



Summary

Programmatic Environmental Impact Statement for Utility-Scale Solar Energy Facilities in Washington

Shorelands and Environmental Assistance Program

Washington State Department of Ecology

Olympia, Washington

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Summary

Introduction

In 2023, the Washington State Legislature directed the state Department of Ecology (Ecology) to prepare a broad environmental review that assesses and discloses the probable significant adverse environmental impacts that utility-scale solar energy facilities may pose in Washington. Under the directive, Ecology also evaluated related measures designed to avoid and reduce those likely impacts. State law, Revised Code of Washington (RCW) [43.21C.535](https://app.leg.wa.gov/RCW/default.aspx?cite=43.21C.535),¹ requires that a final report be submitted to state lawmakers by June 30, 2025.

Utility-scale solar energy facilities help support the state's transition to clean energy. When electricity from a solar energy facility replaces the electricity generated by an existing fossil fuel-based facility, it helps to reduce overall greenhouse gas emissions in Washington. However, utility-scale solar energy facilities may have adverse environmental impacts. This Programmatic Environmental Impact Statement (PEIS) evaluates, at a broad level, different types of solar energy facilities to identify probable environmental impacts and ways to avoid and reduce those impacts.

Ecology developed this draft PEIS to provide consistent and useful information that the public, local and state agencies, Tribes, and developers can use to help review and plan for potential utility-scale solar energy facilities. This statewide planning document is not specific to any single solar energy project. Each individual utility-scale solar energy project will still need to do a separate environmental review.

The draft PEIS evaluates both natural and built resources. While some resources are unlikely to be adversely impacted by solar energy projects, the PEIS found other resources have the potential to be significantly affected. While there may be mitigation options that can reduce or eliminate those impacts, these approaches will depend on the specific project and site.

Purpose

The PEIS is intended to:

- Support the state's transition to clean energy while protecting the environment, Tribal rights and resources, and local communities.
- Identify the range of probable significant adverse environmental impacts utility-scale solar energy projects can pose.
- Provide information about facility siting and design that may be used to help avoid or minimize adverse environmental impacts for proposed projects.
- Identify general potential mitigation measures for impacts.

¹ <https://app.leg.wa.gov/RCW/default.aspx?cite=43.21C.535>

- Provide information for lead agencies to consider when conducting environmental reviews for utility-scale solar energy projects.

Environmental review process

Under state law, Ecology is the lead agency for the draft PEIS and developed the study in compliance with the [State Environmental Policy Act \(SEPA\)](#).² To gather feedback, Ecology held an extended scoping period in September and October 2023, including conducting two online public meetings and a Tribal scoping meeting. Tribes were also provided additional time to comment. An overview of the SEPA review process is shown in Figure S-1.

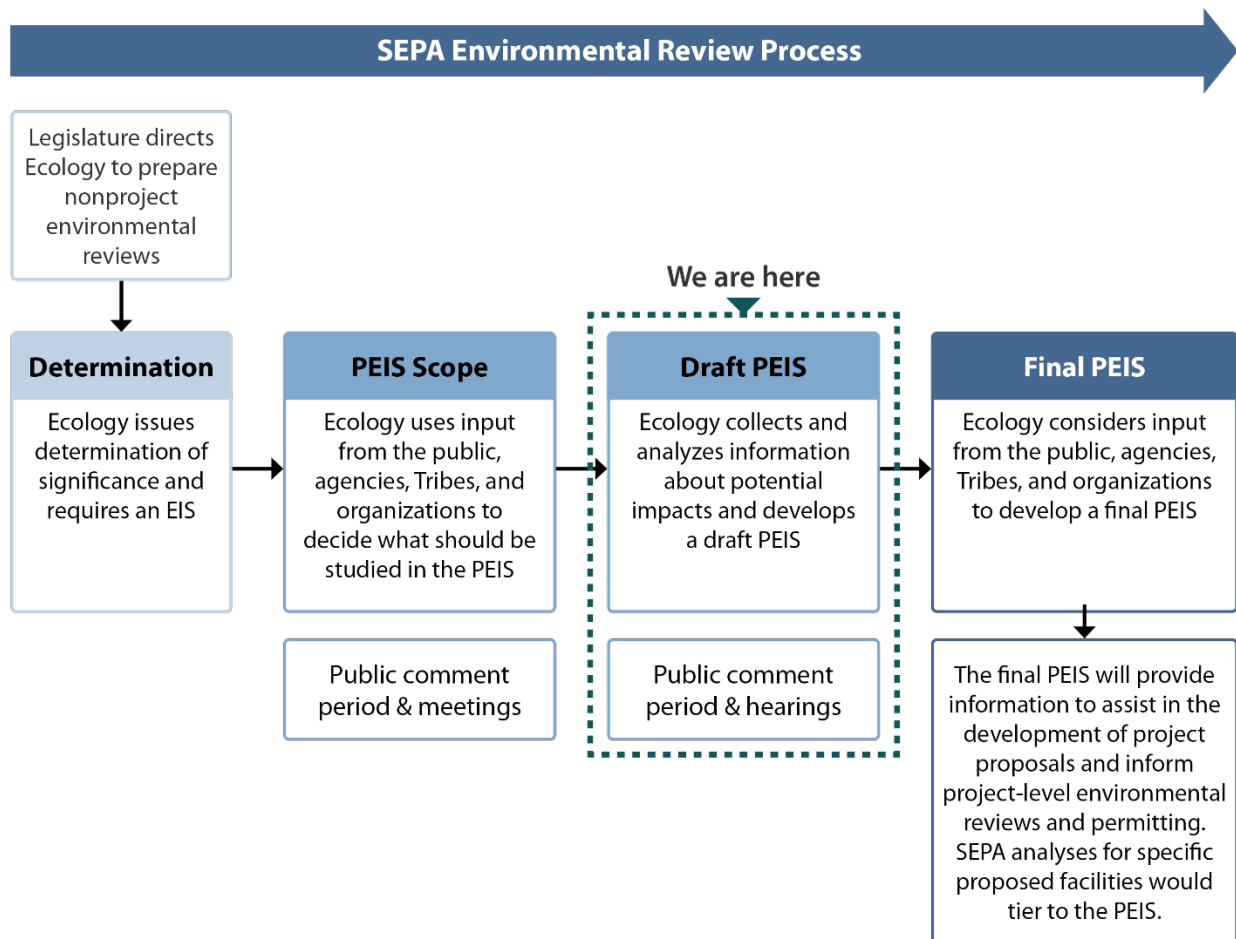


Figure S-1. SEPA environmental review process

A PEIS is a type of environmental review used for planning; it is not an evaluation of a specific project. This PEIS considers potentially significant adverse environmental impacts at a broad

² <https://ecology.wa.gov/regulations-permits/sepa/environmental-review>

level. It analyzes general types of solar energy facilities—but not individual projects—to identify likely environmental impacts and possible ways to avoid and reduce those impacts.

This PEIS evaluates the probable significant adverse environmental impacts at a broad level that are likely to occur over the lifespan of a facility. Mitigation measures designed to reduce impacts are also identified at a high level. The PEIS does not approve, authorize, limit, or exclude any projects.

Using the PEIS for projects

Under SEPA, each individual utility-scale solar energy project will need to do its own separate environmental review. During that review process, site-specific information and project-specific effects will be evaluated. The information in the PEIS is intended to help a developer identify a suitable site, design a project, and submit a proposal that has considered potential environmental impacts. It can also help a developer design mitigation plans to reduce potentially significant impacts.

Developers can use the PEIS to:

1. Consider if a site or design could result in potential environmental impacts.
2. Make siting and design decisions that avoid or reduce impacts.
3. Help identify if impacts could be potentially significant and the type of information reviewing agencies will need for their evaluations.
4. Propose measures to mitigate potential significant impacts that can be incorporated into a mitigation plan. If a lead reviewing agency finds the plan reduces environmental impacts below levels deemed to be significant, they can issue a mitigated determination of significance. However, if significant impacts are probable, a lead reviewing agency will require an environmental impact statement for a proposed project.

State and local agencies reviewing a utility-scale solar energy project must use the information in the PEIS, as well as other publicly available information and site-specific details, to inform their environmental reviews and permitting decisions (Figure S-2).

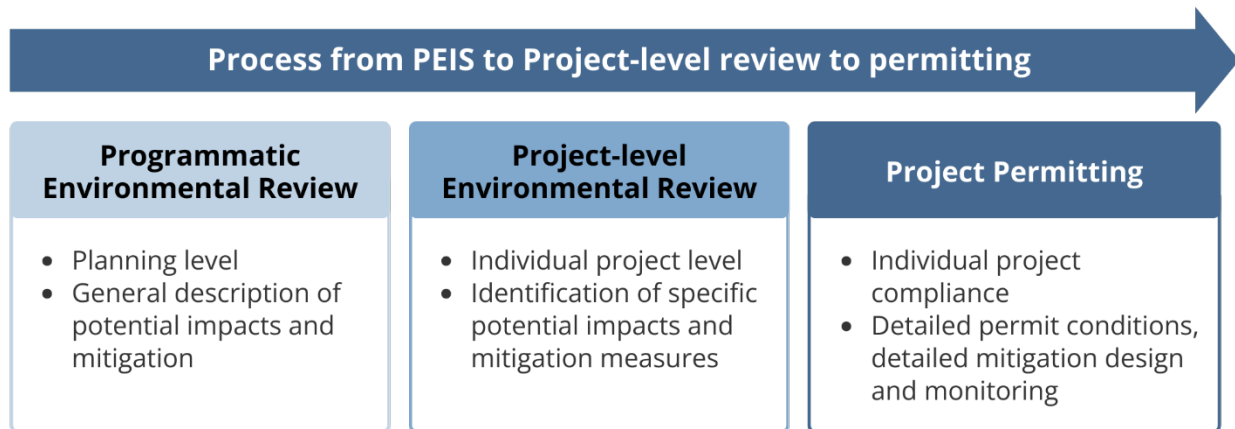


Figure S-2. Process from PEIS to project-level review to permitting

Types of facilities evaluated

The PEIS evaluates the following types of utility-scale solar energy facilities as well as a No Action Alternative:

- **Utility-scale solar facilities:** solar energy facilities capable of generating between 20 and 1,200 megawatts of energy on sites between 200 to 12,000 acres in size.
- **Utility-scale solar facilities with battery energy storage systems:** facilities that also include one or two battery energy storage systems, each capable of storing up to 500 megawatts of energy.
- **Utility-scale solar facilities that include agricultural uses:** dual-use facilities where agriculture would occur during facility operations and may include raising or modifying the solar panels to allow for agricultural land use.
- **No Action Alternative:** city, county, and state agencies would continue to conduct environmental review and permitting for utility-scale solar facilities under existing state and local laws on a project-by-project basis without using this PEIS as a reference.

Study area

The study area for the PEIS (Figure S-3) was defined based on the criteria described below to identify suitable areas for utility-scale solar energy facilities. Facilities could be built on private, city, county, state, or federal lands with agreement from the landowner or manager. For facilities on state or federal lands, the responsible agency would make land use decisions. For facilities on Tribal reservation lands, each Tribe would determine the use of their lands.

These criteria were used to identify areas suitable for utility-scale solar energy facilities:

- **Global horizontal irradiance (GHI):** GHI is the total solar radiation received on a horizontal surface and is used to calculate photovoltaic electricity yield. The PEIS uses areas with GHI of 3.5 kilowatt-hours per square meter per day (kWh/m²/day) or greater.
- **Topography:** Flat to moderately sloped ground surfaces (areas with 15% or less slopes).
- **Transmission line access:** Areas within 25 miles of existing transmission lines that can handle the energy generation of utility-scale facilities (230 kilovolt or greater lines).

The study area excluded the following areas:

- Tribal reservation and trust lands
- Military installations
- U.S. Department of Energy Hanford Site in Eastern Washington (except for a small area available for clean energy development)
- National parks, wilderness areas, and wildlife refuges
- Washington state parks
- Unincorporated areas zoned as urban or residential, areas inside city limits, and unincorporated urban growth areas

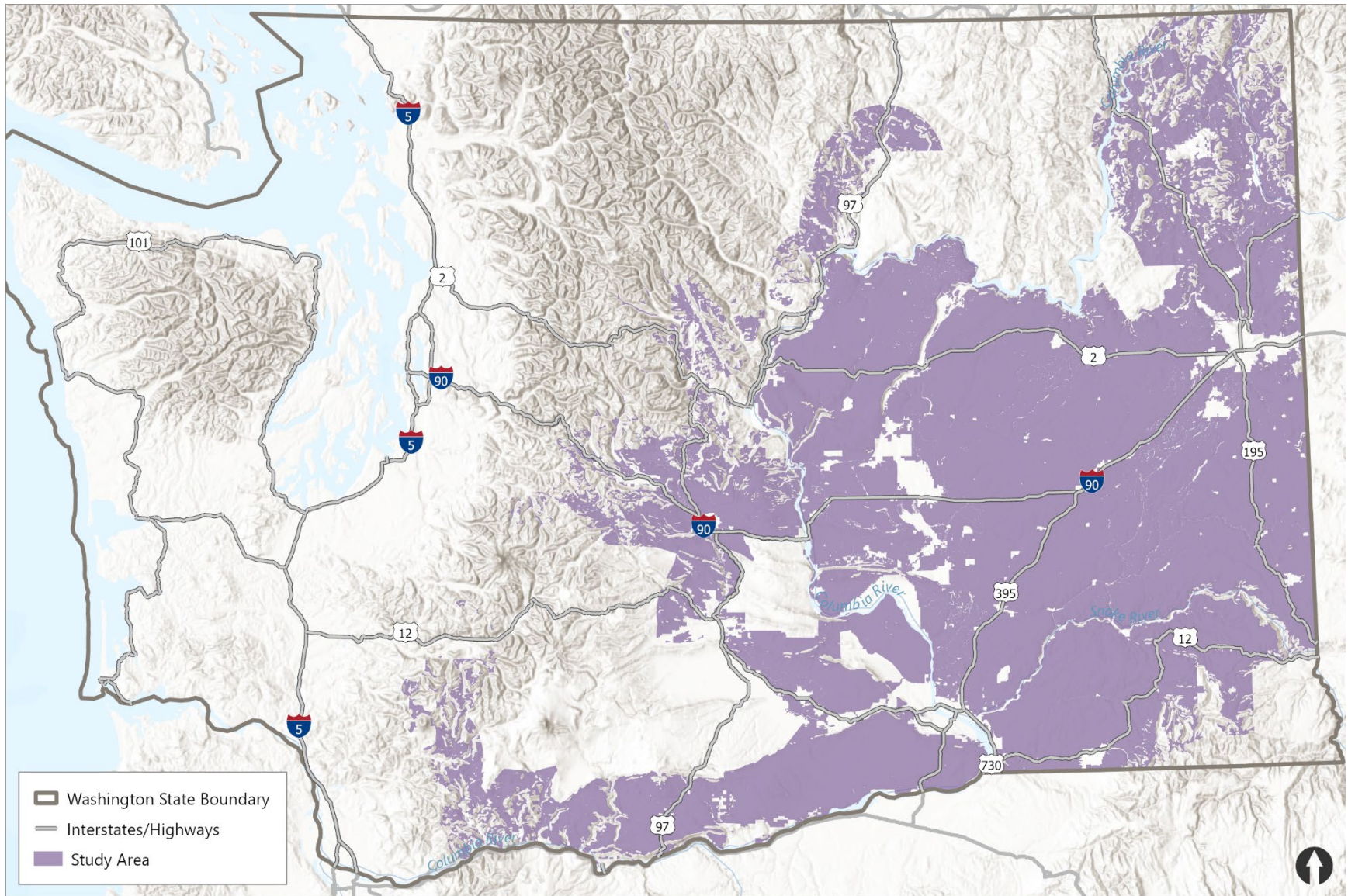


Figure S-3. Solar Energy Facilities PEIS – geographic area of study

Analysis and impact findings

The PEIS analyzes the potential impacts on environmental resources associated with constructing, operating, and decommissioning utility-scale solar energy facilities. These include resources where significant impacts are not likely as well as resources that could be significantly impacted. The PEIS also considers cumulative impacts. For more detailed information and analysis, see the resource reports in the appendices.

Developers should seek to avoid impacts when making siting decisions and determining the design of their project. The PEIS includes “siting and design considerations” identifying agencies and Tribes to contact early in the process, data to gather, and actions to take. To avoid and reduce potentially significant impacts, we recommend developers closely review these considerations and the PEIS analysis.

The PEIS identifies measures to avoid and reduce the potential environmental impacts that a utility-scale solar energy project might pose. Developers can select mitigation approaches that will help offset the potential impacts specific to their facility, including design and site location. In some cases, mitigation actions can reduce probable adverse impacts to a less-than-significant level. In other cases, while there may be mitigation options that can reduce or eliminate significant impacts, these approaches will depend on the specific project and site.

Resources with findings of less than significant impacts

- Earth, including soil resources and geological hazards
- Air quality and greenhouse gases
- Biological resources, including aquatic habitats and species and wetlands
- Water, including surface water, water quality, groundwater, water availability, floodplains, and wetlands
- Energy and natural resources
- Environmental health and safety, including hazardous materials and worker safety
- Land use, including military areas
- Aesthetics and visual quality, including light and glare
- Transportation
- Public services and utilities, including law enforcement; public schools; gas, electric, and communications utilities; water and wastewater utilities; and solid waste and recycling facilities

Resources with probable significant adverse environmental impacts

Table S-1 provides a summary of the environmental resources with probable significant adverse impacts.

Table S-1. Summary of potential significant impacts in the PEIS

Section	Topic	Description of potential significant impact from facility types	Can it be mitigated below significance?
Tribal rights, interests, and resources	Tribal rights, interests, and resources	Constructing, operating, and decommissioning facilities could impact Tribal rights, interests, and resources. The significance of these impacts would be determined through consultation with potentially affected Tribes.	Impacts and mitigation would be determined in consultation with Tribes.
Environmental justice and overburdened communities	Disproportionate impacts	On historic and cultural resources, Tribes and Tribal communities, land use, aesthetics/visual quality, public services and utilities, and environmental health and safety.	Impacts and mitigation would be determined in consultation with Tribes. Determining if mitigation options would reduce or eliminate impacts below significance would be dependent on the specific project and site.
Biological resources	Terrestrial habitat and species (including birds)	Permanent degradation, loss, or conversion of suitable habitat that is critical to species viability. Disruption of habitat continuity along migration routes. Impacts affecting species viability, the mortality of any individual species, or disturbance that disrupts successful breeding and rearing behaviors.	Determining if mitigation options would reduce or eliminate impacts below significance would be dependent on the specific project and site. Mitigation to reduce impacts below significance for special-status habitats or species may not be feasible.
Environmental health and safety	Battery overheating	Potential hazardous air emissions from damage or failure of battery management system that present health and safety risks to fire responders.	Yes
	Wildfire risk	New ignition sources in remote locations with limited response capabilities.	Determining if mitigation options would reduce or eliminate impacts below significance would be dependent on the specific project and site.
Noise and vibration	Noise	Constructing or decommissioning within 1,000 feet of people in quiet rural areas. Operating a substation or battery energy storage system may affect nearby residents.	Yes
	Vibration	Construction or decommissioning could affect people or historic structures within 350 feet of the facility. Blasting within 2,000 feet of historic structures may also have adverse effects.	Yes

Section	Topic	Description of potential significant impact from facility types	Can it be mitigated below significance?
Land use	Changes to land use	Conflict with rural character based on comprehensive plans and development regulations. Conversion of natural resource lands of long-term commercial significance.	Determining if mitigation options would reduce or eliminate impacts below significance would be dependent on the specific project and site, and local regulations and plans.
Aesthetics/ visual quality	Visual landscape	Changes in landscape appearance and addition of new facility structures into the viewshed.	Determining if mitigation options would reduce or eliminate impacts below significance would be dependent on the specific project and site.
Recreation	Recreation	Loss of recreational opportunity, overuse or overcrowding of recreation areas, and/or segmented recreational facilities.	Yes
Historic and cultural resources	Historic and cultural resources	Construction, operations, and decommissioning of all types of facilities could impact historic and cultural resources. The significance of these impacts would be determined through consultation with potentially affected Tribes.	Impacts and mitigation would be determined in consultation with Tribes.
Public services and utilities	Fire response	If activities required a large fire response in remote locations with limited response capabilities or if there are other unique aspects of a facility site or operations that affect fire response.	Determining if mitigation options would reduce or eliminate impacts below significance would be dependent on the specific project and site.

Cumulative impacts

The broad geographic study area includes many reasonably foreseeable actions in the past, present, and future that taken together could result in impacts. These were evaluated as trends. They include:

- Energy projects, including clean energy development and changes to energy systems
- Urban, commercial, and industrial development and activities
- Rural and agricultural development and activities
- Federal, state, Tribal, and local wildlife and related habitat projects
- Transportation infrastructure development and modification
- Timber and forestry management
- Contaminated site cleanup and remediation
- Mining operations
- Recreation activities on public lands
- Military use
- Water supply development

Due to the large geographic study area the PEIS addresses, as well as the broad trends of reasonably foreseeable actions the study identifies and considers, cumulative impacts on natural and built resources would **range from less than significant to potentially significant**. The cumulative impacts analysis is designed to ensure decision-makers consider the full range of potential consequences under anticipated future conditions. An analysis of individual solar energy facilities would also consider cumulative impacts as part of a project-specific environmental review.

Areas of controversy and uncertainty

- **Land use:** Agricultural groups have expressed concern that solar energy projects reduce critical agricultural lands. This is evaluated in Section 4.10.
- **Visual quality:** People have shared concerns that rural landscapes are adversely impacted when solar energy projects are constructed. This is evaluated in Section 4.11.
- **Wildfire risks and emergency response:** There is concern about increased fire risks and adequacy of available response resources for wildfires related to solar energy projects and battery energy storage systems. This is evaluated in Section 4.8 and Section 4.15.
- **Cumulative impacts:** Communities, Tribes, and interested parties have raised concerns about cumulative impacts related to developing multiple energy projects in the same area. Chapter 5 describes trends and potential cumulative impacts.

Next steps

Ecology will review and consider all comments received during the public comment period for the draft PEIS and may revise the study as a result. The final PEIS will be completed by the legislatively mandated date of June 30, 2025, and made available to the public.