- North Spokane Corridor
- SR 155 Spur/Okanogan River Bridge Replacement
- US 395 – NSC Spokane River Crossing
- Eight-Mile Dam Rebuild & Restoration
- Howard A. Hanson Dam Additional Water Storage Project
- Flying A Land Rezone
- Kang/Nazarene Church/Lange Rezone
- Fly By Night Timber Sale
- Conk Timber Sale
- JUB Engineering Quarry
- Pioneer Aggregates South Parcel Mine Expansion

Cumulative Impact Significance Rating: The cumulative impact on historic and cultural resources would depend on the size, scale, location, and timing of each specific project in combination with RFAs within the geographic setting and timeframe of that project. Adverse environmental impacts from transmission facilities on historic and cultural resources are expected to be localized and minimized with the implementation of applicable Mitigation Strategies outlined in this Programmatic EIS. However, despite efforts to minimize adverse environmental impacts on historic and cultural resources, the long-term incremental loss and impacts on historic and cultural resources from the new construction, operation and maintenance, upgrade, and modification of transmission facilities would likely contribute to probable significant adverse cumulative environmental impacts.

4.3.4.15 Socioeconomics

The new construction, operation and maintenance, upgrade, and modification of overhead and underground transmission facilities could impact socioeconomics and environmental justice communities, including vulnerable populations and overburdened communities, in a variety of ways. Adverse environmental impacts could include new or increased noise sources, air pollutant levels, visual disruptions, and restricted access to land resources and recreational facilities. These impacts can have adverse environmental impacts on the social conditions, economic environment, and general welfare of urban and rural communities.

The new construction of overhead and underground transmission facilities could require between 60 and 220 employees at any given time, although new construction would likely be sequenced; therefore, employees would not all be in one location at the same time. Employees traveling to the new construction area could affect the availability of local hotels or short-term places of stay. Mutually agreed-upon property acquisition agreements between the project applicant and residential property owners could lead to long-term changes in housing availability due to the displacement of residents or housing units. Additionally, zoning changes or new utility infrastructure near residents could influence the desirability of continuing to live there, and could lead to residents moving.

Overhead transmission facilities could influence potential homebuyers. Homebuyers with greater financial resources may prefer neighborhoods farther away from overhead transmission facilities. Overhead transmission facilities could decrease home values beginning during new construction and continuing throughout the life of a project.

Road closures and diversions could temporarily disrupt access to local businesses or employment centers. A change in access to local businesses could have adverse environmental impacts on their fiscal revenue, while a change in access to employment centers may require employees to alter their lifestyles to accommodate changes in accessibility. Additionally, the conversion of the DNR-administered lands, including state trust lands, could have cumulative adverse impacts on the fiscal conditions of the beneficiaries and the communities they serve. Changes in the amount, distribution, or allocation of funding once the land is converted to another use could also impact employment opportunities tied to those services.

The siting of transmission facilities could result in adverse environmental impacts on the social conditions, economic environment, and general welfare of both urban and rural communities. These impacts could also affect vulnerable populations and overburdened communities; however, these groups may experience greater impacts due to their vulnerability and the historical burden of environmental stressors.

Many other RFAs identified in **Table 4.2-1** could contribute to cumulative impacts on socioeconomics and environmental justice communities, including those related to community growth, energy generation and transmission, land- and water-based transportation, water infrastructure, mining, forestry, and agriculture. These RFAs could result in similar impacts on the social conditions, economic environment, and general welfare of urban, rural, and environmental justice communities. RFAs that may contribute to adverse cumulative impacts include, but are not limited to, the following:

- Wallula Gap Business Park
- Northwest Advanced Clean Energy Park
- Horse Heaven Wind Farm
- Hop Hill Solar Energy Project
- Cross-Cascades North Reinforcement project
- Double Circuit MidC-White River 500 kV Lines and Longhorn-MidC 500 kV Line
- I-405/SR 167 Corridor Program
- I-405/Renton to Bellevue Widening and Express Toll Lanes Project
- I-5 East Fork Lewis River NB Bridge Replacement

- SR 155 Spur/Okanogan River Bridge Replacement
- JUB Engineering Quarry
- Pioneer Aggregates South Parcel Mine Expansion
- Fly By Night Timber Sale
- Conk Timber Sale
- Swift Creek Poultry Farm
- Kang/Nazarene Church/Lange Rezone

Cumulative Impact Significance Rating: The cumulative impact on socioeconomics and environmental justice communities would depend on the size, scale, location, and timing of each specific project in combination with RFAs within the geographic setting and timeframe of that project. Adverse environmental impacts from transmission facilities on socioeconomics and environmental justice communities are expected to be localized and minimized with the implementation of applicable Mitigation Strategies outlined in this Programmatic EIS. However, despite efforts to minimize adverse environmental impacts on socioeconomics and environmental justice communities, it is expected that the long-term adverse environmental impacts from the new construction, operation and maintenance, upgrade, and modification of transmission facilities would be likely to contribute to probable significant adverse cumulative environmental impacts.

4.4 Summary of Findings

As described in the preceding sections, this Programmatic EIS considers the probable significant adverse cumulative impacts of the Action Alternative. **Table 4.4-1** summarizes the probable significant adverse cumulative impacts of the Action Alternative in combination with other present projects and RFAs across the state. As outlined in General Measure Gen-7 – Cumulative Impact Assessment, the SEPA Lead Agency for project-specific applications would be required to analyze cumulative adverse environmental impacts, identify appropriate Mitigation Measures, and determine significance based on the physical setting of the site-specific project.

Table 4.4-1: Summary of Potential Cumulative Impacts

Element of the Environment	Activities Associated with a Potential Cumulative Impact	Associated Potential Cumulative Impact	Probable Significant Adverse Cumulative Impact?[b]
Earth Resources	▪ Grading ▪ Removing vegetation ▪ Excavating ▪ Building access roads ▪ Use of heavy construction equipment ▪ Siting and constructing transmission facilities in geologically unstable areas ▪ Routine maintenance and operation activities	▪ Alteration of topography and drainage patterns ▪ Soil erosion and/or accretion ▪ Compaction of soil ▪ Damage from a geological hazard	No
Air Quality	▪ Grading ▪ Removing vegetation ▪ Excavating ▪ Building access roads ▪ Moving equipment and vehicles over unpaved surfaces ▪ Disrupting soils susceptible to erosion ▪ Using portable generators, heavy equipment, and concrete batch plants ▪ Installing and handling gas-insulated switchgear and other electrical equipment that uses SF_6 ▪ Clearing and blasting ▪ Using gas and diesel-powered vehicles and equipment ▪ Routine maintenance and operation activities	▪ Increased fugitive dust emissions ▪ Increased emissions from fuel-burning equipment ▪ Increased SF6 emissions ▪ GHG emissions ▪ Odor	No

Element of the Environment	Activities Associated with a Potential Cumulative Impact	Associated Potential Cumulative Impact	Probable Significant Adverse Cumulative Impact?[b]
Water Resources	▪ Creating temporary water diversions ▪ Altering hydrology patterns ▪ Using water or extracting groundwater for construction activities, such as concrete mixing and dust control ▪ Increasing soil erosion and sediment transport due to construction activities ▪ Flooding or storm surges ▪ Spilling deleterious substances or unearthing contaminated sediments near waterbodies ▪ Routine maintenance and operation activities	▪ Impacts on water quality, including: ○ Changes in sedimentation ○ Changes in water chemistry ▪ Impacts on water quantity, including: ○ Increased water usage ○ Altered hydrology ○ Temporary water diversions ○ Groundwater extraction ▪ Damage to infrastructure	No
Vegetation	▪ Removing vegetation ▪ Building new access or maintenance roads ▪ Creating new ROWs ▪ Spreading invasive species ▪ Increasing sedimentation or dust due to construction activities ▪ Using herbicides ▪ Accidentally spilling hazardous materials ▪ Routine maintenance and operation activities	▪ Loss of native ecosystems and plants ▪ Fragmentation ▪ Degradation of soils ▪ Edge effects ▪ Introduction or spread of invasive plants or noxious weeds ▪ Surface runoff ▪ Impacts from increased dust ▪ Introduction of hazardous materials ▪ Increased fire risk	Yes
Habitat, Wildlife, and Fish	▪ Grading ▪ Removing vegetation ▪ Excavating	▪ Direct habitat loss ▪ Indirect habitat loss ▪ Mortality ▪ Barriers to movement ▪ Fragmentation	Yes

Element of the Environment	Activities Associated with a Potential Cumulative Impact	Associated Potential Cumulative Impact	Probable Significant Adverse Cumulative Impact?[b]
	▪ Changes in vegetation composition, exposure to wind, soil conditions, noise levels, light regimes, and human presence ▪ Increasing collisions with vehicles ▪ Destroying nests/dens ▪ Introducing nuisance or invasive species ▪ Changes in water flow or quality ▪ Constructing poles, towers, substations, access and maintenance roads, and fences or sediment fences ▪ Routine maintenance and operation activities		
Energy and Natural Resources	▪ Using resources such as metal, aggregate, concrete, fuel, and oil ▪ Using resources such as land and water ▪ Using resources such as electricity ▪ Routine maintenance and operation activities	▪ Consumption of non-renewable resources ▪ Consumption of renewable resources ▪ Consumption of energy	No
Public Health and Safety	▪ Handling motor vehicles and equipment ▪ Increased exposure to extreme weather events ▪ Working at extreme heights ▪ Electricity-related risks, such as electric shock ▪ Increased exposure to hazardous substances ▪ Conducting hot-work activities ▪ Operating combustion engines and motor vehicles over vegetated areas ▪ Generating EMF ▪ Generating heat during the operation of underground transmission facilities	▪ Increase in accidents and injuries ▪ Exposure to hazardous materials ▪ Increased risk of wildfire ▪ Exposure to EMF ▪ Excess heat generation	No

Element of the Environment	Activities Associated with a Potential Cumulative Impact	Associated Potential Cumulative Impact	Probable Significant Adverse Cumulative Impact?[b]
	▪ Flooding or storm surges ▪ Routine maintenance and operation activities		
Land and Shoreline Use	▪ Being inconsistent with existing land uses ▪ Being inconsistent with goals or policies in relevant planning and program documents ▪ Interfering with natural resource operations, such as farming, due to equipment laydown and staging, and constructing access roads ▪ Soil erosion and sedimentation due to clearing vegetation, constructing foundations, and laying materials within or adjacent to shorelines ▪ Siting and constructing overhead facilities within or near military utilized airspace and civilian airports ▪ Siting and constructing overhead facilities within or near designated wilderness areas, national parks, or state parks ▪ Routine maintenance and operation activities	▪ Incompatibility with land use ▪ Conflict with relevant goals and policies ▪ Loss of function and value of shorelines ▪ Loss of function and value of agricultural lands and rangelands ▪ Conflicts with military utilized airspace and civilian airfield operations	Yes
Transportation	▪ Creating temporary road closures ▪ Creating temporary detours ▪ Constructing access roads ▪ Moving heavy construction vehicles and equipment ▪ Generating EMF ▪ Routine maintenance and operation activities	▪ Impacts on vehicular transportation and infrastructure, including: ○ Closures and diversions ○ Increased traffic and increased collision risk ○ Impacts from access road construction ○ Impacts on road authority	No

Element of the Environment	Activities Associated with a Potential Cumulative Impact	Associated Potential Cumulative Impact	Probable Significant Adverse Cumulative Impact?[b]
		▪ Impacts on waterborne vessels and infrastructure, including: ○ Closures and diversions ○ Increased collision risk ○ Impacts from infrastructure modification ▪ Impacts on rail transportation and infrastructure, including: ○ Closures and diversions ○ Increased collision risk ○ Impacts on rail stability ○ Impacts from infrastructure modification ▪ Impacts on air transportation and infrastructure,[a] including: ○ Impacts from airspace restrictions ○ Increased collision risk ○ Decreased visibility	
Public Services and Utilities	▪ Impacting existing utility infrastructure ▪ Creating excess solid waste from excavating, clearing vegetation and soils, packing materials, etc. ▪ Using water for dust or fire control, concrete mixing, and revegetation efforts ▪ Increasing risks of fires, worker injuries, vehicular collisions, theft, vandalism, and trespassing ▪ Creating temporary road closures, detours, and increased traffic	▪ Conflicts with existing utility infrastructure ▪ Increased solid waste production ▪ Increased water demand ▪ Increased demand for fire protection services, law enforcement, and emergency responders ▪ Increased emergency response times	No

Element of the Environment	Activities Associated with a Potential Cumulative Impact	Associated Potential Cumulative Impact	Probable Significant Adverse Cumulative Impact?[b]
	▪ Routine maintenance and operation activities	▪ Increased risk of power outages at public service facilities	
Visual Quality	▪ Grading ▪ Removing vegetation ▪ Excavating ▪ Open trenching for underground transmission facilities ▪ Creating new ROW corridors ▪ Building access roads, fencing, bridges, temporary laydown areas, turnaround areas, and watercourse crossings ▪ Assembling foundations, structures, and substations ▪ Transporting materials and equipment at night ▪ Use of lighting during night construction ▪ Presence of vehicles and equipment during construction ▪ Routine maintenance and operation activities	▪ Degradation of scenic natural resources ▪ Degradation of aesthetics ▪ Degradation of night sky	Yes
Noise and Vibration	▪ Transporting materials and equipment ▪ Staging materials ▪ Assembling transmission structures and other project features ▪ Constructing access roads ▪ Increasing vehicle traffic from commuting workers and trucks ▪ Blasting and rock breaking	▪ Increased noise at sensitive receptors ▪ Ground-borne vibration at off-site structures ▪ Hearing loss	No

Element of the Environment	Activities Associated with a Potential Cumulative Impact	Associated Potential Cumulative Impact	Probable Significant Adverse Cumulative Impact?[b]
	▪ Using implosive devices during conductor stringing ▪ Using heavy machinery and helicopters during construction ▪ Conducting open-trenching operations ▪ Conducting horizontal directional drilling operations ▪ Conducting trenchless crossing operations ▪ Corona discharge ▪ Routine maintenance and operation activities		
Recreation	▪ Grading ▪ Removing vegetation ▪ Excavating ▪ Open trenching for underground transmission facilities ▪ Creating new ROW corridors for overhead and underground transmission facilities ▪ Increasing publicity of recreational facilities ▪ Using recreational facilities ▪ Welding, vehicle ignition, and blasting ▪ Use of heavy machinery and combustion vehicles ▪ Routine maintenance and operation activities	▪ Temporary closure or restricted access ▪ Permanent closure ▪ Increase in use ▪ Change in integrity ▪ Increased risk of wildfire ▪ Physical hazard to aerial recreation	Yes
Cultural and Historic Resources	▪ Grading ▪ Removing vegetation ▪ Excavating ▪ Compacting soils	▪ Physical impacts on historic and cultural resources ▪ Visual impacts on historic and cultural resources	Yes

Element of the Environment	Activities Associated with a Potential Cumulative Impact	Associated Potential Cumulative Impact	Probable Significant Adverse Cumulative Impact?[b]
	▪ Creating new ROW corridors for overhead and underground transmission facilities ▪ Creating a modern intrusion ▪ Replacing gates or fences for access roads ▪ Collocating conduits on historic bridges ▪ Routine maintenance and operation activities	▪ Physical impacts on Tribal resources and TCPs ▪ Visual impacts on Tribal resources and TCPs	
Socioeconomics and Environmental Justice	▪ Grading ▪ Removing vegetation ▪ Excavating ▪ Transporting materials and equipment ▪ Staging materials ▪ Assembling transmission structures and other project features ▪ Creating an increase in fugitive dust emissions, emissions from fuel-burning equipment, and SF_6 emissions ▪ Creating new ROW corridors ▪ Constructing access roads ▪ Blasting and rock breaking ▪ Conducting open-trenching operations ▪ Conducting horizontal directional drilling operations ▪ Conducting trenchless crossing operations ▪ Generating corona discharge ▪ Generating EMF	▪ Degradation of the natural and built environment, including: ○ Noise and vibration ○ Air quality ○ Visual quality ○ Land and shoreline use, and recreation ▪ Changes in housing availability ▪ Changes in home values ▪ Changes in economic and fiscal conditions or employment	Yes

Element of the Environment	Activities Associated with a Potential Cumulative Impact	Associated Potential Cumulative Impact	Probable Significant Adverse Cumulative Impact?[b]
	▪ Creating an influx of construction workers looking for temporary housing ▪ Requiring land acquisitions that displace residents or housing units ▪ Imposing a tariff for the additional cost of undergrounding a transmission facility ▪ Creating temporary road closures ▪ Creating temporary detours ▪ Vehicle traffic from commuting workers and trucks		

Notes:

(a) Section 3.9, Land and Shoreline Use, analyzes impacts on military utilized airspace and civilian airfield operations.

(b) A response of "No" does not mean that this element of the environment should be excluded from analysis in project-specific cumulative impact assessments.

EMF = electromagnetic fields; **ROW** = right-of-way; **SF_6** = sulfur hexafluoride; **TCP** = Traditional Cultural Place

This Page Intentionally Left Blank

4.5 Phased Environmental Review for Cumulative Impacts

The Washington Energy Facility Site Evaluation Council has determined that the appropriate scope and level of detail for this Programmatic EIS cumulative effects analysis (the Study Area) may not be sufficient for a project-specific cumulative effects analysis (Washington Administrative Code 197-11-060(5) Phased Review). This Programmatic EIS analyzes cumulative effects and recognizes that significant cumulative effects are possible for many environmental resources. However, the actual context for a specific project would vary with the physical setting and timing, and would therefore affect the analysis of cumulative effects for that specific project and make it more feasible to identify appropriate mitigation for any identified project-specific cumulative impacts. Therefore, it is assumed that all project-specific applications would implement Gen-7. Gen-7 recommends that information be provided to the SEPA Lead Agency to support a project-specific cumulative impact.

The applicant should prepare an updated RFA list based on the geographic setting of the project-specific application, and the SEPA Lead Agency should consider the geographic setting for each element of the environment, as outlined in **Table 4.5-1**. More details on the geographic settings provided in **Table 4.5-1** can be found in the respective resource section in Chapter 3, Affected Environment, Significant Impacts, and Mitigation. The SEPA Lead Agency would analyze cumulative adverse environmental impacts, identify appropriate Mitigation Measures, and determine significance.

Table 4.5-1: Geographic Setting for Environmental Resources

Resource	Geographic Setting
Earth Resources	▪ Project Site and Immediate Vicinity ▪ Soil and Geology ▪ Seismic Hazards ▪ Previous Earthworks
Air Quality	▪ Project Site and Immediate Vicinity ▪ Air Basin
Water Resources	▪ Project Site and Immediate Vicinity ▪ Watershed and River Basins ▪ Wetlands and Floodplains ▪ Groundwater Aquifers

Resource	Geographic Setting
Vegetation	▪ Project Site and Immediate Vicinity ▪ A Local Study Area Surrounding the Project Site
Wildlife, Habitat, and Fish	▪ Project Site and Immediate Vicinity ▪ Protected Areas ▪ Aquatic Ecosystems ▪ Critical Habitat ▪ Sensitive Species Habitat ▪ Migration Corridors
Energy and Natural Resources	▪ Project Site and Immediate Vicinity ▪ Affected Geography
Public Health and Safety	▪ Project Site and Immediate Vicinity
Land and Shoreline Use	▪ Project Site and Immediate Vicinity ▪ Agriculture and Rangelands ▪ Shorelines ▪ Military Utilized Airspace and Civilian Airfields
Transportation	▪ Project Site and Immediate Vicinity ▪ Transportation corridors ▪ Transportation Infrastructure ▪ Airspace and Flight Paths ▪ Safety and Reliability
Public Services and Utilities	▪ Project Site and Immediate Vicinity ▪ Existing Utilities
Visual Quality	▪ Project Site and Immediate Vicinity ▪ Assessment Zone ▪ Viewshed
Noise and Vibration	▪ Project Site and Immediate Vicinity ▪ Existing Noise Environment ▪ Climate and Elevation
Recreation	▪ Project Site and Immediate Vicinity ▪ Viewshed
Historic and Cultural Resources	▪ Project Site and Immediate Vicinity ▪ Viewshed
Socioeconomics	▪ Project Site and Immediate Vicinity ▪ Vulnerable Populations and Overburdened Communities