EFSEC
WASHINGTON

Programmatic Environmental Impact Statement

High-Voltage Transmission Facilities in Washington

Executive Summary

October 2025

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Executive Summary

The Washington Energy Facility Site Evaluation Council (EFSEC) is undertaking a broad evaluation of the potential adverse environmental impacts of the new construction, operation and maintenance, upgrade, and modification of electrical transmission facilities with a nominal voltage of 230 kilovolts (kV) or greater (transmission facilities) throughout Washington. This analysis is being considered to improve and expand the planning of transmission facilities in response to Senate Bill (SB) 5165, codified in Washington as Revised Code of Washington (RCW) 43.21C.405 and RCW 43.21C.408, signed by Governor Inslee on May 3, 2023, becoming effective July 23, 2023.

ES 1.0 Introduction

This Programmatic Environmental Impact Statement (EIS) provides a high-level analysis of transmission facilities, rather than focusing on individual projects. It identifies when an adverse environmental impact could occur, Mitigation Strategies to address them, and whether the impact may still result in a probable significant adverse impact. “Impacts” are the effects or consequences of actions (Washington Administrative Code [WAC] 197-11-752) on the elements of the environment identified.

As directed by the Washington State Legislature in RCW 43.21C.405, this Programmatic EIS analyzes potential direct, indirect, and cumulative adverse environmental impacts of the new construction, operation and maintenance, upgrade, and modification of transmission facilities in Washington. The analysis considers the potential adverse environmental impacts on elements of the natural and built environment specified under WAC 197-11-444. It contains an evaluation of adverse environmental impacts and identifies Mitigation Measures for the following topics:

- Earth Resources (including seismic hazards)
- Air Quality (including greenhouse gases)
- Water Resources
- Vegetation
- Habitat, Wildlife, and Fish
- Energy and Natural Resources
- Public Health and Safety
- Land and Shoreline Use (including military, agricultural, and ranching uses)
- Transportation
- Public Services and Utilities
- Visual Quality
- Noise and Vibration
- Recreation
- Historic and Cultural Resources (including Tribal rights, interests, and resources)
- Socioeconomics (including Environmental Justice and Overburdened Communities)[1]

In accordance with the Washington State Environmental Policy Act (SEPA), this Programmatic EIS weighs the likelihood of various adverse environmental impacts with the anticipated physical setting, magnitude, and duration of each impact (WAC 197-11-794) and considers several factors when analyzing potential adverse environmental impacts.

This Programmatic EIS presents an analysis of adverse environmental impacts for four assumed project stages—new construction, operation and maintenance, upgrade, and modification—and examines the Action Alternative and a No Action Alternative.

ES 1.1 Action Alternative

The Action Alternative in this Programmatic EIS analyzes the potential adverse environmental impacts of transmission facilities in Washington to understand the landscape-scale context of these impacts. Its purpose is to identify common adverse environmental impacts and explore, analyze, and adopt Mitigation Strategies that could be applied to project-specific applications. By doing so, project-specific

[1] Although not listed among the elements of the environment in WAC 197-11-444, socioeconomics was added to the list of elements analyzed to reflect information on potential socioeconomic impacts in response to WAC 463-60-535.

environmental reviews can focus on site-specific impacts, conducting additional project-specific environmental analyses, and identifying project-specific mitigation, as appropriate.

This Programmatic EIS serves as a guide for the development of project-specific applications related to transmission facilities. The Action Alternative provides a phased approach to the environmental review process for project-specific applications. It allows applicants to incorporate the Mitigation Strategies identified in this Programmatic EIS early in their planning stages and before submitting their project-specific applications to the SEPA Lead Agency for review. By incorporating these Mitigation Strategies, applicants can maximize the benefits of this Programmatic EIS and reduce the time needed for project-specific environmental review by the SEPA Lead Agency.

ES 1.2 No Action Alternative

SEPA requires the analysis of a No Action Alternative. Under the No Action Alternative for this Programmatic EIS, the SEPA Lead Agency for each proposed transmission facility project would continue to use the current process of review and management of transmission facility development under approved land use plans, SEPA, and regulations for transmission facilities.

The adverse environmental impacts associated with the Action Alternative and the No Action Alternative are described quantitatively herein if sufficient data or information is available to do so. In cases where detailed information is not available, and such information is not essential for determining the level of adverse environmental impacts, impacts are described qualitatively. To determine potential adverse environmental impacts, this analysis considers existing laws and regulations, best management practices, and typical design considerations.

ES 1.3 Cumulative Impacts

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. Cumulative impacts are the combined result of incremental direct and indirect adverse environmental impacts that a project may have on resources of concern, along with past, present, and reasonably foreseeable actions.

Adverse environmental impacts from transmission facilities on the environment and resources may not be significant when considered alone. However, when they are considered in combination with the adverse environmental impacts of past, present, and reasonably foreseeable actions, they can result in a significant impact on the environment.

Reasonably foreseeable actions generally include actions that are currently underway, formally proposed or planned, or highly likely to occur based on publicly available information. These actions, when combined with the impacts of a specific project, can lead to significant cumulative effects on the environment. The cumulative effects of past projects and actions are not individually identified but are addressed in the Affected Environment section for each resource discussed in Chapter 3.

ES 2.0 Background

The Washington State Legislature passed the Clean Energy Transformation Act (CETA) in 2019, which requires Washington's electric utilities to meet 100 percent of their retail electric load using non-emitting and renewable resources by January 1, 2045; eliminate coal-fired resources from their allocation of electricity by December 31, 2025; and make all retail sales of electricity greenhouse gas–neutral by January 1, 2030. The Legislature also found that the electric power system serving Washington would require additional high-voltage transmission capacity to achieve the state's objectives and legal requirements. Consistent with Section 25 of CETA, EFSEC convened a Transmission Corridors Work Group (TCWG).

The TCWG provided a Cover Letter and Final Report to Governor Inslee and the appropriate legislative committees on August 1, 2022 (EFSEC 2022a, 2022b). The Final Report identifies recommendations to guide transmission facility development in the state, while the Cover Letter summarizes the TCWG's work completed to date. The Cover Letter highlights the following key points that emerged from the work of the TCWG:

- Regional and interregional planning
- Staff resources in state agencies
- Enhanced resources for Tribes
- Pre-application planning and coordination

The Legislature anticipated the crucial role of additional transmission capacity in Washington and passed SB 5165 to align the needs of utility providers with CETA and enhance electric transmission planning. SB 5165 was codified into RCW 43.21C.405 and RCW 43.21C.408. In accordance with RCW 43.21C.030, EFSEC was also directed to prepare a nonproject environmental review—commonly referred to as Programmatic EIS—for high-voltage transmission facilities.

The purpose of this Programmatic EIS is to assess and disclose any probable significant adverse environmental impacts and identify related measures for transmission facilities in Washington. This Programmatic EIS provides this requested analysis for two options (e.g., overhead and underground) and multiple stages of transmission facility development (e.g., new construction, operation and maintenance, upgrade, and modification). Additional nonproject environmental reviews could be completed for areas identified as outside the scope of this Programmatic EIS, if additional data becomes available.

ES 2.1 Purpose and Need

Washington needs more transmission facilities for several reasons, including population growth, renewable energy integration, grid reliability and resilience, and economic growth. Expanded transmission capacity and modifications that make existing transmission capacity more effective would benefit electricity consumers by making the electric power system more reliable and increasing access to more affordable sources of electricity in the state and across the western United States and Canada.

Existing constraints on transmission capacity in Washington already present challenges in ensuring adequate and affordable supplies of clean electricity. Of particular concern is the capability of the transmission facility system to deliver clean electricity to and within the central Puget Sound area.

Transmission facility projects typically take at least a decade to develop and permit. This timing presents challenges for achieving the state's greenhouse gas emissions reduction mandates, which include ambitious benchmarks starting in 2030. There is a need to accelerate the timeline for transmission facility development while still protecting other Washington values, including land use compatibility, environmental protection, and Tribal rights.

Several factors contribute to the challenge of implementing timely and cost-effective transmission facility projects. Transmission planning must reflect not just the requirements to connect individual generating resources to the grid but also the need to transfer electricity across the state and the West as a region. Transmission facility planning must incorporate state policies and laws in planning objectives.

The following principles recommended by the TCWG were considered in helping to expedite environmental review and permitting without compromising protections. These principles provide foundational, solution-oriented direction throughout transmission facility system development:

- *Align and coordinate process, timing, and analysis methodologies within and across National Environmental Policy Act (NEPA) and other federal laws, and SEPA during project planning.*
- *Use EFSEC for cross-jurisdictional long-range transmission projects.*
- *Identify opportunities for federal and state programs to establish programmatic permitting agreements for transmission projects.*
- *Identify specific geographic areas for siting transmission within corridors where additional transmission capacity is needed to meet the goals of CETA, as part of regional planning for grid-critical transmission investments/projects.*
- *Approach expediting review and permitting with the primary goal of avoiding cultural resource impacts in transmission corridors.*
- *Invest in proactive and meaningful Tribal consultation.*
- *Invest in relationship-building between project developers and Tribes.*
- *Look for a "win" for Tribes and cultural resources.*
- *Leverage the expertise of the Department of Archaeological and Historic Preservation (DAHP).*
- *Increase funding to Tribes and DAHP to reduce staffing constraints that impede and slow Tribal cultural resources review and completion of ethnographic studies. (EFSEC 2022a)*

This Programmatic EIS serves several important purposes, including the following:

- **Provide a Broad Environmental Impact Assessment:** It presents a comprehensive evaluation of adverse environmental impacts associated with

transmission facility development at a broad level throughout Washington, rather than focusing on specific projects, sites, or corridors.

- **Facilitate Streamlined Planning:** It assesses common adverse environmental impacts and mitigation strategies early in the planning stage, which helps to streamline the environmental review process for individual transmission facility projects in the future. Streamlining the project-specific environmental review process can save time and resources for both applicants and the SEPA Lead Agency.
- **Support Informed Decision-Making:** It provides information that can help applicants understand potential adverse environmental impacts upfront and make initial siting[2] and design[3] choices that could avoid or minimize adverse environmental impacts at earlier stages of project consideration, potentially expediting the permitting timeline for future transmission facility development.
- **Identify Mitigation Strategies:** It identifies effective avoidance, minimization, and Mitigation Measures[4] to address adverse environmental impacts, which can be applied to future transmission facility projects that fall within the scope of this Programmatic EIS.
- **Initiate Public and Stakeholder Engagement:** It provides an up-front platform for public and stakeholder input, ensuring that community concerns and interests are considered early in the planning process.

Overall, this Programmatic EIS helps facilitate project-specific environmental review of transmission facilities in Washington in an environmentally responsible and efficient manner.

ES 2.2 Decisions to Be Made

This Programmatic EIS, when finalized, is designed to provide a broad environmental review for future project-specific decisions. It evaluates the potential adverse environmental impacts of transmission facilities at a high level, rather than focusing on specific projects. Once finalized, a SEPA Lead Agency reviewing a project-specific

[2] Siting involves identifying and evaluating potential routes for transmission facilities.
[3] Design involves the detailed planning of the transmission infrastructure.
[4] WAC 197-11-768 outlines the concept of mitigation in the context of environmental impact. Mitigation includes 1. Avoiding the impact, 2. Minimizing impacts, 3. Rectifying the Impact, 4. Reducing or eliminating the impact, 5. Compensating for the impact, and 6. Monitoring the impact.

application for an electrical transmission facility would decide to do one of the following:

- **Adopt the Programmatic EIS** in its entirety without the need for an addendum or supplemental analysis. This indicates that there are no additional project-specific details or analyses of adverse environmental impacts that should be recorded in the SEPA documentation.
- **Prepare an Addendum**, in addition to adopting the Programmatic EIS, that adds analyses or information about the project but does not substantially change the analysis of significant adverse environmental impacts and alternatives addressed in this Programmatic EIS.
- **Prepare a Supplemental EIS**, in addition to adopting the Programmatic EIS, that adds new analyses or information related to probable significant adverse environmental impacts of the project that have not been addressed in this Programmatic EIS. This may include project-specific adverse environmental impacts that were not identified in this Programmatic EIS or that were identified in this Programmatic EIS, but are determined by the SEPA Lead Agency through project-specific environmental review to have been insufficiently evaluated.
- **Incorporate the Programmatic EIS** by reference if the intent is for the SEPA Lead Agency to prepare a full, distinct project-specific environmental review resulting in a DNS, MDNS, or EIS.

SEPA allows for nonproject reviews to provide a comprehensive analysis of potential adverse environmental impacts for plans, policies, or programs. The SEPA Lead Agency is still required to conduct a project-specific environmental review even if a nonproject environmental review has been conducted. The project-specific environmental review would identify and address any impacts or mitigation measures that were not accounted for in the nonproject review. This ensures that all adverse environmental impacts are thoroughly evaluated and mitigated, providing a more detailed and focused review for individual projects.

ES 2.3 Scope of Analysis

EFSEC has determined that the Planning Area of this Programmatic EIS includes the entirety of Washington. The Study Area, or geographic scope, includes all lands across

Washington except for those covered by the exclusion criteria identified in Table 1.5-1 in Chapter 1, Introduction.

The scope of this Programmatic EIS is limited to the probable significant adverse environmental impacts in geographic areas suitable for the electrical transmission facilities with a nominal voltage of 230 kV or greater. However, the analysis also includes evaluation of lesser impacts where relevant to understanding the cumulative effects of transmission facility development across the state. This approach supports SEPA's directive to consider direct, indirect, and cumulative impacts when evaluating the significance of environmental effects.

As directed by RCW 43.21C.405, this Programmatic EIS is not required to evaluate geographic areas that lack the characteristics necessary to support electrical transmission facilities with a nominal voltage of 230 kV or greater.

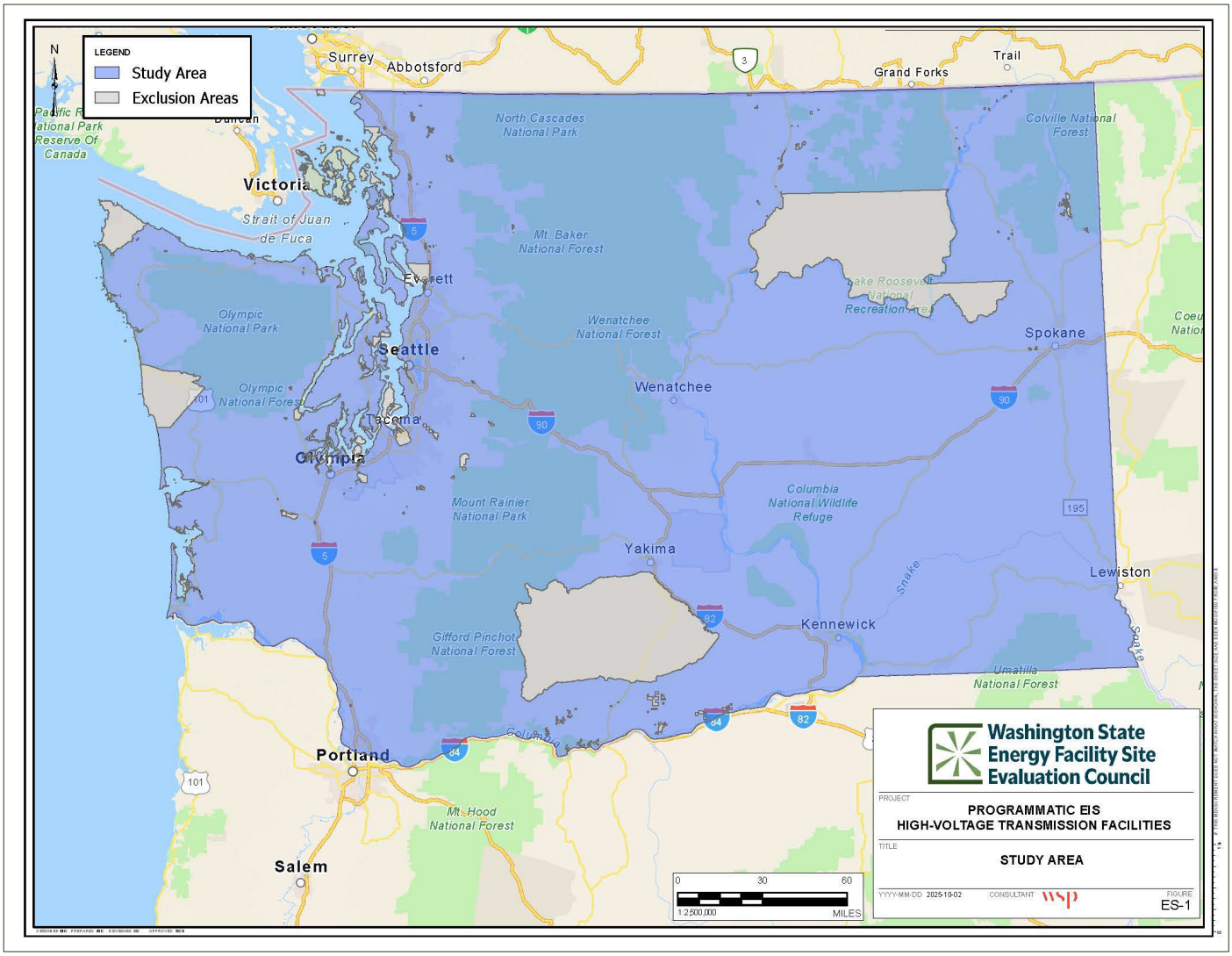
The following areas will be excluded from the geographic scope of study for this Programmatic EIS:

- Undersea or oceanic transmission, including in-water trenching or burial within freshwater bodies (e.g., lakes and rivers)[5]
- Tribal reservation lands[6]

Figure ES-1 shows the geographic scope, or Study Area, for this Programmatic EIS. A full-sized figure representing the Study Area, Figure 1.5-1, is provided in Chapter 1, Introduction.

[5] 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, thus 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.

[6] For the purposes of this scoping document, Tribal lands are not included in the Study Area. Tribal lands are sovereign territories, and decisions regarding their use typically fall under the jurisdiction of the respective 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. RCW 70A.65.305 establishes a leal requirement for state agencies and applicants to engage in early, meaningful, and individual consultation with affected federally recognized Tribes when projects may impact Tribal resources. This includes cultural resources, archaeological sites, sacred sites, fisheries, or other rights and interest in tribal lands or lands where Tribes hold treaty-protect rights. These processes ensure that Tribal concerns and perspectives are adequately addressed.



ES 2.4 Decision Tree

Environmental reviews often involve complex decisions with multiple variables. A decision tree is a visual tool used to guide decision-making processes by outlining a series of questions and corresponding actions or outcomes. It helps users navigate complex regulations, policies, or procedures by breaking them down into manageable steps.

The decision tree for this Programmatic EIS is provided in **Figure ES-2** and discussed further in Chapter 1, Introduction. This decision tree breaks the project-specific environmental review process into manageable steps and outlines how the

Programmatic EIS can be used. The primary purpose of the Programmatic EIS is to facilitate the SEPA Lead Agency in streamlining project-specific environmental reviews. Since transmission facilities must connect two or more locations safely and reliably across the entire length of the project, authorizations need to be streamlined so that environmental and regulatory considerations can be simultaneously addressed over the entire length of a project. The decision tree highlights how the Programmatic EIS provides opportunities for efficiently conducting project-specific environmental reviews for transmission facilities.

This Programmatic EIS identifies General Measures and Avoidance Criteria based on the affected environment and impact analysis. By incorporating these assumptions into the baseline analysis, this Programmatic EIS provides a framework for understanding and managing probable significant adverse environmental impacts of projects at a broader scale. This approach ensures that environmental protection measures are considered and integrated early in the planning and decision-making process. It also offers a clear and consistent understanding of which adverse environmental impacts may require project-specific analyses or mitigation that fall outside the scope of this Programmatic EIS.

Chapter 3 weighs the potential adverse environmental impacts on elements of the environment that would result from transmission facility development after considering the application of laws and regulations; siting and design considerations, including agency guidance and best management practices (BMPs); and Mitigation Strategies, resulting in an impact determination. General Measures and Avoidance Criteria are designed to reduce the time and resources needed for completing project-specific environmental reviews. All Mitigation Strategies are provided in **Appendix 3.1-**1.

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STEP 1

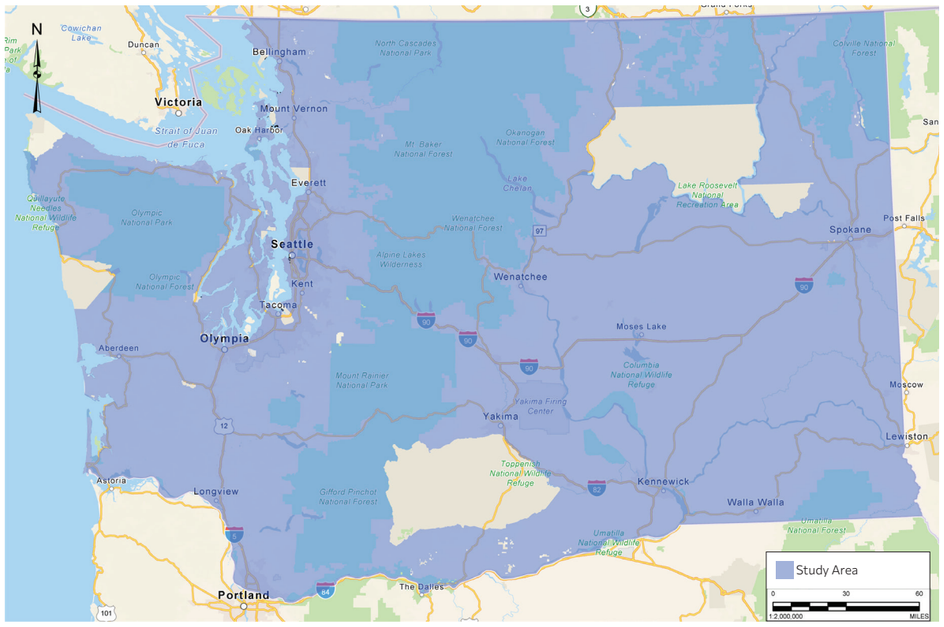
Determine if the project-specific application fits the definition of a **transmission facility**[2] analyzed within the prescribed Study Area[3] of this Programmatic EIS.

NO

Follow applicable SEPA environmental review and permitting processes.

The SEPA Lead Agency would conduct an environmental review in accordance with Chapter 43.21C RCW and Chapter 197-11 WAC for the project and make a SEPA Threshold Determination.

Regarding this Programmatic EIS, the SEPA Lead Agency could **Incorporate by Reference**.



STEP 2

YES

Step 2.1

Does the project comply with all state, federal, and local regulations[5]?

NO | This Programmatic EIS did not analyze this scenario.

THE FOLLOWING IS REQUIRED:

- **APP** Identify the regulations that have not been complied with and provide an explanation.
- **SLA** Complete additional environmental analyses and identify applicable project-specific mitigation.[9]

Proceed to Step 2.2.

YES

Step 2.2

Are design considerations and BMPs[5] accounted for in the design of the project-specific application?

NO | This Programmatic EIS did not analyze this scenario.

THE FOLLOWING IS REQUIRED:

- **APP** Identify the design considerations and BMPs[5] that are not proposed as part of the project-specific application and provide an explanation.
- **SLA** Complete additional environmental analyses and identify applicable project-specific mitigation.[9]

Proceed to Step 2.3.

YES

Step 2.3

Would the project comply with the identified **General Measures**[6] within this Programmatic EIS?

NO | This Programmatic EIS did not analyze this scenario.

THE FOLLOWING IS REQUIRED:

- **APP** Identify the General Measures that have not been complied with and provide an explanation.
- **SLA** Complete additional environmental analyses and identify applicable project-specific mitigation.[9]

Proceed to Step 2.4.

YES

Step 2.4

Does the project comply with the identified **Avoidance Criteria**[7] within this Programmatic EIS?

NO | This Programmatic EIS did not analyze this scenario.

THE FOLLOWING IS REQUIRED:

- **APP** Identify Avoidance Criteria that have not been complied with and provide an explanation.
- **SLA** Complete additional environmental analyses and identify applicable project-specific mitigation.[9]

Proceed to Step 2.5.

YES

Step 2.5

Are all probable adverse environmental impacts of the project identified and analyzed in this Programmatic EIS?

NO | This Programmatic EIS did not analyze this scenario.

THE FOLLOWING IS REQUIRED:

- **SLA** Identify and complete additional environmental analysis for probable adverse environmental impacts not analyzed in this Programmatic EIS and identify applicable project-specific mitigation.[9]

Proceed to Step 2.6.

YES

Step 2.6[7]

Has the applicant committed to the **Mitigation**[9] **Measures**[5] identified within this Programmatic EIS associated with medium or high impact determinations?

NO | This Programmatic EIS did not analyze this scenario.

THE FOLLOWING IS REQUIRED:

- **APP** Identify the Mitigation[9] Measures[5] that have not been incorporated in the project-specific application and provide an explanation.
- **SLA** Complete additional environmental analyses and identify applicable project-specific mitigation.[9]

Proceed to Step 3.

YES | **Proceed to Step 3.**

STEP 3

The **SLA** has the responsibility to determine the appropriate level and type of environmental review for each project-specific application:

Step 3.1

Adopt the Programmatic EIS without the need for an addendum or supplemental analysis. This indicates that there are no additional project-specific details or analyses of adverse environmental impacts that should be recorded in the SEPA documentation.

OR

Step 3.2

Prepare an Addendum, in addition to adopting the Programmatic EIS, that adds analyses or information about the project but does not substantially change the analysis of significant adverse environmental impacts and alternatives addressed in this Programmatic EIS.

OR

Step 3.3

Prepare a Supplemental EIS, in addition to adopting the Programmatic EIS, that adds new analyses or information related to probable significant adverse environmental impacts of the project that have not been addressed in this Programmatic EIS. This may include project-specific adverse environmental impacts that were not identified in this Programmatic EIS or that were identified in this Programmatic EIS, but are determined by the SEPA Lead Agency through project-specific environmental review to have been insufficiently evaluated.

OR

Step 3.4

Incorporate by Reference if the intent is for the SEPA Lead Agency to produce a full, distinct project-specific environmental review, resulting in a DNS, MDNS, or EIS.

REFERENCES

APP	Responsibility of Applicant
SLA	Responsibility of SEPA Lead Agency
BMP	Best Management Practice
EIS	Environmental Impact Statement
kV	Kilovolt
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
WAC	Washington Administrative Code

1 Early consultation with Lead Agencies and affected Tribes to determine the appropriate scope of additional analysis is encouraged.

2 The construction, operation and maintenance, upgrade, and modification of electrical transmission facilities with a nominal voltage of 230kV or greater.

3 This Programmatic EIS analyzes the siting of transmission facilities across all geographic areas of Washington that are suitable for such linear facilities, excluding: Tribal lands, Undersea cables, and in-water trenching or burial within freshwater bodies (e.g., lakes and rivers).

4 Nonconformance with any of the items identified in Step 2 does not preclude the use of the Programmatic EIS. The project-specific environmental review could adopt the Programmatic EIS for adverse environmental impacts that conform, while addressing nonconforming impacts through additional project-specific environmental analyses, which may require additional project-specific mitigation.

5 As applicable to project-specific applications.

6 As used in this Programmatic EIS, a measure that provides a consistent baseline for evaluating the potential impacts of project-specific applications for transmission facility development.

7 Criteria that, when implemented, would narrow the scope of the project-specific environmental review. These Avoidance Criteria are anticipated to avoid adverse environmental impacts that may be significant for project-specific applications.

8 If all recommended Mitigation Strategies from this Programmatic EIS have been implemented then mitigation would be deemed sufficient for all probable significant adverse environmental impacts addressed in this Programmatic EIS.

9 A specific step or action taken to address adverse environmental impacts of project development or action.

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ES 3.0 Recommendations from this Programmatic Environmental Impact Statement

Following the preparation of this Programmatic EIS, the following key recommendations were identified to help streamline the process of siting, permitting, and addressing potential challenges for transmission facilities:

1) **Expand Use of the Programmatic EIS:** Agencies could increase the use of this Programmatic EIS for transmission facilities on federal and state land if a memorandum of agreement for coordinating and adopting documents between federal agencies and state agencies were completed.
2) **Enhance Coordination:** Identify, deploy, and update when necessary the tools to improve coordination among industry partners, Tribes, stakeholders, and agencies.
3) **Tribal Engagement:** Continue to provide dedicated opportunities for Tribes to contribute to identifying Mitigation Strategies and incorporate Tribal knowledge and perspectives into decision-making to strengthen protection of Tribal resources.
4) **Stakeholder and Partner Engagement:** Hold additional workshops with stakeholders and partners to increase engagement throughout the process, address concerns, and gather input in an effort to address opposition and delays.
5) **Data and Evidence-Based Decisions:** Identify a mechanism and funding to utilize extensive data compilation and evidence-based recommendations to inform decision-making and overcome barriers to transmission facilities.

6) **Capacity Building:** Ensure that agencies have sufficient capacity and resources to handle the increasing number of projects proposed within the scope of this Programmatic EIS

7) **Environmental and Community Protection:** Balance the need for rapid deployment with the protection of environmental integrity and community interests.

8) **Update Guidance Information, as Appropriate:** As new data or scientific findings become available, the information in the appendices may need to be updated to reflect the most current information. Updates in environmental laws, regulations, or policies may also necessitate changes in guidance to ensure compliance. Feedback from public consultations or stakeholder engagements might highlight areas that require additional information or clarification.

9) **Formally Update the Programmatic EIS:** Periodically update the Programmatic EIS (Supplemental or Addendum) with new information and analyses that have been collected, including review of Avoidance Criteria to identify possible additional analysis.

10) **Prepare a Subsequent Programmatic EIS:** Prepare a Programmatic EIS using multiple least-conflict corridors identified by other sources for future transmission facility development and examining corridor-specific adverse environmental impacts and mitigation.

11) **Federal Coordination:** Determine the applicability of pursuing a Programmatic Biological Opinion from the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.

12) **Prioritize Corridor-Based Regional Transmission Planning:** Identify funding and initiate planning studies that focus on the delivery of energy through designated least-conflict corridors. These studies would work closely with industry partners to identify points of connection, leverage existing corridor assessments, integrate state-level planning, and coordinate with federal agencies.

ES 4.0 Summary of Impacts

This Programmatic EIS evaluates the potential environmental, social, and economic impacts of transmission facilities. By identifying adverse environmental impacts, this Programmatic EIS aims to inform decision-makers and stakeholders regarding transmission facility projects, ensuring that their implementation aligns with sustainable development goals and regulatory requirements. This analysis underscores the importance of Mitigation Strategies to minimize negative consequences while maximizing positive outcomes for the environment and society. **Table ES-1** provides a summary, organized by element of the environment, of the adverse environmental impacts identified and analyzed in this Programmatic EIS.

Table ES-1: Summary of Adverse Environmental Impacts for Elements of the Environment Analyzed in this Programmatic EIS

Element of the Environment	Adverse Environmental Impacts Analyzed in this Programmatic EIS
Earth Resources (Section 3.2)	▪ Alteration of topography and drainage patterns ▪ Soil erosion and/or accretion ▪ Compaction of soil ▪ Damage from a geologic hazard
Air Quality (Section 3.3)	▪ Increased fugitive dust emissions ▪ Increased emissions from fuel-burning equipment ▪ Increased SF_6 emissions ▪ GHG emissions ▪ Odor

Water Resources (Section 3.4)	▪ 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

Element of the Environment	Adverse Environmental Impacts Analyzed in this Programmatic EIS
Vegetation (Section 3.5)	▪ Loss of native ecosystems and plants ▪ Fragmentation ▪ Degradation of soil ▪ Edge effects ▪ Introduction or spread of invasive plants or noxious weeds ▪ Surface runoff ▪ Impacts from increased dust ▪ Introduction of hazardous materials ▪ Increased risk of fire
Habitat, Wildlife, and Fish (Section 3.6)	▪ Direct habitat loss ▪ Indirect habitat loss ▪ Mortality ▪ Barriers to movement ▪ Fragmentation
Energy and Natural Resources (Section 3.7)	▪ Consumption of non-renewable resources ▪ Consumption of renewable resources ▪ Consumption of energy
Public Health and Safety (Section 3.8)	▪ Increase in accidents and injuries ▪ Exposure to hazardous materials ▪ Increased risk of wildfire ▪ Exposure to EMF ▪ Excess heat generation
Land and Shoreline Use (Section 3.9)	▪ 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

Element of the Environment	Adverse Environmental Impacts Analyzed in this Programmatic EIS
Transportation (Section 3.10)	▪ 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 ▪ 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[7], including: ○ Impacts from airspace restrictions ○ Increased collision risk ○ Decreased visibility
Public Services and Utilities (Section 3.11)	▪ 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
Visual Quality (Section 3.12)	▪ Degradation of scenic natural resources ▪ Degradation of aesthetics ▪ Degradation of night sky
Noise and Vibration (Section 3.13)	▪ Increased noise at sensitive receptors ▪ Increased ground-borne vibration at off-site structures ▪ Hearing loss
Recreation (Section 3.14)	▪ Temporary closure or restricted access ▪ Permanent closure ▪ Increase in use ▪ Change in integrity ▪ Increased risk of wildfire ▪ Physical hazard to aerial recreation

[7] Section 3.09, Land and Shoreline Use, analyzes adverse environmental impacts on military utilized airspace and civilian airfield operations

Element of the Environment	Adverse Environmental Impacts Analyzed in this Programmatic EIS
Cultural and Historic Resources (Section 3.15)	▪ Physical impacts on historic and cultural resources ▪ Visual impacts on historic and cultural resources ▪ Physical impacts on TCPs and Tribal resources ▪ Visual impacts on TCPs and Tribal resources
Socioeconomics and Environmental Justice (Section 3.16)	▪ 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 = electric and magnetic fields; **SF_6** = sulfur hexafluoride; **TCP** = Traditional Cultural Place

The analysis conducted for this Programmatic EIS considered how upgrades or modifications to existing transmission facilities may result in adverse environmental impacts of lesser magnitude than those for new construction. Upgrades were found to have potential adverse environmental impacts comparable to those resulting from routine operation and maintenance activities, as all work would occur within the existing right-of-way (ROW) with no additional footprint or ground disturbance.

While modifications present certain advantages over new construction, this analysis acknowledges that modifications may still result in an increased footprint or require ground disturbance as defined in this Programmatic EIS. Modifications to existing transmission facilities, despite their potential benefits, were determined to have an impact range similar to that of new construction. However, the anticipated impacts from modification are expected to fall at the lower end of the impact range identified for new construction related to each adverse environmental impact.

Table ES-2 provides considerations on how the modification of an existing transmission facility may result in adverse environmental impacts of lesser magnitude than those for new construction. These considerations are intended to inform planning and stakeholder engagement by highlighting where environmental outcomes may be improved by modifications compared to new construction. These considerations do not constitute formal impact determinations, which are addressed in Chapter 3, Affected Environment, Significant Impacts, and Mitigation. For additional context regarding how the modification of existing transmission facilities

may affect a specific environmental resource, refer to the corresponding section in Chapter 3. Further details on upgrades and modifications are provided in Chapter 2.

Table ES-2: Considerations for the Upgrade or Modification of Existing Transmission Facilities Compared to New Construction

Considerations for the Upgrade of Existing Transmission Facilities Compared to New Construction	Considerations for the Modification of Existing Transmission Facilities Compared to New Construction
No New Ground Disturbance: Upgrading existing transmission facilities reduces the need for new land clearing, as ground disturbance is limited to areas that have already been reclaimed or restored within the existing ROW. Because no new ground disturbance occurs, the potential for disturbance-related adverse environmental impacts is minimized compared to new construction.	**Reduced Ground Disturbance Compared to New Construction:** Modifying existing transmission facilities generally limits new disturbance to areas within the existing ROW or to new areas required for access or safety. This approach can minimize the need for additional land clearing and may reduce adverse environmental impacts compared to new construction.
Utilization of Existing Infrastructure and ROWs: Upgrades utilize existing infrastructure and ROWs, avoiding extensive new development and minimizing adverse impacts to environmental resources.	**Utilization of Existing Infrastructure and ROWs:** Modifications also use existing infrastructure and ROWs, but may require new disturbance within these areas or the expansion of ROWs to accommodate safety clearances. This can lead to greater impacts compared to upgrades, but still less than those associated with new construction.
Reduced Erosion and Water Contamination Risk: Upgrades involve less soil disturbance and construction activity, minimizing risks of erosion, sedimentation, and contamination compared to new construction.	**Reduced Erosion and Water Contamination Risk:** Modifications may introduce new disturbance within existing ROWs, increasing risks of erosion and contamination, though impacts are generally less than those of new construction.
Resiliency of Existing Vegetation: Upgrades typically affect areas already adapted to disturbance, so native plants and ecosystems within the ROW may be resilient to impacts, minimizing adverse environmental impacts.	**Partial Resiliency of Existing Vegetation:** Modifications may affect previously undisturbed areas within the ROW, but areas outside of new disturbance may retain resilience compared to new construction.
Reduced New Risk of Wildlife Mortality: Upgrades would occur in existing ROWs and not require extensive new transmission lines avoiding the introduction of new sources of collision risk and electrocution compared to new construction.	**Reduced New Risk of Wildlife Mortality:** Modifications may require new transmission lines or expansion of ROW to accommodate safety clearances that could introduce sources of wildlife mortality. However, modifications would generally be sited within existing ROW, reducing the amount of new transmission line and clearing compared to new construction.
Barriers to Movement: Upgrades would occur in an existing ROW and would not introduce new barriers to movement. Upgrades to access roads may result in improved fish passage if the works include upgrading crossing structures (e.g. culverts).	**Reduced New Barriers to Movement:** Modifications may require the expansion of ROWs, which could exacerbate the existing barrier. However, these barriers are expected to be less impactful than those associated with new construction.

Considerations for the Upgrade of Existing Transmission Facilities Compared to New Construction	Considerations for the Modification of Existing Transmission Facilities Compared to New Construction
Fragmentation: Upgrades would occur in an existing ROW and would not create new fragmentation.	**Reduced Fragmentation:** Modifications would predominantly be located in an existing ROW and would be less likely to create new fragmentation.
Emergency Access and Response: Upgrades within existing ROWs benefit from established access routes, facilitating emergency response and reducing the need for new road construction.	**Emergency Access and Response:** Modifications may require new or widened roads for safety, but still benefit from some existing access routes. This would reduce the extent of new road construction compared to the potential need for road construction associated with new construction.
EMF Exposure: EMF exposure levels would typically be unchanged or only marginally affected by upgrades, especially if conductor configurations remain similar.	**EMF Exposure:** EMF exposure levels would typically be unchanged or only marginally affected by modifications, especially if conductor configurations remain similar.
Reduced Wildfire Risk: Upgrading aging infrastructure may reduce wildfire risk by replacing deteriorated components, improving clearances, and integrating fire-resistant materials.	**Reduced Wildfire Risk:** Modifications may reduce wildfire risk if they include infrastructure improvements.
Reduced Construction Activities and Duration: Upgrading existing infrastructure typically involves a smaller scope of work and shorter construction timeframes, reducing the duration of adverse environmental impacts.	**Reduced Construction Activities and Duration:** Modifications may require more extensive work than upgrades, but typically less than new construction, resulting in shorter durations of adverse environmental impact.
Land Conversion: Upgrades do not require the conversion of previously undisturbed land to utility use, thereby preserving existing land uses and minimizing habitat fragmentation.	**Land Conversion:** Modifications may require conversion of some previously undisturbed land to accommodate expanded ROWs, but adverse environmental impacts are anticipated to be less than those associated with new construction.
Established Access and Management: Access routes, maintenance roads, and safety protocols are already in place for existing facilities, reducing the need for new roads or changes to established recreational patterns.	**Established Access and Management:** Modifications may require new or widened roads, but still benefit from some existing access and management protocols.
Regulatory and Stakeholder Familiarity: Recreation managers, landowners, and user groups are often already familiar with the presence and management of the existing facility, which can help with coordination and minimize unanticipated conflicts.	**Regulatory and Stakeholder Familiarity:** Modifications to existing facilities maintain some stakeholder familiarity, though new disturbances may require additional coordination.
Preservation of Cultural and Historic Resources: Since upgrades do not create new ground disturbance, they are typically less likely to impact archaeological or culturally sensitive sites.	Not Applicable

Considerations for the Upgrade of Existing Transmission Facilities Compared to New Construction	Considerations for the Modification of Existing Transmission Facilities Compared to New Construction
Minimal New Visual Impact: Upgrades maintain existing visual profiles, avoiding new visual intrusions into landscapes or scenic viewsheds.	**Minimal New Visual Impact:** Modifications may have minimal changes to the existing visual profiles.

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