



Geothermal Energy Collaborative Process

Legislative Update



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Related Information

- [Engrossed Substitute Senate Bill 6039 \(2024\)](#)¹
- [Washington Geothermal Experience](#)²
- [2021 Washington State Geothermal Play-Fairway Analysis](#)³

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¹ <https://lawfilesexternal.wa.gov/biennium/2023-24/Pdf/Bills/Senate%20Passed%20Legislature/6039-S.PL.pdf#page=1>

² <https://storymaps.arcgis.com/stories/6038a47202a04a5da71c2251ec11c2c1>

³ <https://www.osti.gov/biblio/1823116>

⁴ www.ecology.wa.gov/contact

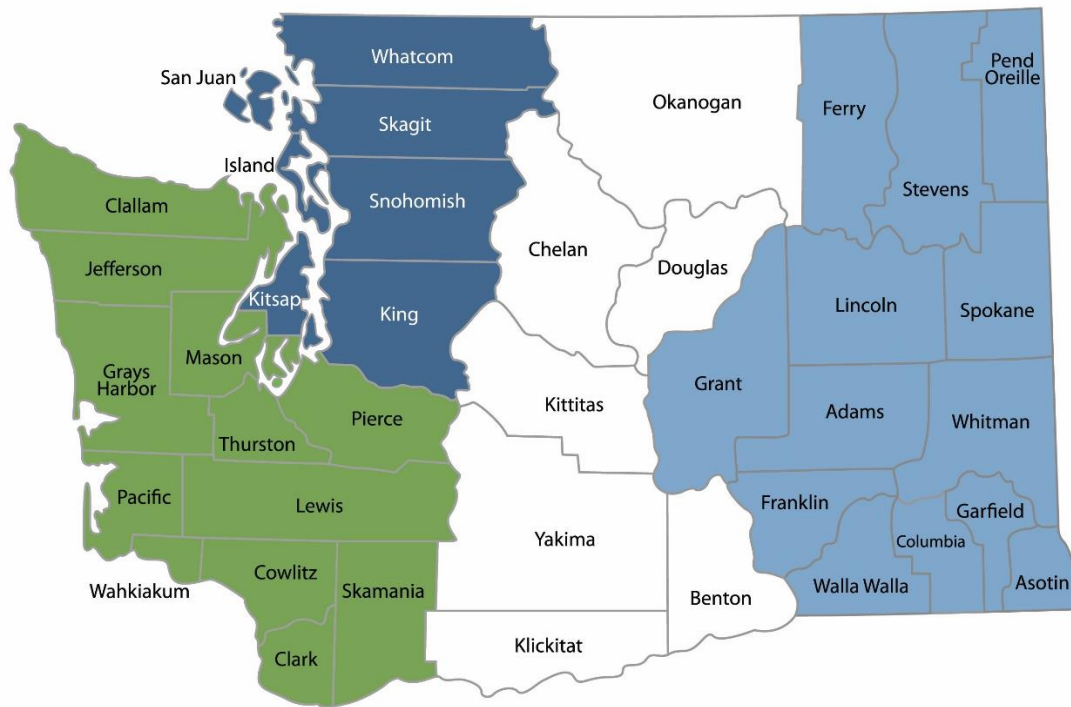
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DEPARTMENT OF
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State of Washington

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Executive Summary

[Senate Bill 6039](#)⁵, passed in 2024, directed the Washington Department of Ecology (Ecology) to initiate a collaborative process to identify opportunities and risks associated with developing utility-scale geothermal energy for generating clean electricity. The law requires Ecology to submit to the Legislature an update on the collaborative process in June 2026 and a final report in June 2027.

Geothermal energy is a low-emission source of renewable energy that can provide continuous baseload power. The state effort centers on understanding how geothermal resources may contribute to Washington's long-term clean energy goals, including progress toward reducing greenhouse gas emissions under the state Climate Commitment Act and an electricity supply free of greenhouse gas emissions by 2045 under the Clean Energy Transformation Act. Developing the state's geothermal energy resources, particularly through emerging geothermal technologies, is also a priority measure under the state's [Comprehensive Climate Action Plan](#).⁶

This work focuses specifically on electricity-producing geothermal applications and potential utility-scale development. While there is interest in exploring geothermal energy development in Washington, there are currently no geothermal energy projects proposed or under consideration. The process has statewide considerations and is focused on three areas the state Department of Natural Resources (DNR) has identified having the greatest geothermal resource potential: Mount Baker, Mount St. Helens and the Wind River valley south of Mount St. Helens.

This June 2026 update provides an overview about the geothermal energy collaborative process including information we gathered at public workshops and other outreach efforts as well as preliminary recommendations for early consideration. A final legislative report is due June 30, 2027, and will include factors that may influence site suitability such as potential impacts, mitigation strategies, geologic characteristics and proximity to electrical transmission infrastructure. It will also include an analysis of gaps in local, state and federal regulations. Combined, these reports are designed to provide a framework for understanding opportunities, challenges and considerations associated with developing utility-scale geothermal energy in Washington.

We are engaging communities, Tribes, utilities, industry, agencies and other interested parties to identify opportunities, risks, and siting factors to consider for future geothermal energy development. There is a high interest in the collaborative process and how its outcomes and findings will inform communities and Tribes regarding geothermal energy development.

As a result of our engagement activities, we found a wide range of questions reflecting interest in the technical feasibility of planning for and developing geothermal energy resources in Washington. These include considerations for siting and permitting, and the potential impacts

⁵ [https://lawfilesext.leg.wa.gov/biennium/2023-24/Pdf/Bills/Session Laws/Senate/6039-S.L.pdf?q=20250603125300](https://lawfilesext.leg.wa.gov/biennium/2023-24/Pdf/Bills/Session%20Laws/Senate/6039-S.L.pdf?q=20250603125300)

⁶ <https://waclimatepartnership.org/en/>

of development on Tribal rights and cultural resources, water quantity and quality, endangered and sensitive species, and overburdened communities. It also includes the potential for induced seismicity, which refers to earthquakes and tremors caused by human activities.

Ecology is researching and analyzing emerging geothermal technologies, including potential impacts, mitigation strategies and facility siting considerations. DNR is also conducting seismic hazard assessments for the three geothermal focus areas. We will share study results in fall 2026 and collect additional feedback and input to include in the final legislative report due June 2027.

Preliminary recommendations

This legislative update includes several preliminary recommendations for advancing geothermal energy development in Washington. These include supporting Tribal participation in geothermal studies and planning and promoting Tribal geothermal energy projects. The recommendations include support for geothermal exploration through the existing state grant program and expanding how we coordinate with other states and federal agencies on geothermal development. The strategic use of state and federal funding sources would support geothermal development needs. Developers, Tribes and local governments requested guidance for geothermal development. Recommendations include developing policies and model ordinances, best practices for community and Tribal engagement, and guidance on community and Tribal benefit agreements.

Several of the preliminary recommendations align with the work of the state's [Interagency Clean Energy Siting Coordinating Council](#).⁷ Agencies should continue to look for opportunities to include geothermal energy resources in the state's broader effort to transition to clean energy sources to generate electricity.

Next steps

The collaborative process will continue to inform, refine and expand on the preliminary recommendations. We will continue to engage directly with communities, Tribes, interested parties, and developers and share information from our technical research. The final June 2027 legislative report will include detailed recommendations on actions to move geothermal development forward while ensuring the protection of people and the environment.

⁷ <https://ecology.wa.gov/regulations-permits/sepa/clean-energy/council>

Geothermal Energy Collaborative Process

Legislative directive

In 2024, the Washington State Legislature passed [Senate Bill 6039](#)⁸ (Chapter 350, Laws of 2024) to promote the development of geothermal energy resources. Section 4 of the bill directed the Department of Ecology (Ecology) to carry out a collaborative process to identify opportunities and risks associated with developing utility-scale geothermal energy resources in Washington for generating clean electricity.

Working closely with experts from the state departments of Commerce, Archaeology and Historic Preservation (DAHP), Fish and Wildlife, Natural Resources (DNR), and the Energy Facility Site Evaluation Council (EFSEC), we are required to provide an update on the status of the collaborative process to the governor and Legislature by June 30, 2026, with the final report due June 30, 2027. Below is an excerpt of Senate Bill 6039 (2024) that requires the establishment of this collaborative process:

Sec. 4.

(1) The department of ecology, in consultation with the department of commerce, the department of natural resources, the department of fish and wildlife, and the department of archaeology and historic preservation, shall engage in a collaborative process to identify opportunities and risks associated with the development of geothermal resources in three locations with the highest geothermal potential in Washington. The department of natural resources must identify these three locations.

(2)(a) As part of the geothermal resources collaborative process, the department of ecology must engage in meaningful government-to-government consultation with potentially affected federally recognized Indian tribes by learning from each participating tribe about their communication protocols for consultation and must seek participation from the department of archaeology and historic preservation, other state agencies as appropriate, local governments, state research institutions, participants in Washington's electrical generation, transmission, and distribution sector, and environmental organizations. At the request of potentially affected federally recognized Indian tribes, the department of ecology may include additional participation with independent subject matter expertise.

(b) Subject to the availability of amounts appropriated for this specific purpose, the department of ecology shall provide grants to potentially affected federally recognized Indian tribes to provide capacity and to support their evaluation of the cultural, natural

⁸<https://lawfilesexternal.wa.gov/biennium/2023-24/Pdf/Bills/Session%20Laws/Senate/6039-S.SL.pdf?q=20250603125300>

resource, and other impacts of geothermal electricity development and to support their participation in the collaborative process established in this section.

(3) The geothermal resources collaborative process must identify and provide recommendations on, at a minimum, the following topics:

(a) The potential impacts of geothermal resources development, including impacts to:

(i) Rights, interests, and resources, including tribal cultural resources, of potentially affected federally recognized Indian tribes;

(ii) State or federal endangered species act listed species in Washington; and

(iii) Overburdened communities;

(b) The development of factors to guide the identification of preferable sites for the development of geothermal resources including, but not limited to, geologic suitability, proximity to electrical transmission and distribution infrastructure, and continuity between groundwater and surface water resources; and

(c) The capacity for geothermal resources in Washington to help the state meet its clean energy generation requirements and greenhouse gas emissions limits.

(4) The department of ecology must commence the geothermal resources collaborative process by November 30, 2024. The department of ecology must provide the appropriate committees of the legislature an update on the status of the collaborative process by June 30, 2026. The department of ecology must provide the appropriate committees of the legislature with a final report on the collaborative process by June 30, 2027.

Overview

This update provides an overview of the collaborative process and engagement activities as of June 2026. We have also introduced current and potential geothermal technologies, and preliminary recommendations and themes from our initial engagement. It offers a first look at geothermal energy opportunities, risks, potential impacts, siting factors, and regulatory considerations in Washington gathered from workshops in fall 2025 and spring 2026. Ecology and DNR are conducting an additional technical analysis on technologies and potential impacts, which will be available in fall 2026. We will share those results and gather additional input for the final legislative report due in 2027.

As part of the collaborative process, Ecology is gathering input from state and federal agencies, local governments, Tribes, communities, industry, and other interested parties to inform the development of geothermal energy resources in Washington. The process is also helping identify potential impacts of geothermal development and key factors to consider when siting projects.

Our engagement efforts generated productive discussions across the state. These conversations focused on three geothermal resource areas identified in previous Washington Geological Survey studies, housed within DNR, as having the highest potential: Mount Baker (Figure 1 below), Mount St. Helens, and the Wind River valley south of Mount St. Helens. To gather input, Ecology conducted over 25 community workshops, Tribal forums, and interagency meetings.

The feedback and information we gathered, as of June 2026, is included in this update. Additional engagement and synthesis will continue through the collaborative process, culminating in a final legislative report due June 30, 2027.



Figure 1. Participants talk with Ecology, DNR, and Commerce staff during the February 2026 Mount Baker workshop in Bellingham.

Scope

The geothermal energy collaborative process focuses on identifying opportunities and risks associated with developing utility-scale geothermal energy resources for generating electricity in Washington. Geothermal energy is a low-emission source of renewable energy that can provide continuous baseload power. The effort centers on understanding how geothermal resources may contribute to Washington’s long-term clean energy goals, including progress toward reducing greenhouse gas emissions under the state Climate Commitment Act (CCA) and an electricity supply free of greenhouse gas emissions by 2045 under the Clean Energy Transformation Act (CETA).

Consistent with legislative direction, this work focuses specifically on electricity-producing geothermal applications and potential utility-scale development. Direct-use geothermal applications—such heating and cooling for buildings or industrial uses—are not a primary focus

of this effort. However, this update provides high-level background information about these technologies to help contextualize geothermal energy within broader clean energy planning.

The scope includes identifying potential impacts associated with developing geothermal energy and siting and permitting criteria. Considerations include potential impacts on Tribal rights and cultural resources, water quantity and quality, endangered and sensitive species, and overburdened communities. It also includes the potential for induced seismicity, which refers to earthquakes and tremors caused by human activities.

The collaborative process also examines factors that may influence site suitability, such as geologic characteristics and proximity to electrical transmission infrastructure.

To support this work, Ecology and partner state agencies, Tribes, communities, and interested parties participated in a coordinated set of engagement activities including community workshops, Tribal forums, and interagency meetings. The findings from this process inform this legislative update and will continue to shape the final legislative report due June 30, 2027. These two reports provide a framework for understanding opportunities, challenges, and considerations associated with developing utility-scale geothermal energy in Washington.

While the legislation also authorizes grants to potentially affected federally recognized Tribes to support their participation in the collaborative process, funding was not appropriated for this purpose.

Other geothermal activities

[RCW 43.92.090](#)⁹ directs the Washington Geological Survey to develop a public-facing subsurface database that includes all data relevant to the development of geothermal resources and collect new data to fill critical data gaps. [RCW 79.13.530](#)¹⁰ directs DNR to review and update geothermal lease rates on state lands to align with rates in other Western states. The lease rates were updated in 2025, as documented in [WAC 332-22-200 to 332-22-230](#).¹¹

[RCW 43.31.038](#)¹² also authorizes a cost-share grant program to allow Commerce to incentivize investments in drilling and early-phase geothermal investigations. However, the Legislature did not provide funding, so the program is not currently active.

Developing the legislative update

Ecology entered into contracts with consultants to support the collaborative process and associated research. Ross Strategic and Cascadia Consulting Group provide facilitation support, including in-person and virtual engagement, Tribal forums, interagency coordination, and assistance in developing outreach and legislative reports. Hotrock Energy Research Organization provides technical research and analysis on emerging geothermal technologies, potential impacts, mitigation strategies, and facility siting considerations. Other research includes regulatory analysis across local, state and federal levels, as well as a gap analysis and

⁹ <https://app.leg.wa.gov/RCW/default.aspx?cite=43.92.090>

¹⁰ <https://app.leg.wa.gov/rcw/default.aspx?cite=79.13.530>

¹¹ <https://app.leg.wa.gov/wac/default.aspx?cite=332-22>

¹² <https://app.leg.wa.gov/RCW/default.aspx?cite=43.31.038>

lessons learned from other states and industries. In addition, DNR contracted with a consultant to conduct seismic hazard assessments for the three geothermal focus areas.

Technical research and seismic hazard assessment results are expected this summer. We will share the results later this fall and collect additional feedback and input to include in the final legislative report due in June 2027.

Geothermal energy in Washington

Geothermal energy refers to heat stored beneath the Earth's surface that can be used for heating, cooling, generating electricity, and industrial and agricultural purposes.

Low- and moderate-temperature geothermal resources (those below 194°F and up to 302°F) can be used for heating and cooling residential and commercial dwellings and structures as well as agriculture and industrial purposes.

Moderate- to high-temperature resources (above 302°F) can be used to generate electricity and are the focus of the geothermal collaborative process.

Geothermal energy can help Washington meet its clean energy goals and utilities have expressed interest in this energy resource due to its ability to provide constant baseload power. Although Washington has geothermal potential and there is interest in exploring and developing this resource, we are not aware of any proposed utility-scale projects for electrical generation.

The Washington Geothermal Experience

The Washington Geological Survey developed an [interactive webpage](https://storymaps.arcgis.com/stories/6038a47202a04a5da71c2251ec11c2c1)¹³ to provide an overview of the status of geothermal technologies, research, and use in Washington.

Geothermal and Washington's energy strategy

Geothermal energy is being studied because it could help the state meet its clean energy goals under CCA and CETA and provide reliable power. Most importantly, geothermal energy can serve as a “always on” or baseload power source, critical for maintaining the reliability of the electric grid. It supports the integration of intermittent renewable resources, such as wind and solar, which cannot operate continuously. Washington's broader framework for energy planning increasingly recognizes the potential value of geothermal resources. Continued research, updated resource mapping, and coordination with utilities, research partners, Tribes, community members, and state agencies will help determine the long-term contribution of geothermal to a decarbonized and resilient energy system.

¹³ <https://storymaps.arcgis.com/stories/6038a47202a04a5da71c2251ec11c2c1>

The [2021 Washington State Energy Strategy](#)¹⁴ recognized geothermal energy as a promising emerging resource and encouraged research, development, demonstration projects, and collaboration between state agencies, research universities, national laboratories, federal partners, and private-sector innovators. The strategy also identified ground-source heat pumps as a key zero-emission heating and cooling option for buildings and called for support to accelerate their deployment for residential and commercial customers.^{15,16}

The [2024 Biennial Energy Report](#)¹⁷ highlighted opportunities to further evaluate geothermal electricity production, advance networked geothermal systems for community-scale heating and cooling and support updated resource assessments. The report also supported the evaluation of emerging technologies—such as enhanced and advanced geothermal systems—that are in the process of reaching commercial reality.¹⁸ Developing the state’s geothermal energy resources, particularly through emerging technologies, is also a priority measure in the state’s 2026 [Comprehensive Climate Action Plan](#).¹⁹

Across the nation, geothermal development has been increasing. In 2025, the U.S. Department of Energy’s Office of Geothermal and the National Lab of the Rockies updated its market assessment of the U.S. geothermal market²⁰. Growth is being driven by advancements in technologies, state energy policies, and demand for constantly available energy sources.

There are 99 existing geothermal power plants in the western United States, with the majority of facilities being in California and Nevada. From 2021 through 2025, there were 26 agreements between utilities or companies to purchase electrical power from geothermal projects. Approximately 60% of those agreements were for emerging geothermal technologies, mostly enhanced geothermal systems.

As utilities strive to meet Washington’s clean energy requirements, geothermal resources can play a growing role in meeting the power needs of their customers. These resources provide valuable capacity for baseload power generation and electrical grid reliability that compliments intermittent renewable energy sources, such as solar and onshore wind. Washington utilities have not historically incorporated geothermal into their resource plans due to limited data

¹⁴ Washington State Department of Commerce. (2020, December). Washington 2021 State Energy Strategy. <https://deptofcommerce.box.com/s/zsbjvf0nato9q7dk3t7jjh0vjb4iqof>

¹⁵ Washington State Department of Commerce. (2020, December). Washington 2021 State Energy Strategy. <https://deptofcommerce.app.box.com/s/t4qd4zhohzb5kmp0rz5yb4c5h248e67e>

¹⁶ Washington State Department of Commerce. (2020, December 31). Appendix D - Heat Pumps. Washington 2021 State Energy Strategy.

<https://deptofcommerce.app.box.com/s/0jktbcn0f43whgc9n67eqwh0agoawciq/file/1669195945662>

¹⁷ <https://deptofcommerce.app.box.com/s/93of6sfoeo6eh3kvrflmi9xj81tv2f8v>

¹⁸ Washington State Department of Commerce. (2025, April 4). 2024 Biennial Energy Report. <https://deptofcommerce.app.box.com/s/93of6sfoeo6eh3kvrflmi9xj81tv2f8v>

¹⁹ Washington Climate Partnership. (2026, April). Washington State Comprehensive Climate Action Plan. <https://deptofcommerce.app.box.com/s/bo1ly7ol0lfq4kof220y9exp7886view>

²⁰ National Laboratory of the Rockies. (2025). 2025 U.S. Geothermal Market Report. <https://docs.nrel.gov/docs/fy26osti/91898.pdf>.

regarding in-state potential and project economics. However, updated geological assessments, federal pilot projects, and developing regional markets may influence future planning cycles.

Additional geothermal applications in Washington

While the collaborative process focuses on geothermal energy for producing electricity, the state also supports ground-source heat pumps and direct-use geothermal energy applications. These highly energy efficient systems help reduce electricity consumption and contribute to the state's decarbonization goals.

Ground-source heat pumps use the stable temperatures of underground soil, rock, or groundwater to heat and cool buildings. In winter, they draw heat from the ground and transfer it indoors. During the summer, they move excess indoor heat back into the ground. Because the ground maintains a relatively constant annual temperature, ground-source heat pumps operate more efficiently than conventional heating and cooling technologies such as natural gas or electric.

Low to moderate temperature systems can also be used for agricultural and industrial purposes such as food dehydration, heating greenhouses, spa and bathing facilities, and snow- and ice-melting infrastructure.²¹

These systems operate at multiple scales. Residential-scale heat pumps typically provide heating and cooling to one building, including single-family and multi-family buildings. District-scale heat pumps operate at a larger scale to provide heating or cooling for corporate offices, university campuses, large data centers, or even neighborhoods and entire towns.

Several direct-use applications are underway in Washington. For example, Seattle Public Schools is replacing gas-fired boiler systems with geothermal heat pumps during school remodels and replacements.²² The Goldendale hospital is installing a geothermal heat pump system with \$3 million in support from the Washington Clean Energy Fund. Central Washington University is building the GeoEco Center which will use a ground-source heat pump system to heat and cool approximately 500,000 square feet of campus facilities.²³ Through [Commerce grant programs](#),²⁴ thermal energy networks are also under development at Bellingham

²¹ U.S. Department of Energy. (2016, November 15). Heat from Beneath the Ground – Working to Advance Deep Direct-Use Geothermal. U.S. Department of Energy. <https://www.energy.gov/hgeo/geothermal/articles/heat-beneath-ground-working-advance-deep-direct-use-geothermal>

²² U.S. Department of Energy. (n.d.). Geothermal Heat Pump Case Study: Seattle Public Schools. <https://www.energy.gov/hgeo/geothermal/geothermal-heat-pump-case-study-seattle-public-schools>

²³ Eavor. (2025, April 14). Technology: Closed-Loop Geothermal Technology for a 24/7 Carbon-free and Secure Energy Future. Eavor. <https://eavor.com/technology/>

²⁴ <https://www.commerce.wa.gov/epic/clean-energy-grants/>

Technical College²⁵ and the city of Vancouver where the network will serve city hall and other municipal buildings.²⁶

Geothermal research in Washington

Studies in Washington regarding the potential application of geothermal energy started in the early 1970s. These studies used targeted drilling of exploratory wells to measure temperature profiles based on depth to develop a geothermal gradient. In 2009, the U.S. Department of Energy Department provided funding to support additional data collection. DNR used the funds to conduct drilling to measure geothermal gradients around the state. They also developed a statewide campaign to collect samples and gather data about thermal and mineral springs.

In 2014, DNR launched a suite of geospatial layers for state geothermal resources on its [Washington Geologic Information Portal](#).²⁷ This included data for geothermal gradients, thermal and mineral springs, geothermal system locations, drilling permit locations, and maps of geothermal potential and favorability.

These statewide datasets represent the most comprehensive effort to map Washington's potential geothermal resources and favorability models.²⁸ This modeling identified several areas of high or elevated geothermal favorability in the Cascade Mountains, including the east side of Mount Baker, the areas surrounding Mount St. Helens, the Wind River valley, and the Columbia Basin.

From 2015 through 2019, the U.S. Department of Energy funded further research to help DNR refine geothermal potential near Mount Baker, Mount St. Helens, and the Wind River valley. Activities included drilling boreholes, geologic mapping, and geophysical exploration. The results were incorporated into the existing models to more precisely delineate the extent and scale of subsurface heat in these three favorable areas.

From 2019 through 2021, DNR conducted a study of the three focus areas to systematically evaluate potential locations for hydrothermal resources to assess the likelihood of a combination of unique geophysical, geologic, structural, or stratigraphic elements within a region to determine areas where geothermal resources are projected to exist. The study incorporated targeted drilling, terrain geophysics, and geologic mapping with a detailed analysis

²⁵ Cascadia Daily News. March 4, 2026. Flooded coal mine under Bellingham could become heat source for college. <https://www.cascadiadaily.com/2026/mar/04/flooded-coal-mine-under-bellingham-could-become-heat-source-for-college/>

²⁶ Washington Utilities and Transportation Commission. June 5, 2025. UG-250458: Petition for the Intent to Deploy a Thermal Energy Network Pilot Project, Pursuant to RCW 80.28.460(2)(a). <https://www.utc.wa.gov/casedocket/2025/250458>

²⁷ <https://dnr.wa.gov/washington-geological-survey/publications-and-data/geologic-information-portal>

²⁸ Boschmann, D. E.; Czajkowski, J. L.; Bowman, J. D., 2014, Geothermal favorability model of Washington State: Washington Division of Geology and Earth Resources Open File Report 2014-02, 1 plate, scale 1:900,000, 26 p. https://dnr.wa.gov/sites/default/files/2025-03/ger_ofr2014-02_geothermal_favorability.pdf

of fault systems to better characterize geothermal resources.²⁹ The focus areas were further refined by factoring in land availability and lease potential with proximity to transmission infrastructure.

Senate Bill 6039 (2024) builds on this work by directing further assessment of Washington's geothermal potential and supporting additional data collection. DNR is collecting and analyzing additional data and updating the state's thermal and mineral spring database. The database will include a revised data structure, new sampling, and additional analysis to better understand groundwater age, interactions with bedrock, and reservoir temperatures. Legacy and new groundwater chemistry data will enable DNR to publish detailed analyses and reports in 2027. A contractor, Lettis Consultants International, is also performing induced seismic hazard assessments for the three focus areas. These reports will also be published in 2027.

Together, decades of geological research, targeted exploration efforts, and the new state policy direction have put Washington in a better position to fully evaluate the role geothermal energy could play in meeting the state's long-term clean-energy, reliability, and community-resilience goals. This work establishes the technical basis for this collaborative process and the state's broader geothermal assessment effort.

Geothermal technologies

The collaborative process examines three types of geothermal technologies for generating electricity: conventional geothermal and new technologies called enhanced and advanced geothermal systems (Figure 2 on the next page). All use steam heat to spin large turbines to generate electricity. The suitability of each geothermal technology depends on local geology and hydrology, particularly how temperatures increase with depth and how easily fluids can circulate through rock formations.³⁰

The collaborative process considers the full lifecycle of geothermal power plant development, including exploration, construction, operations, and decommissioning. It also evaluates needed infrastructure such as access roads and electrical transmission connections.

Ecology is researching these technologies and the exploration, construction, and operational requirements. Additional technical details and considerations for the collaborative process will be shared during future workshops in the fall 2026.

²⁹ Washington Geological Survey. (2021, September 30). Geothermal Play-Fairway Analysis of Washington State Prospects: Final Report. <https://www.osti.gov/biblio/1823116/>

³⁰ Washington State Department of Natural Resources. (n.d.). Geothermal Resources in Washington State. https://dnr.wa.gov/sites/default/files/2025-03/ger_fs_geothermal_resources.pdf

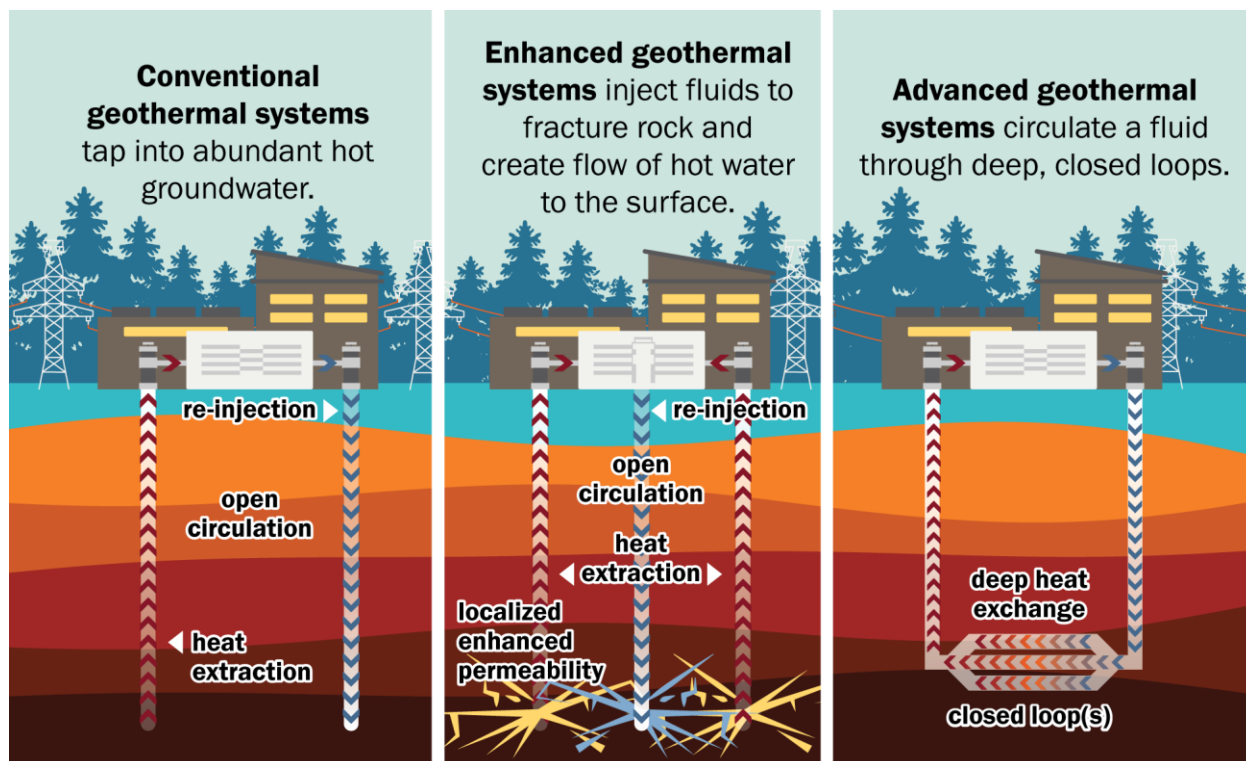


Figure 2. Three types of geothermal energy technologies.

Conventional geothermal systems

Conventional geothermal systems rely on naturally occurring underground conditions to generate power including high temperatures at a relatively shallow depth, sufficient fluid or steam to carry heat to the surface, and subsurface conditions allowing fluid or steam to flow freely.

In these systems, hot groundwater or steam rises to the surface and drives turbines to generate electricity. After the heat is extracted, cooled geothermal fluid is reinjected back into the reservoir to maintain pressure and support long-term sustainability.

The Geysers, located in northern California, is the largest complex of conventional geothermal power plants in the world, producing approximately 725 megawatts of electricity—enough to power a city the size of San Francisco.³¹

Enhanced geothermal systems

Enhanced geothermal systems are designed for locations where underground heat exists but natural fluid circulation is limited. In these systems, deep wells are drilled into “dry” hot rock formations. A fluid is then injected under pressure to create fractures, or “break” the rock. This hydraulic fracturing allows fluid to circulate through the rock, producing hot fluid or steam that can be brought to the surface to generate electricity.

³¹ Calpine. (n.d.) About the Geysers. <https://geysers.com/about/>

Hydraulic fracturing has been used in oil and gas development for decades but its adaptation to geothermal applications is relatively new. The U.S. Energy Department funded several large-scale demonstration projects including the Frontier Observatory for Research in Geothermal Energy (FORGE) project, in Utah.³² In 2023, the first enhanced geothermal project in the United States to deliver electricity to the grid began operating in Nevada.³³ Enhanced geothermal systems are extensively studied and monitored to reduce risks, including induced seismicity and impacts on aquifer systems.

Advanced geothermal systems

Advanced geothermal systems, including “closed-loop geothermal systems,” are another emerging technology used when conventional geothermal systems are not feasible.

Unlike enhanced systems, closed-loop systems do not rely on underground fractures or fluid movement in the surrounding rock. Instead, they act like radiators, circulating fluids through sealed underground loops that absorb heat from the surrounding rock and bring it to the surface for power production.³⁴ In these closed loops, a fluid with a boiling point lower than water is contained within the loops and does not contact the surrounding rock.

The first commercial advanced geothermal system was the Eavor-Loop in southern Germany which began operations in late 2025.³⁵

³² U.S. Department of Energy. (n.d.). Enhanced Geothermal Systems Demonstration Projects. U.S. Department of Energy. <https://www.energy.gov/hgeo/geothermal/enhanced-geothermal-systems-demonstration-projects>

³³ Gallucci, M. (2023, November 28). America’s first “enhanced” geothermal plant just got up and running. Canary Media. [https://www.canarymedia.com/articles/geothermal/americas-first-enhanced-geothermal-plant-just-got-up-and-](https://www.canarymedia.com/articles/geothermal/americas-first-enhanced-geothermal-plant-just-got-up-and-running#:~:text=At%20the%20geothermal%20site,%20two,percent%20drop%20from%20today%27s%20prices)

[running#:~:text=At%20the%20geothermal%20site,%20two,percent%20drop%20from%20today%27s%20prices](https://www.canarymedia.com/articles/geothermal/americas-first-enhanced-geothermal-plant-just-got-up-and-running#:~:text=At%20the%20geothermal%20site,%20two,percent%20drop%20from%20today%27s%20prices)
³⁴ U.S. Department of Energy. (n.d.). Geothermal Electricity Generation. U.S. Department of Energy. <https://www.energy.gov/hgeo/geothermal/geothermal-electricity-generation>

³⁵ Power. (2026, January 8). Eavor’s first-of-its kind closed-loop geothermal project produces grid power in Germany. <https://www.powermag.com/eavors-first-of-its-kind-closed-loop-geothermal-project-produces-grid-power-in-germany/>

Collaborative process focus areas

While the collaborative process includes statewide considerations, initial focus is on the three areas with high geothermal potential (Figure 3 below). The unique communities, land uses, and economic histories within each focus area shape how geothermal development may be considered locally. Understanding these regional characteristics helps inform how engagement activities are designed and who may be most affected by potential geothermal development.

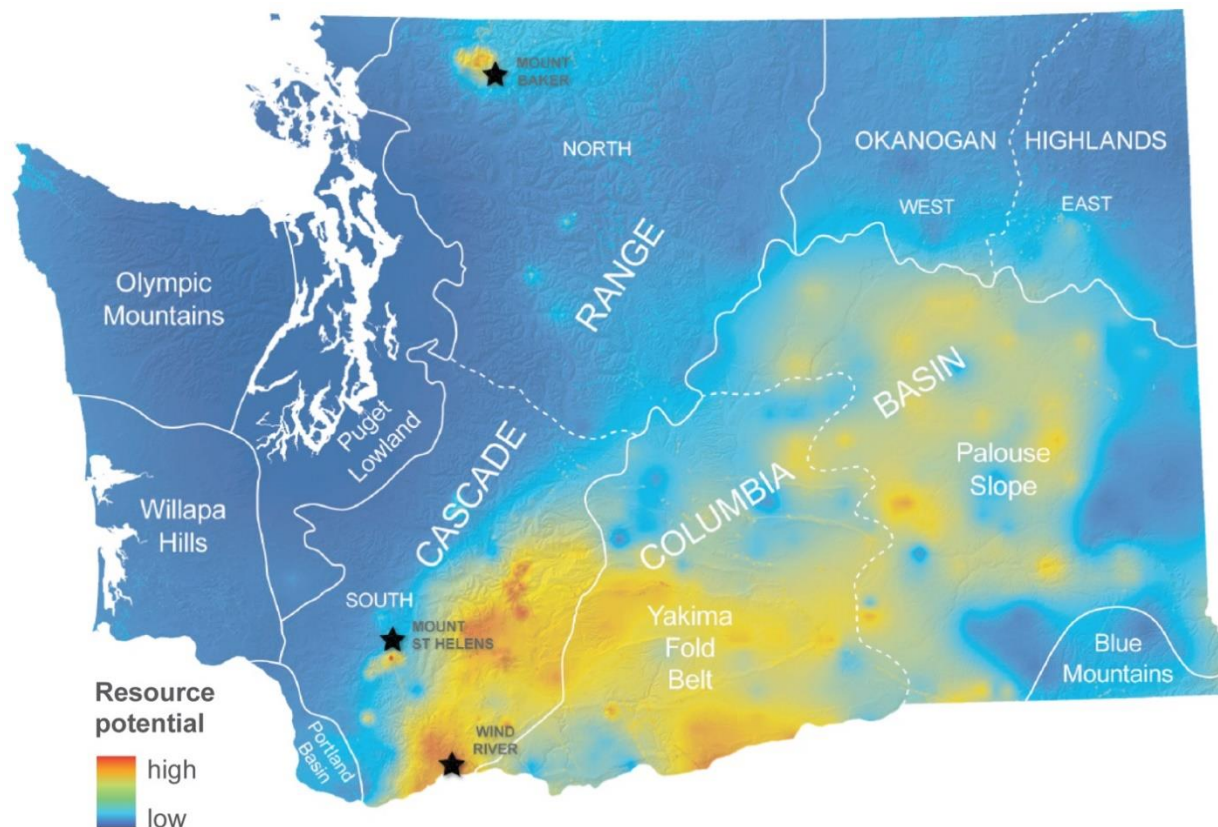


Figure 3. Geothermal energy resource focus areas³⁶

The following regional profiles summarize key geographic, community, and geothermal characteristics and will be updated as additional insights emerge.

³⁶ Boschmann, D., et al. (July 2014). Geothermal Favorability Model of Washington State. Open File Report 2014-02. https://www.dnr.wa.gov/publications/ger_ofr2014-02_geothermal_favorability.pdf

Mount Baker area

Community and landscape context

The Mount Baker focus area is located on the southeast side of Mount Baker and northwest of Baker Lake on land managed by the U.S. Forest Service within the Mount Baker-Snoqualmie National Forest (see Figure 4 on the next page).³⁷ The area is accessed from the south via State Route 20 to Baker Lake Road and Forest Road 11. It covers approximately 100 square miles and lies primarily in Whatcom County, adjacent to the Skagit County border. The area is known for its volcanic features, forests, waterways, abundant wildlife, and deep cultural significance to the Tribes who have lived in and utilized the area since time immemorial.^{38, 39} The Swinomish Indian Tribal Community and the Tulalip Tribes shared that they exercise Treaty-reserved fishing, hunting, and gathering rights within the focus area.⁴⁰ The Swinomish Indian Tribal Community also has Traditional Cultural Properties on Mount Baker and throughout the Skagit River watershed.⁴¹

Baker Hot Springs, Pacific Northwest Trail, and several recreation trails and trailheads are located within the focus area and on nearby forest lands. The region supports important salmon fisheries and historical Tribal fishing areas such as Baker Lake and the recently rebounding Baker River sockeye, and sustains a strong recreation economy centered on hiking, camping, boating, and winter sports.⁴²

Surrounding communities include small towns such as Concrete in Skagit County and Glacier in Whatcom County and urban centers such as Mount Vernon and Bellingham. These communities reflect a mix of agricultural, recreation-based, and small-town identities.

³⁷ U.S. Forest Service and U.S. National Park Service. (n.d.). North Cascades and Mt. Baker Visitor Information Guide. https://ncascades.org/discover/north-cascades-ecosystem/files/Visitor-Information-Guide-Nov-09_web.pdf

³⁸ Vance-Sherman, A. (2022). Whatcom County profile. Washington State, Employment Security Department. Washington State Employment Security Department. <https://esd.wa.gov/media/pdf/444/whatcom20county20profile202022pdf/download?inline>

³⁹ Trainor, Amy. (2026). Swinomish Indian Tribal Community comment letter on the draft legislative update.

⁴⁰ Gobin, A. (2026). Tulalip Tribes comment letter on the draft legislative update.

⁴¹ Trainor 2026

⁴² Pailthorp, B. (2025). Upper Skagit Indian Tribe celebrates huge rebound of Baker River sockeye. KNKX Public Radio. <https://www.knkx.org/environment/2025-10-16/upper-skagit-indian-tribe-baker-river-sockeye-puget-sound-energy>



Figure 4. Map of the Mount Baker focus area

Geothermal considerations

Mount Baker sits in one of Washington's dynamic volcanic regions. Heat flow, past volcanic activity, and historical hydrothermal features indicate strong geothermal potential. As part of previous studies, DNR drilled two geothermal wells in the focus area to collect data. Mapping has revealed a network of faults, with a particularly high fault density near Baker Hot Springs.

Some modeling for subsurface flow was also completed but data remains limited. Improved geological and geophysical mapping is needed to reduce uncertainty in subsurface conditions and geothermal potential.

In 2024, the Legislature appropriated \$500,000 to support the Nooksack Indian Tribe, in partnership with the Whatcom County Public Utility District, in conducting a pre-feasibility study of the geothermal potential of the Mount Baker (Kweq' Smánit) region.⁴³ This recently completed study includes a site assessment and preliminary feasibility analysis. It also recommends additional site exploration to support a possible future geothermal project plan.

The U.S. Forest Service also had active lease lands in the area between 2014 and 2019, but no projects were developed. They are currently evaluating nominated lease parcels that overlap with and extend beyond past lease areas and released a draft environmental assessment under the federal National Environmental Policy Act for public comment in May 2026.⁴⁴

Mount St. Helens area

Community and landscape context

The Mount St. Helens focus area is in southwestern Washington and is made up of two areas: one on the north side of the mountain and the other on the south side. The northern focus area covers approximately 75 square miles in Cowlitz and Skamania counties, and the southern focus area covers approximately 20 square miles in Skamania County (Figure 5 on the next page). The focus area does not include the Mount St. Helens National Volcanic Monument area. The area is primarily privately held timber land and accessed from the northwest on State Route 504 or the Spirit Lake Highway, and from the southwest by Lewis River Road and Forest Road 90. The focus areas and surrounding lands include multiple streams and lakes, including Coldwater Lake and Swift Reservoir. Nearby public lands offer multiple recreation opportunities including hiking, camping, hunting, wildlife viewing, and scenic areas.

Mount St. Helens (lawilátla, listed as Lawetlat'la) also holds deep cultural importance to multiple Tribes and was listed on the Washington State Register of Historic Places and National Register of Historic Places as a Traditional Cultural Property in 2013.⁴⁵ The Cowlitz Indian Tribe has specifically noted the importance of Mount St. Helens. The mountain is a place of exceptional spiritual power, reflects important traditional cultural beliefs rooted in Tribal history, and it is important to preserving the cultural significance of the Tribal communities that exercise inherent rights to the region. The Traditional Cultural Property boundary includes the

⁴³ Hotrock Energy Research Organization. (2025, December). Mt. Baker/Kweq' Smánit Region Prefeasibility Geothermal Resource Assessment Final Report. https://www.pudwhatcom.org/wp-content/uploads/2026/02/MtBakerGeoPrefeasibility_Final_Report_12_2025.pdf

⁴⁴ U.S. Forest Service. (n.d.). 2025 Mt. Baker Geothermal Consent to Lease. <https://www.fs.usda.gov/r06/mbs/projects/68702>

⁴⁵ McClure, R., J. Hand and A. Burke. (2012). National Register of Historic Places Registration Form, Lawetlat'la. U.S. Department of the Interior, National Park Service, National Register of Historic Places Program. <https://npgallery.nps.gov/NRHP/AssetDetail/42a51632-8b57-4d1c-aaed-48ad85765864>

area of the mountain above the tree line at an elevation of approximately 4,000 feet above sea level. The Loowit Trail which encircles the mountain occurs at roughly this elevation and serves as the tangible fixed boundary for the property.⁴⁶

The focus area lies within rural, forested landscapes whose communities have been shaped by timber, manufacturing, and transportation-based economies. Surrounding communities include Castle Rock, Cougar, St. Helens, and Woodland.

⁴⁶ McClure, R., and N. Reynolds. (2015). Making the List: Mount St. Helens As a Traditional Cultural Property, A Case Study in Tribal/Government Cooperation. *Journal of Northwest Anthropology*, Volume 49, No. 2. https://kboo.fm/sites/default/files/mcclure-reynolds_jona_final.pdf.

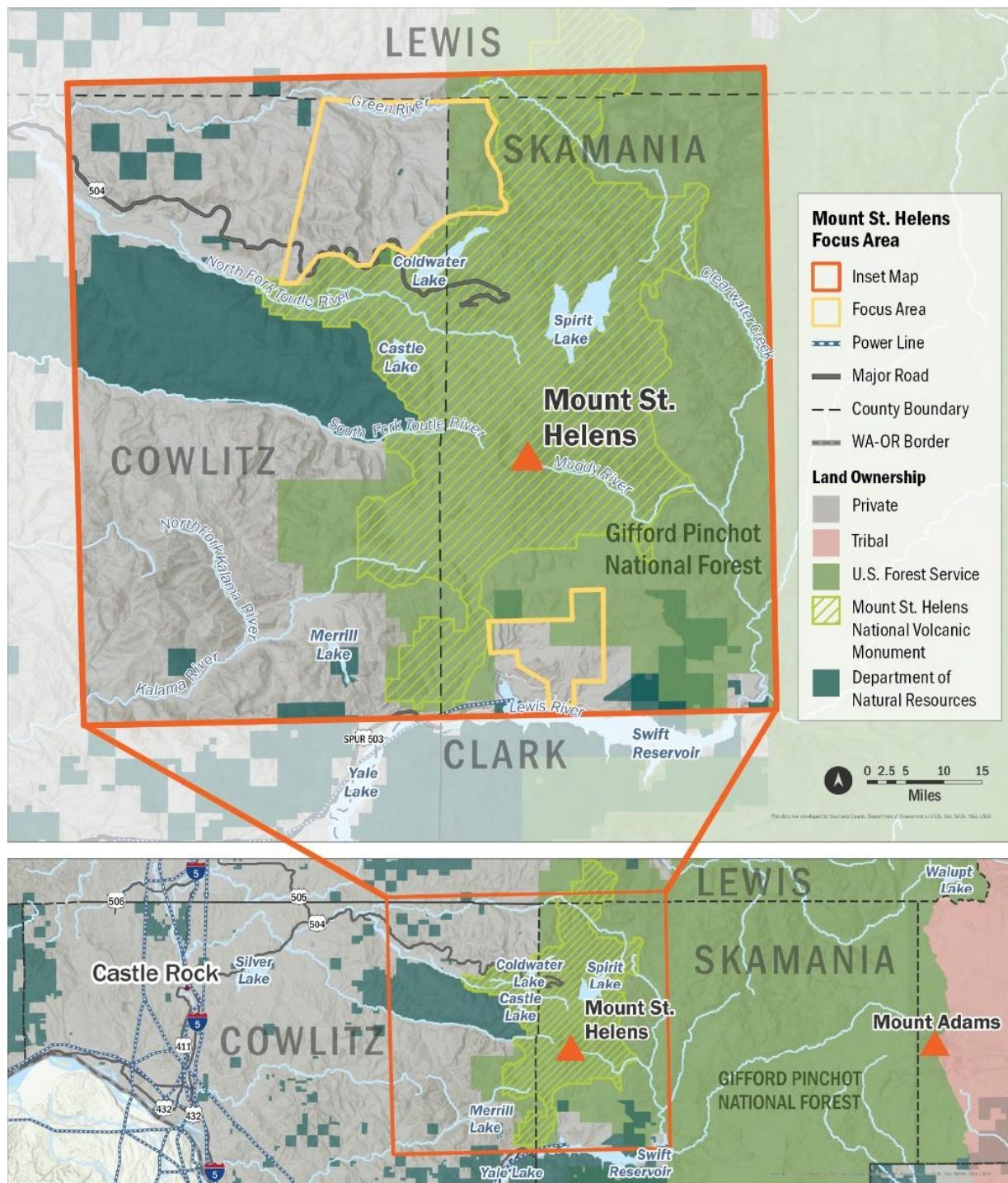


Figure 5. Map of Mount St. Helens focus area

Geothermal considerations

Mount St. Helens is a well-studied volcanic system with clear signs of geothermal activity. Decades of scientific monitoring, primarily by the U.S. Geological Survey, provide insight into the structure and composition of the volcanic system, including a large body of data from seismometers, ground deformation sensors, volcanic gas detectors, and chemistry of thermal

springs associated with adjacent volcanic activity. While important, these data focus on volcanic activity rather than geothermal energy and largely come from areas within the national monument. A part of past studies by DNR starting in 2009, they collected chemistry data from springs in the region that focuses on potential geothermal resources. They also collected geothermal data, conducted mapping and surveys, and drilled a borehole on Elk Ridge north of Mount St. Helens as part of its geothermal investigation. This work suggests some potential geothermal resources to the north and south of Mount St. Helens, but additional studies are needed.

Wind River valley area

Community and landscape context

The Wind River valley focus area is in Skamania County in southwestern Washington. The area covers approximately 160 square miles and includes a mix of state, federal, and private lands, with the northern portion located within the Gifford Pinchot National Forest and southern portion under state and private ownership (Figure 6 on the next page). The Wind River corridor is widely recognized for its scenic and ecological value, including its designation as a wild steelhead river and its consideration for scenic river status in its lower reaches.⁴⁷ This cultural and environmentally significant area also encompasses the U.S. Forest Services' Wind River Historic District, a historic administrative and research district with early-20th-century ranger, nursery, and experiment station facilities as well as the Pacific Northwest's oldest arboretum.⁴⁸ There are recorded and unrecorded cultural and Tribal resources in the focus area, and the Mount St. Helens Traditional Cultural Property is located north of the focus area.

A portion of this focus area is in the [Columbia River Gorge National Scenic Area](#).⁴⁹ There are also two Bonneville Power Administration electrical transmission lines running east to west along the Columbia River.

The focus area is within a largely rural landscape shaped by forestry, river-based transportation, and recreation tied to the Columbia River Gorge and surrounding forests. Nearby communities include Carson and the unincorporated communities of Hemlock, Home Valley, Stabler, and Trout Lake, which provide limited local services and access points for recreation, forest management, and travel through the valley. The region reflects a mix of long-established rural settlements, small tourism-centered communities, and county-level economies influenced by government employment, hospitality and lodging, food services, and manufacturing.⁵⁰

⁴⁷ Historic Wind River. (n.d.). History and restoration efforts at Historic Wind River.

<https://www.windriverwa.org/the-history-of-skamania-county/>

⁴⁸ U.S. Department of Agriculture Forest Service. (n.d.). Wind River Historic District.

<https://www.fs.usda.gov/r06/giffordpinchot/recreation/wind-river-historic-district>

⁴⁹ <https://www.fs.usda.gov/r06/columbiarivergorge>

⁵⁰ Bailey, S. (2022). Skamania County profile. Washington State Employment Security Department.

<https://esd.wa.gov/media/pdf/892/skamania20county20profile202022pdf/download?inline>

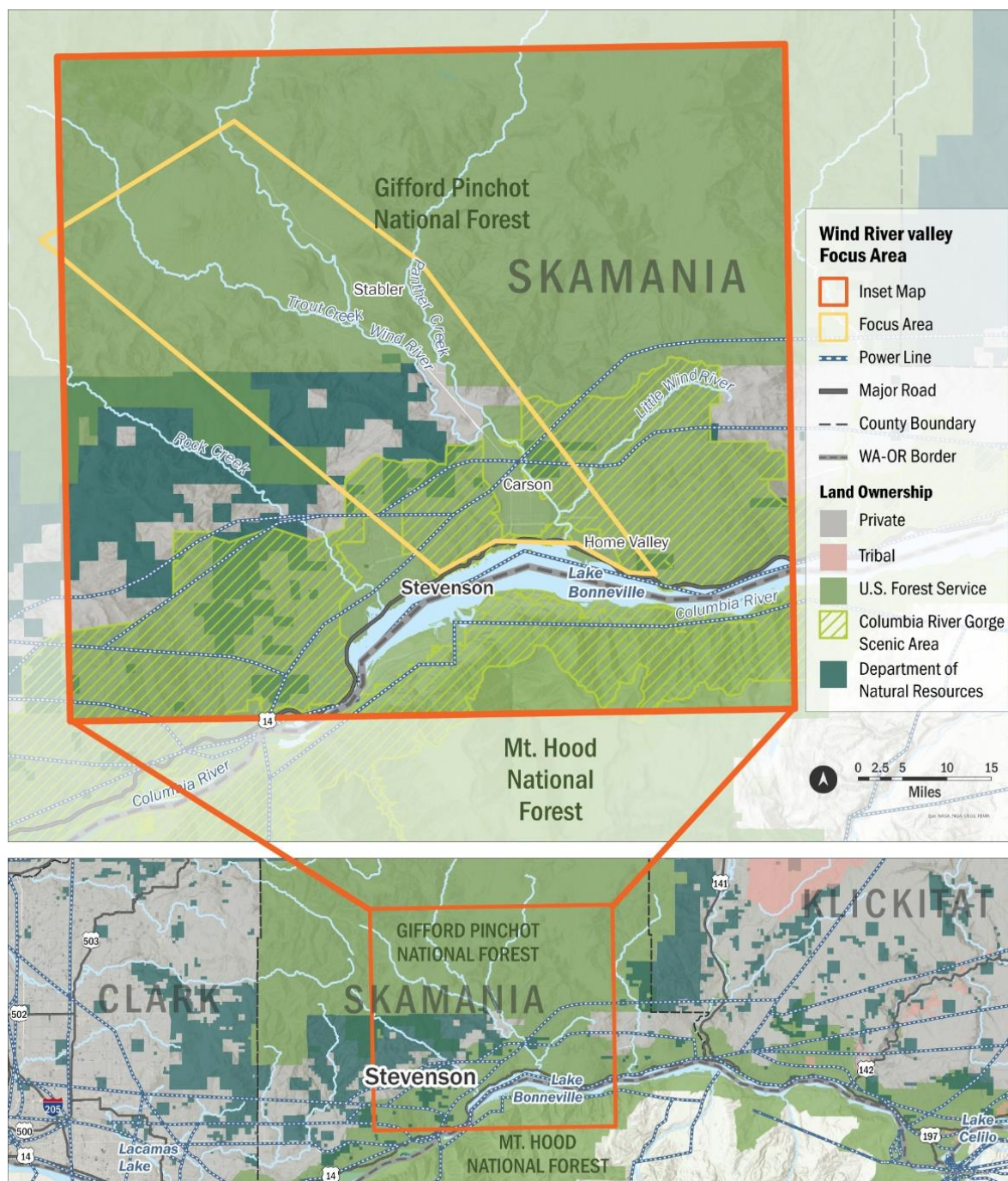


Figure 6. Map of Wind River valley focus area

Geothermal considerations

The Wind River valley area represents a distinct geothermal setting outside of major volcanic centers. It offers an opportunity to evaluate geothermal systems that are influenced by bedrock faults and fractures. The Washington Geologic Survey identified this corridor as an important place to improve understanding of subsurface temperature gradients, permeability, and

fault-controlled groundwater flow. These are areas where current data are limited but essential for understanding Washington’s broader geothermal potential.

In fall 2025, DNR solicited proposals for geothermal exploration and feasibility studies on state lands in the Wind River valley area.⁵¹ If approved, studies could include geologic mapping, exploratory wells, water sampling, and cultural resource studies. Access to state lands would be managed through a land use license which would not allow development or constructing roads, buildings, or infrastructure.

The U.S. Forest Service is also conducting a lease evaluation process for federal parcels in the valley and released a draft environmental assessment under the federal National Environmental Policy Act for public comment in June 2026.⁵²

Statewide geothermal considerations

In addition to the focus areas, the collaborative process is gathering statewide input about geothermal resources and development considerations. While the geothermal focus areas are concentrated along the Cascade Range, there may be geothermal resources in the Columbia River basin as well as other areas in Eastern Washington.

The Chelan, Douglas and Grant public utility districts are seeking to explore geothermal potential in North Central Washington through geophysical studies and exploration wells.⁵³ Central Washington University, which already uses geothermal energy for building heating and cooling, is considering opportunities for developing geothermal energy on its lands in Ellensburg.⁵⁴ Kittitas County is also initiating a Programmatic Environmental Impact Statement under the State Environmental Policy Act to evaluate appropriate areas for permitting a variety of different energy uses, including geothermal energy.⁵⁵

⁵¹ Department of Ecology. (2025, August). SEPA Register: 202503365 WA department of Natural Resources.

<https://apps.ecology.wa.gov/separ/Main/SEPA/Record.aspx?SEPANumber=202503365>

⁵² Gifford Pinchot National Forest. (2026, March 13). Review of Wind River Consent to Geothermal Lease Request.

<https://www.fs.usda.gov/r06/giffordpinchot/projects/68979>

⁵³ Hansen, R. (2026, April 21). Mid-Columbia PUDs consider partnership to study geothermal potential. Chelan County P.U.D. <https://www.chelanpud.org/about-us/news/2026/04/21/mid-columbia-puds-consider-partnership-to-study-geothermal-potential>

⁵⁴ DuPont, Steve. (2026). Central Washington University comment letter on the draft legislative update.

⁵⁵ <https://www.co.kittitas.wa.us/cds/cesp.aspx>

Engagement plan overview

The geothermal collaborative process is focused on early, meaningful, and ongoing engagement with Tribes, local governments, community-based organizations, utilities, industry partners, environmental groups, and the public.

Throughout the process timeline (Figure 7 below), Ecology is implementing various outreach strategies, with a particular emphasis on the three focus areas. Gathered input helps ensure community and Tribal perspectives, as well as local context, informs this legislative update and final recommendations to be shared in 2027. The engagement activities are sequenced in phases and supported by feedback loops, so input gathered early informs subsequent discussions.

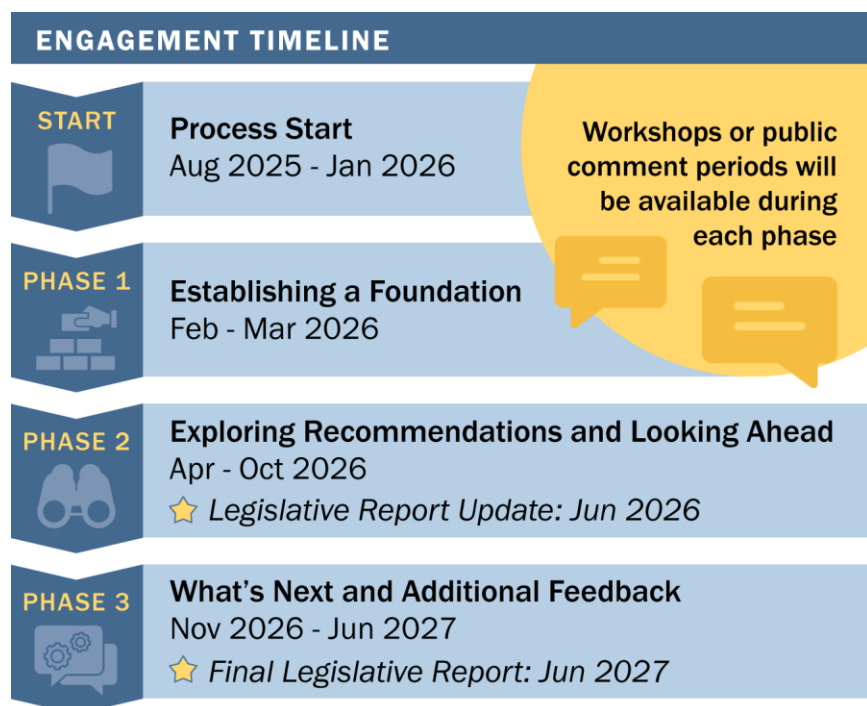


Figure 7. High-level timeline of the engagement activities

Engagement goals and methods

New technologies have increased the potential for developing geothermal resources in Washington. Most people are unfamiliar with these emerging technologies or how they might be affected. The collaborative process is designed to provide clear and accessible information about the types of technologies, as well as opportunities and risks associated with developing geothermal energy. Ecology seeks to understand public and Tribal concerns, perspectives, and recommendations, and recognizes that priorities may vary across geographies. By employing accessible and transparent engagement opportunities, we are providing multiple ways to support meaningful participation, particularly among overburdened communities and vulnerable populations that have been historically underserved.

We have conducted meetings, virtual and in-person community workshops, Tribal forums, and public comment periods. We also maintain a [collaborative process website](#)⁵⁶ to share information and updates. Other communication methods include blogs and social media posts, media interviews, radio ads, email and newsletter updates, and presentations to industry groups and organizations.

Tribal engagement and consultation

Ecology invites early, meaningful, and ongoing engagement and consultation with federally recognized Tribes. Engagement began in August 2025 and will continue throughout the process with information sharing and opportunities for input at each phase. Ecology shared a draft Tribal Engagement and Consultation plan with information and options for the collaborative process with Tribes for review and feedback. Senate Bill 6039 (2024) requires the process to identify and provide recommendations regarding potential geothermal energy development on Tribal rights, interests, and resources, including cultural, archaeological and sacred sites, fisheries, and other rights reserved or protected by federal treaty, statute, or executive order. The process provides multiple options for Tribes to share information and perspectives about developing geothermal energy, including government-to-government consultations, community workshops, Tribal forums, reviews of draft legislative updates and reports, and updates at Tribal meetings and conferences. Tribes may also provide comment letters to include as an appendix to the legislative update or final report.

Engagement to date

Ecology began the geothermal energy collaborative process in November 2024. Agencies meet monthly to share information and plan. Early engagement with Tribes and the public began in 2025 and the agencies held several public webinars and a Tribal forum. Community and Tribal engagement activities continue into 2026. The sections below provide an overview of the activities that have been implemented as of June 2026. *Appendix A. Interested Parties and Tribal Engagement* includes a list of interested parties and the Tribes we reached out to as of June 2026. *Appendix B. Workshop Summaries* includes the summary of workshops completed to date.

Communities and interested parties

Ecology conducted 12 targeted outreach meetings with interested parties, including community-based organizations, public utility districts, utilities, local jurisdictions, and state and federal agencies in the Mount Baker, Mount St. Helens, and Wind River valley regions throughout 2025.

In August 2025, we held a virtual information webinar describing the collaborative process, geothermal technologies, opportunities and risks, and opportunities for input. There were 89 attendees representing varying interests and geographies across the state. A [recording](#)⁵⁷ is

⁵⁶ <https://ecology.wa.gov/regulations-permits/sepa/clean-energy/geothermal>

⁵⁷ <https://www.youtube.com/watch?v=cse1b9xMcbw>

available on the collaborative process website. In November 2025, we held two virtual public workshops to provide background information and solicit input on opportunities and risks associated with geothermal development. Attendees included representatives from 10 Tribes and approximately 90 interested parties from utilities, industry, organizations, individuals, academia, and federal, state, and local agencies.

Seven interviews were conducted in early 2026 with community-based organizations, public utility districts, and local jurisdictions to help develop engagement options that would best suit community needs.

In February and March 2026, we held in-person community workshops in each of the focus areas: Mount Baker, Mount St. Helens, and Wind River valley (see Figure 8 below). At each event, we shared information, answered questions, and gathered input related to geothermal energy exploration. We provided an overview of geothermal energy, background on the collaborative process, how the focus areas were determined, and awareness of other geothermal planning. The workshops help ensure future steps are informed by local knowledge and community values.



Figure 8. March 2026 Wind River valley area workshop at the Stevenson Community Library in Stevenson

We hosted a statewide virtual workshop in March 2026 to collect feedback and provide background information, share updates and key themes from the collaborative process. The workshop provided the opportunity to hear from individuals and organizations outside of the three geographic focus areas and included facilitated small-group breakout discussions where participants shared feedback on opportunities and discussed risks related to geothermal development and geographic considerations beyond the three focus areas.

County level demographic data revealed more than 5% of the residents in the three focus areas speak Spanish, so we included Spanish language materials in our outreach. To advertise the workshops, we posted to Ecology's blog and distributed it to media outlets across the state. We also placed notices in local newspapers, bought radio ads for English and Spanish stations, made social media posts and distributed notices to different email lists and Ecology newsletters. There was also an online comment form for written feedback. We provided a Spanish interpreter and all outreach materials were translated into Spanish.

Participants included community members, Tribal staff, environmental organizations, academia, utilities and utility associations, energy project developers, community land trusts, forest landowners, and local, state, and federal agencies.

From April 15 to May 15, 2026, we held a public comment period to gather feedback on the draft legislative update. Ecology received 16 public comments from individuals, Tribes, environmental organizations, academic institutions, and industry. On May 5, we hosted a virtual question and answer session about the update. We received comments about siting considerations, environmental and cultural impacts, clean energy goals, technologies and tools, regulations and policy, and coordination with agencies and Tribal governments, especially Tribal consultation. We considered the input received as we revised the legislative update. These comments will also inform the technical research now underway that will be discussed in more detail in fall 2026.

Throughout the process, we also engaged utilities and energy developers to better understand their siting and financing considerations as well as market interest in geothermal resources. These discussions provided insight into project sequencing, regulatory and leasing constraints, technology pathways, and community engagement considerations.

Tribal engagement

Multiple Tribes attended a virtual webinar in August 2025. In September 2025, we shared a draft Tribal Engagement and Consultation Plan with Tribes for their review and offered consultation. The Confederated Tribes and Bands of the Yakama Nation provided comments on the draft. We met with the Cowlitz Tribe to provide an overview of the process, made a presentation at an energy conference conducted by the Affiliated Tribes of Northwest Indians, and extended invitations to meet with the Northwest Indian Fisheries Commission and Columbia River Inter-Tribal Fish Commission. In November 2025, we offered a virtual Tribal-only forum to provide information about the collaborative process and present the draft Tribal Engagement and Consultation Plan. Tribal representatives also attended the November 2025 virtual public workshops.

We shared our draft outline of this legislative update with Tribes in early 2026 for their input and offered in-person meetings to Tribes in the focus areas as well as virtual meetings for any interested Tribe. We met with staff from the Swinomish Indian Tribal Community who shared comments they sent to the U.S. Forest Service in October 2025 regarding the Mount Baker federal geothermal consent to lease process. Representatives from the Nooksack Indian Tribe and the Confederated Tribes and Bands of the Yakama Nation attended the in-person community workshops. The Confederated Tribes and Bands of the Yakama Nation also submitted a comment letter with feedback on the legislative update outline and comments on the collaborative process.

We also held a Tribal comment period concurrent with the public comment period, conducted April 15 through May 15, 2026, to take feedback on the draft legislative update. On May 6, we hosted a Tribal question and answer session on the draft legislative update. Tribes provided feedback and concerns related to Tribal engagement, consultation, Treaty rights, environmental impacts, Traditional Cultural Properties, and cultural practices. They also commented on the state regulatory framework and coordination with federal agencies. Additionally, Tribes were invited to include comment letters on the legislative update, and these are in *Appendix C. Tribal Comment Letters*.

We incorporated Tribal feedback into the opportunities and risks discussion of this update. We will also continue to invite engagement and consultation with Tribal governments and Tribal organizations to discuss geothermal energy considerations. For the full list of Tribes engaged to date, see *Appendix A. Interested Parties and Tribal Engagement*.

Interagency meetings

We continue to convene monthly interagency coordination meetings with representatives from DAHP, Commerce, WDFW, DNR including the Washington Geological Survey, and EFSEC.

These regular meetings afford agencies the opportunity to exchange information, discuss regulatory and policy issues, prepare for community engagement, and ensure consistent, collaborative planning. Topics typically touch on technical and scientific coordination, regulatory policy alignment, outreach and engagement planning, and external coordination.

We and our partner agencies work with various local, state and federal agencies to share information about geothermal-related activities, as well as broader energy and land-management activities. These federal agencies include the U.S. Bureau of Land Management and U.S. Forest Service to better understand federal geothermal leasing processes and timelines that may intersect with state planning. The state team also met with the U.S. Department of Energy's Office of Geothermal and the National Association of State Energy Officials, enabling Washington to join a multi-state [Geothermal Power Accelerator](https://www.naseo.org/topics/geothermal-power-accelerator)⁵⁸ group. State-to-state coordination also includes outreach to Oregon to gather insight regarding their

⁵⁸ <https://www.naseo.org/topics/geothermal-power-accelerator>

geothermal experience and exploring opportunities for shared learning. In addition, we also engaged several county planning departments to understand local considerations and needs.

Opportunities and risks

Throughout the collaborative process, we are engaging communities, Tribes, utilities, industry, agencies, and other interested parties to identify opportunities and risks associated with geothermal energy resources in Washington. We found there is a high level of interest in the collaborative process and how outcomes and findings will inform communities and Tribes about geothermal energy development. We received a wide range of questions reflecting interest in the technical feasibility and broader planning context of geothermal energy in Washington.

These themes are summarized below. They reflect both statewide and focus area considerations raised during the collaborative process. They will be used to inform future engagement. We have included detailed summaries in *Appendix B. Workshop Summaries*.

Overarching themes

Opportunities

Participants noted geothermal energy is a renewable source of consistent power that could help utilities meet state clean energy requirements, support electrical reliability and reduce risks to the Pacific Northwest energy grid. Some noted geothermal energy to power microgrids or local power suppliers could also help efforts to alleviate transmission capacity issues, and strengthen local and Tribal energy resilience through geothermal microgrid applications.

Developing geothermal energy could create jobs and boost local competitiveness through workforce development, cost-competitive energy production, and revitalizing rural economies. Development could support public education about clean energy, including geothermal resources. Depending on a project's location, it could also create opportunities for multi-use applications such as providing electricity generation and direct-use heating and cooling. Other opportunities could include incentives and financial assistance for developers, communities, and Tribes to support geothermal feasibility studies.

Risks

Participants raised concerns about potential environmental impacts and effects on Tribal rights, interests, and cultural and natural resources. In addition, potential impacts on salmon, bird and fish nesting seasons, migration corridors, and habitat loss need to be better understood.

Developing geothermal energy could also pose risks to water quality and water supplies, including potential groundwater contamination. Geologic and seismic hazards such as induced seismicity and ground deformation also could be potential risks for existing surface infrastructure such as hydropower dams. There could also be risks to facilities from volcanic activity and lahars or debris flows.

There are also risks to project longevity if new technologies do not perform as expected. The lack of information about these technologies may present a risk in adequately determining potential impacts.

Additional risks include recreational impacts, restrictions on public access in geothermal lease areas, releasing heat into the environment and potential air quality impacts from fugitive dust and greenhouse gas emissions. Other concerns included sulfurous odor emissions, wildfire risk from transmission infrastructure, and visual quality and aesthetics impacts in protected viewsheds.

Research needs

Participants noted additional studies and information are needed to adequately consider all the potential impacts. This includes identifying geothermal energy technologies suitable for Washington and capturing lessons learned from the oil and gas industry and other geothermal projects around the nation and world.

Research could also include documenting data gaps for the focus areas and to assess if other areas of the state have geothermal resources that could be developed, particularly in the Columbia River Basin and Eastern Washington. Other research needs include additional seismicity studies and assessments about hazards and available temperature data. They noted it would be important to characterize the injection fluids that would be used to determine potential water quality impacts. Approaches for identifying and addressing seismic and water quality risks are likely to be needed.

Siting and development factors

Participants shared siting and developing geothermal energy must include early engagement and consultation with affected communities and Tribes. Project proponents should have economic cost-benefit analyses and hiring strategies prepared as part of project planning to understand benefits and impacts to communities.

Since the focus areas are in mostly undeveloped and remote locations, there will be a need for transmission infrastructure and access roads which could result in greater impacts. They noted the existing statewide constraints on transmission capacity should be considered early when siting projects. Some participants suggested developers consider how geothermal energy could align with other energy projects to provide opportunities to upgrade transmission lines. Siting in undeveloped locations also could result in increased impacts to fish and wildlife habitat.

Other siting factors include the location of seismic faults, potential for facilities to induce seismicity, and the need for site-specific studies and monitoring. Other concerns include drilling and exploration costs and limited funding for early-stage feasibility and test wells.

Depending on project type and location, geothermal projects could also use filtering technology to extract minerals from subsurface fluids which could be sold to offset plant operating costs. Participants also noted the Mount Baker and Mount St. Helens focus areas contain high elevation lands with winter weather conditions that could make siting and facility access more difficult.

Regulations and policy

Discussion indicated a need for understanding local, state and federal regulations, permitting, and oversight requirements to support geothermal development. This includes identifying a clear regulatory framework for developing geothermal energy, regulatory or policy gaps, oversight roles among local, state and federal agencies and regulatory differences involving different types of geothermal energy technologies. Examples of regulatory topics include exploratory drilling requirements, geothermal resource ownership, conflicting subsurface uses, water rights, and state land leasing. There were also questions about alignment between the state and federal geothermal regulations and leasing processes. Additional considerations include continued compliance, incorporating new technologies, and long-term monitoring after facilities closures.

Geographic focus areas

Many of the opportunities and risks associated with the three focus areas are consistent with the overarching themes we have already presented. The collaborative process workshops were attended by community members who identified specific concerns and benefits.

Mount Baker

There was support for geothermal energy providing local energy independence for Whatcom and Skagit counties. Skagit County has limited independent power production and geothermal may present opportunities for energy generation. The Nooksack Indian Tribe and Whatcom County Public Utility District conducted a prefeasibility assessment for the Mount Baker (Kweq' Smánit) region to determine potential next steps.⁵⁹

Risks include impacts to Baker Lake, Baker River, and salmon recovery. The area has many recreational uses and there are concerns about impacts on the recreation economy. Concerns also were raised about risks to nearby hydropower dams from drilling and operating geothermal facilities.

The Swinomish Indian Tribal Community raised concerns about impacts to Tribal and cultural resources from exploration activities and future operations. They expressed specific concerns about impacts and cumulative pressures from hydropower infrastructure and increased recreational use. They stated the entire Mount Baker area is important to the Tribe for natural, cultural, and Tribal resources. They are opposed to geothermal energy development and related transmission lines and roads, specifically on the south side of Mount Baker, Baker Lake, and Baker River. The Tribe also shared that they exercise Treaty-reserved fishing, hunting, and gathering rights within the focus area and have Traditional Cultural Properties on Mount Baker and throughout the Skagit River watershed.

Impacts on Tribal resources can only be understood from within the unique cultural context of a specific-affected Tribe. Specific project impacts would need to be determined through

⁵⁹ Hotrock Energy Research Organization. (2025, December). Mt. Baker/Kweq' Smánit Region Prefeasibility Geothermal Resource Assessment Final Report. https://www.pudwhatcom.org/wp-content/uploads/2026/02/MtBakerGeoPrefeasibility_Final_Report_12_2025.pdf

engagement and in consultation with each potentially affected individual Tribe at the project level.

Mount St. Helens

The opportunities we heard expressed for the Mount St. Helens area were consistent with other areas. We heard concerns about water temperature increases, impacts on salmon and steelhead recovery in the Lewis and Wind rivers and Spirit Lake.

The Cowlitz Indian Tribe raised concerns about potential impacts to Tribal and cultural resources and specifically identified the Mount. St. Helens (lawilát+a) Traditional Cultural Property. Tribes also expressed interest in the potential for geothermal to support energy sovereignty and to reduce the use of fossil fuels and hydropower.

In addition, there were concerns about sediment loading and landslides, including seismic events impacting the Spirit Lake outflow⁶⁰ or contributing to sediment flows downstream of potential projects. The area continues to have sediment issues following the 1980 Mount St. Helens eruption. Additional concerns include development near the town of Cougar along State Route 503 and potential for increased landslide activity.

For the north side of Mount St. Helens, there are also long-term goals to acquire area private lands for public use and to reconnect trails,⁶¹ which could affect facility siting.

Wind River valley

Participants raised concerns about impacts to Carson Hot Springs. They asked about economic benefits for communities, including whether counties would receive economic benefits beyond lease payments and job creation, such as tax credits or financial incentives. Opportunities discussed included microgrid-scale geothermal systems that could power affordable housing in Skamania County, add to regional power supplies, and provide electricity and direct use applications for heating and cooling.

Regarding siting factors, participants also noted there is mineral rich groundwater in this area which may lead to corrosion and long-term maintenance needs for facilities. Potential risks to multiple scenic and protected areas include private, state, and federal lands with conservation easements or other legal instruments that prohibit this type of energy development. They specifically mentioned potential impacts to the Columbia River Gorge National Scenic Area and viewshed. Participants also spoke about cumulative impacts associated with other development in the region, including transmission projects and data centers.

The Cowlitz Indian Tribe and community members spoke of potential impacts to Tribal and cultural resources in the area, including Mount. St. Helens (lawilát+a) Traditional Cultural Property and the Wind River Historic District.

⁶⁰ U.S. Forest Service. (n.d.) Spirit Lake Outflow Safety Improvement Project. <https://www.fs.usda.gov/r06/giffordpinchot/projects/66482>

⁶¹ U.S. Forest Service. (n.d.) Looking Forward Strategic Investment Plan. Gifford Pinchot National Forest Mount St. Helens National Volcanic Monument. <https://www.cwcog.org/wp-content/uploads/bsk-pdf-manager/2019/01/MSHNVMStrategicInvestmentPlan.pdf>

Potential impacts

We are conducting technical research and analysis about emerging geothermal technologies, potential impacts, mitigation strategies, and facility siting considerations. Results from this research will be shared in the fall of 2026. The feedback and input we collect will be included in the final June 2027 legislative report.

The assessment will consider impacts that may occur during site selection, exploration, construction, operation, and decommissioning. Resource topics include those identified in Senate Bill 6039 (2024) and the [Washington State Environmental Policy Act](#).⁶²

- Tribal rights, interests, and resources
- Environmental justice and overburdened communities
- Earth, including seismicity
- Air, including greenhouse gas life-cycle emissions
- Water resources, including surface water and groundwater
- Plants and animals, including state and federally listed species
- Energy and natural resources
- Environmental health and safety, including noise
- Land and shoreline use
- Housing
- Aesthetics, including light and glare
- Recreation
- Historic and cultural resources
- Transportation
- Public services and utilities

This section provides a high-level summary of potential impacts associated with developing geothermal energy in Washington to some of the resources listed above.

Tribal rights, interests, and resources. Potential impacts include disturbance or loss of resources such as impacts on plant and animal species used by Tribal members. These include medicinal and traditional plants and foods; loss of or modification to habitats; loss of access to traditional use areas; impacts on archaeological sites, traditional cultural properties or spiritual areas; and disruption and degradation to the health and mental wellbeing of Tribal members. Hot springs are a cultural resource to many Tribes. Mount. St. Helens (lawilátła) is a Traditional Cultural Property and the Swinomish Indian Tribal Community shared that there are Traditional Cultural Properties on Mount Baker and throughout the Skagit River watershed. Project-specific evaluations would be needed to determine potential impacts. The significance of Tribal resources can only be understood within the cultural context of an affected Tribe. Specific

⁶² <https://ecology.wa.gov/regulations-permits/sepa/environmental-review>

project impacts would need to be determined through engagement and in consultation with each potentially affected Tribe.

Historic and cultural resources. Potential impacts to historic and cultural resources could occur from direct disturbance or loss of a resource, or from indirect disturbances such as noise or visual impacts. Resources include documented or undocumented archaeological sites, historic buildings and structures, human remains and cemeteries, sacred sites, and traditional cultural properties. Hot springs are a cultural resource to many Tribes. There are Traditional Cultural Properties that require project-specific evaluations to determine potential impacts. The significance of each historic or cultural resource is unique to that resource; therefore, the impact analysis will also be unique and would need to be conducted during any future project-level review, in consultation with Tribes and Department of Archaeological and Historic Preservation.

Plants and animals, including endangered species. Geothermal development could impact plant and animal species listed for protection under state and federal laws due to habitat loss, alteration or fragmentation of existing habitats, changes in water quality and quantity, and noise, vibration, or seismic disturbances.

Overburdened communities. These communities could face additional burdens related to environmental impacts, construction traffic, drilling methods, noise, water allocation, and land-use changes. Economic and community impacts may arise depending on siting and project design, as well as impacts to resources such as recreation or visual changes to the landscape.

Induced seismicity. Geothermal project development and operations could result in seismic impacts such as minor earthquakes triggered by injecting fluids underground, particularly in enhanced geothermal systems. Risk levels will depend on local faults and underground stress conditions. DNR is working on preliminary induced seismic hazard assessments for the three focus areas, and a summary will be included in the final report. These studies will provide information to the public and assist industry in conducting high-level exploration planning for potential geothermal projects. Site-specific hazard modeling would be needed to understand project risks, and long-term seismic monitoring and mitigation would likely be required.

Water use and water quality. Groundwater withdrawals, water quality changes, and contamination are all potential impacts from geothermal energy projects. Since geothermal drilling and operations use water and can produce waste fluids, there is potential for contamination if fluids move upward into aquifers or if injected water changes groundwater chemistry. Federal and state regulations protect groundwater and would apply to drilling, construction, and operations. Water use and water quality would be analyzed during environmental review and permitting. Additional groundwater data may be needed to understand potential impacts. Monitoring of flow rates and water quality may be required -- and operations adjusted as needed. Water regulations will be considered for the regulatory gap analysis.

Other resources. Other impacted resources could include recreation, noise from construction and operations, subsurface resources and uses, changes in land use or impacts to nearby uses, and aesthetics and visual resources changes.

Siting factors

This section summarizes some of the factors that guide the identification of preferred sites for geothermal resource development in Washington. They focus on geological, environmental, and infrastructure-related conditions influencing the feasibility of developing geothermal resources and the potential environmental and community impacts.

Core siting considerations include geologic suitability, proximity to electrical transmission and distribution infrastructure, and connectivity between underground and surface water resources. Siting a geothermal project also depends on land classification, ownership, regulatory requirements, and the potential for impacts. Technical research available this fall will include more details about siting and development factors.

Geologic suitability. Viable geothermal resources depend on specific subsurface conditions. Adequate heat, permeability, and fluid-bearing rock must be present at depths accessible by modern drilling technology. DNR modeling highlights where faults and elevated geothermal gradients suggest promising geothermal conditions. However, additional research, data collection, and exploratory drilling are needed to determine whether a specific geothermal energy project would be suitable to build. Other factors include the geothermal drilling technology to be used (i.e., conventional, advanced or enhanced systems).

Proximity to electrical transmission and distribution infrastructure. Distance to existing transmission lines or substations, the capacity of existing infrastructure to support new generation, and the need for potential upgrades all influence siting decisions. Remote settings can pose connection challenges and higher costs. In some cases, local non-grid geothermal use may be more feasible.

Connectivity between groundwater and surface water resources. Hydrologic conditions influence both the feasibility and environmental sensitivity of a geothermal energy project and may help identify locations projects interact with connected water systems, supporting early avoidance or mitigation planning.

Competing land uses. Areas where geothermal resources can be developed may overlap with other land uses including recreation, forestry, agricultural or other uses. Siting considerations include potential conflicts where development could affect access to land or water resources important for other uses.

Regulatory and land-use restrictions. Siting depends on land status and ownership as well as land-use and elevation restrictions. These include measures to protect biological diversity or natural, recreational, or cultural uses. These factors influence access, permitting pathways, and the feasibility of infrastructure development.

Potential for environmental and community impacts. Siting decisions must also consider the potential impacts to communities, Tribes and the environment. Areas with lower potential for impacts may be more suitable for exploration or development.

Regulatory overview and gap analysis

This section provides an overview of the existing regulatory framework governing geothermal energy development in Washington. Technical research on the regulatory framework and gaps is underway, and we will share those results in fall 2026 in workshops to inform the final 2027 legislative report. The analysis considers emerging technologies and lessons learned from geothermal development regulations in other states. Regulatory gaps may require further evaluation, legislative action, rulemaking, or updated policy and guidance.

Developers seeking to build and operate geothermal projects in Washington will need a range of approvals and permits from local, state, and federal agencies. Project planning and permitting is complex since each project and site is unique. Multiple permitting requirements, site considerations, land use and zoning restrictions, and environmental considerations all inform the regulatory process.

Needed permits would cover activities such as exploratory well drilling, construction, and plant operations. They also address air and water quality, construction and wastewater discharge, and underground fluid injection. Figure 9 on the next page is a high-level view of various regulatory authorities held by state and federal agencies during the lifecycle of a geothermal energy project. This includes the facility site as well as access roads and transmission lines.

In addition to permits, projects on private, state, or federal lands require land agreements, leases, or licenses to drill exploratory wells and operate a facility. Additional rights-of-ways may be required for access roads and transmission lines. The technical research available later this fall will also include information about leasing processes.

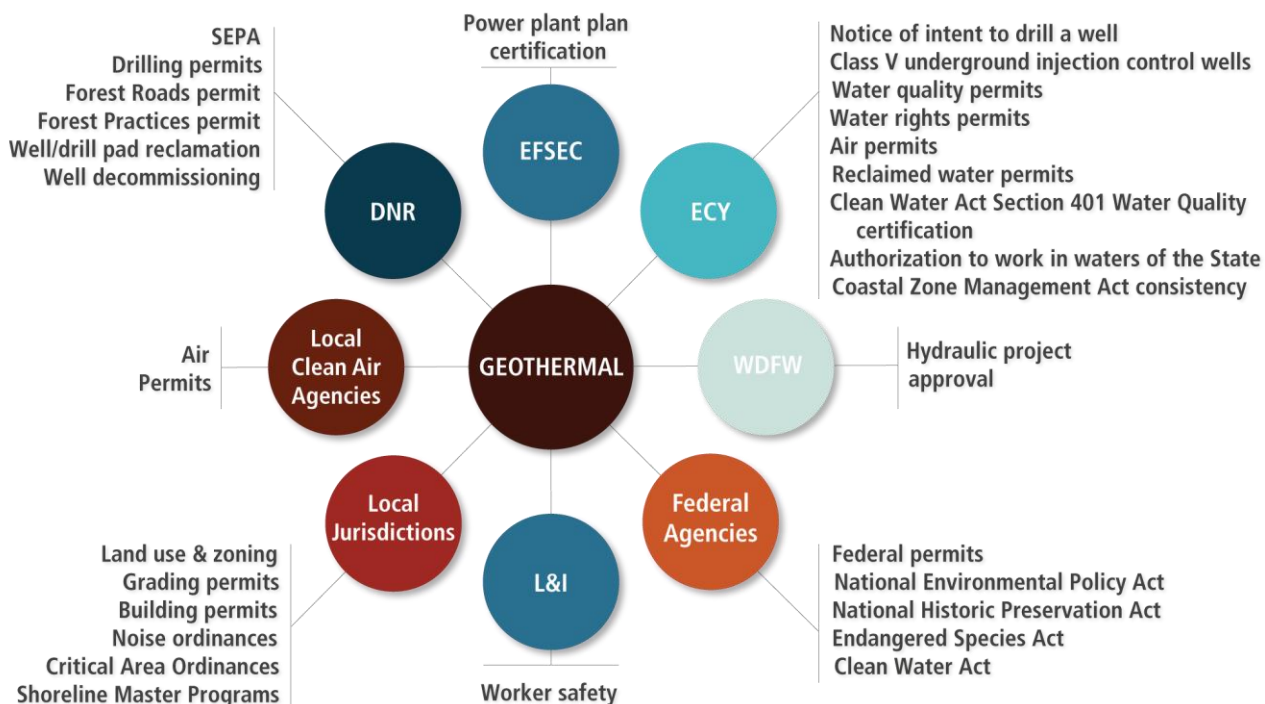


Figure 9. Overview of relevant regulatory authorities

Preliminary recommendations

This section provides preliminary recommendations for advancing geothermal energy in Washington. The collaborative process will continue to inform, refine, and expand on these preliminary recommendations and develop others for the June 2027 final legislative report. Several recommendations correspond to broader clean energy recommendations by the [Interagency Clean Energy Siting Coordinating Council](#).⁶³ Agencies should continue to look for opportunities to include geothermal energy resources in the state’s broader effort to transition to clean energy sources to generate electricity.

Support Tribal capacity to meaningfully participate in geothermal studies and planning

Support Tribal participation in geothermal energy resource studies and planning. While [RCW 43.31.038](#)⁶⁴ authorized grants to potentially affected federally recognized Tribes to support their participation in the collaborative process, no funding was appropriated for this purpose. Funding, either directly or through grants like Ecology’s Tribal clean energy capacity grants, and technical assistance should be made available so Tribes can meaningfully participate in future geothermal energy resource planning and studies.

⁶³ <https://ecology.wa.gov/regulations-permits/sepa/clean-energy/council>

⁶⁴ <https://app.leg.wa.gov/RCW/default.aspx?cite=43.31.038>

Expand agency coordination

Continue coordinating with state and federal agencies to identify opportunities for increased collaboration. This could include gathering data, providing technical assistance and coordinating on federal geothermal leasing. Washington is participating in the multi-state [Geothermal Power Accelerator](#)⁶⁵ group, which offers opportunities to gather insights from federal agencies, the geothermal industry, and other state geothermal experiences, as well as explore opportunities for shared learning. Washington is also working with the [Pacific Coast Collaborative](#)⁶⁶ geothermal working group to develop collaborative policies with other West Coast states. Agencies should consider joining other state and federal working groups as they are formed.

Examples of other federal coordination includes regular meetings between state agencies and U.S. Forest Service, Geological Survey and Bureau of Land Management to provide updates on geothermal topics and share data. Agencies are also meeting to learn more about the federal geothermal leases processes currently under review for the Mount Baker and Wind River valley areas.

Support geothermal exploration and development

Recommend funding the geothermal exploration grant program authorized in RCW 43.31.038.⁶⁷ Under the statute, Commerce is authorized to provide cost-share grants to incentivize investments in drilling and early-phase geothermal investigations. Funding exploratory drilling was also recommended by the Interagency Clean Energy Siting Coordinating Council in its [2025 annual legislative report](#).⁶⁸

Identify federal funding opportunities and strategic partnerships. The U.S. Department of Energy's Office of Geothermal is considering providing funding to states through the national laboratories to provide technical assistance regarding geothermal resources and development. As more federal funding becomes available, state agencies should seek funding and engage industry, utilities, Tribes, and communities regarding technical assistance needs.

Review various state and federal funding mechanisms to streamline the opportunities available for geothermal development. State agencies should review federal grant and cost-share programs to identify ways funding can be matched with the needs for exploration and development of geothermal energy.

Provide guidance and tools

⁶⁵ <https://www.naseo.org/topics/geothermal-power-accelerator>

⁶⁶ <https://pacificcoastcollaborative.org/>

⁶⁷ <https://app.leg.wa.gov/RCW/default.aspx?cite=43.31.038>

⁶⁸ Interagency Clean Energy Siting Coordinating Council. (2025, October). Improving Clean Energy Project Siting and Permitting. <https://apps.ecology.wa.gov/publications/SummaryPages/2506011.html>

Develop guidance on regulatory and environmental review requirements for developing geothermal energy projects in Washington, from exploration through operations and project decommissioning. This tool would help developers, industry, Tribes, communities, and state and local agencies understand required processes and timelines for developing a geothermal energy project. This would also include guidance on engaging communities and Tribes in environmental review and permitting processes.

Develop geothermal energy guidance, policy objectives, and model ordinances for local governments to incorporate into their comprehensive plans and development regulations.

This corresponds with broader recommendations by the Interagency Clean Energy Siting Coordinating Council to incorporate clean energy into local government planning.

Improve community and Tribal engagement and outreach

Develop guidance and best practices to help developers and local governments effectively engage communities and Tribes in geothermal energy resource planning and project development. There is a substantial lack of public information about geothermal energy, including differences between using geothermal energy for direct heating purposes and producing electricity. These tools would provide objective and factual information about geothermal technologies in accessible ways.

Building a common understanding about new geothermal technologies also aligns with broader clean energy recommendations by the Interagency Clean Energy Siting Coordinating Council for engagement and outreach.

Support use of community and Tribal benefit agreements

Develop guidance on community and Tribal benefit agreements. These provide clear understanding of how a geothermal energy project benefits local communities and Tribes. Benefit agreements, whether voluntary or required, are one way developers can collaborate with communities and Tribes regarding the benefits of developing geothermal energy projects. These agreements can address a wide variety of topics. Examples include strategies for local hiring, job training, and workforce development.

In 2025, Commerce conducted an initial internal assessment to identify opportunities, barriers, and best practices for establishing community benefit agreements for clean energy.⁶⁹ Future guidance should include geothermal energy.

Promote Tribal geothermal energy exploration and development

Consider options to support Tribal geothermal energy projects, including projects owned by or jointly developed with Tribes and private or public developers. This supports Tribal energy sovereignty and economic and community development. It also leverages the expertise of

⁶⁹ Interagency Clean Energy Siting Coordinating Council. (2025).

Tribal members and industry. Promoting Tribal projects could be done in a variety of ways such as funding prefeasibility studies or technical assistance.

Conclusion and next steps

This legislative update provides overviews of geothermal energy, research, technologies and resources. The update on the collaborative process describes how we engaged with agencies, communities, Tribes and industry and what we heard about risks and opportunities. In April 2026, Ecology released a draft update for public and Tribal review. We considered those comments and feedback as we revised this June 2026 legislative update.

For the rest of 2026 and early 2027, we will continue public engagement, Tribal forums, and agency coordination. We will share the results of our technical analysis on geothermal technologies, potential impacts and regulatory gaps for awareness and feedback. We will use virtual and in-person formats, including public workshops and Tribal forums, for the three focus areas. The input we receive will inform our recommendations for the final June 2027 legislative report.

Appendix A. Interested Parties and Tribal Engagement

The following lists identify the interested parties and Tribes engaged as of spring 2026, organized by type.

Government organizations:

- City of Mercer Island
- City of Milton
- City of Oak Harbor
- City of Selah
- City of Spokane
- City of Tacoma
- Columbia River Gorge Commission
- Cowlitz County
- Cowlitz-Wahkiakum Council of Governments
- Island County
- Port of Kalama
- Puget Sound Partnership
- Skagit County Planning and Development Services
- Skamania County
- Snohomish Conservation District
- Snohomish County
- U.S. Bureau of Land Management
- U.S. Department of Agriculture
- U.S. Environmental Protection Agency
- U.S. Forest Service
- U.S. House of Representatives
- U.S. Senate
- Whatcom County

Federally recognized Tribes and Tribal organizations:

- Confederated Tribes and Bands of the Yakama Nation*
- Confederated Tribes of the Chehalis Reservation*
- Confederated Tribes of the Colville Reservation*
- Confederated Tribes of the Umatilla Indian Reservation
- Confederated Tribes of Warm Springs Reservation of Oregon
- Cowlitz Indian Tribe*
- Hoh Indian Tribe*
- Jamestown S’Klallam Tribe
- Kalispel Tribe of Indians
- Lower Elwha Klallam Tribe
- Lummi Nation*

- Makah Tribe
- Muckleshoot Indian Tribe
- Nez Perce Tribe*
- Nisqually Indian Tribe
- Nooksack Indian Tribe*
- Port Gamble S'Klallam Tribe*
- Puyallup Tribe
- Quileute Tribe
- Quinault Indian Nation
- Samish Indian Nation
- Sauk-Suiattle Indian Tribe
- Shoalwater Bay Indian Tribe
- Skokomish Indian Tribe
- Snoqualmie Indian Tribe*
- Spokane Tribe of Indians
- Squaxin Island Tribe*
- Stillaguamish Tribe of Indians
- Suquamish Tribe
- Swinomish Indian Tribal Community*
- Tulalip Tribes*
- Upper Skagit Indian Tribe
- Affiliated Tribes of Northwest Indians*
- Columbia River Inter-Tribal Fish Commission
- Northwest Indian Fisheries Commission
- Upper Columbia United Tribes

*Tribe met with Ecology, participated in Tribal forum, attended public webinar or workshop, or submitted comments.

Industry organizations and businesses:

- Alpine Flamingo
- Anchor QEA
- Arbaugh & Associates
- Aspect Consulting
- Barker Drilling
- BGC Engineering
- BP p.l.c.
- Brookfield Renewable Corporation
- Cascadia Law Group
- Darcy Solutions
- David Evans and Associates
- EKI Environment & Water

- Environmental Science Associates
- Epic Engineering
- Fervo Energy
- Geosyntec Consultants
- GRAM Northwest
- Green Diamond Resource Co.
- GSI Water Solutions
- Haley & Aldrich
- Herrera Environmental
- Hexagon Energy
- Invenergy
- John I. Haas
- Kimley-Horn
- McKinstry
- MPERA Geotechnical & Earthquake Engineering
- Nel Hydrogen
- NewsData
- Nomalo
- North Pacific Paper Corporation
- Obsidian Renewables
- Ormat Technologies
- Pacifica Marine
- Par Pacific
- Pend Oreille Valley Railroad
- RDS Disposal
- RESPEC
- S&P Global
- Shuttle Systems
- Side x Side Architects
- Simplot Company
- Sinclair Well Products
- Smart Land Use Consulting
- Spryng Energy
- SWS Geothermal
- Tetra Tech
- Triangle Associates
- Trinity Consultants
- UMC, Inc.
- Van Ness Feldman
- Vulcan Geoscience
- Weyerhaeuser
- Wisewood Energy

- XGS Energy

Research or academia organizations:

- Central Washington University
- Idaho National Laboratory
- National Laboratory of the Rockies
- Pacific Northwest National Laboratory
- Pacific Northwest Seismic Network
- Portland State University
- The Evergreen State College
- Washington State University Extension
- Western Washington University

Other organizations:

- Cascade Forest Conservancy
- Clark-Skamania Flyfishers
- Clean & Prosperous Institute
- Clean Air Task Force
- Clean Energy Transition Institute
- CleanTech Alliance
- Climate Jobs Washington
- Columbia Riverkeeper
- Cowlitz Economic Development Council
- EarthGen
- Energy Northwest
- Front and Centered
- Geothermal Rising
- Hotrock Energy Research Organization
- Mount St. Helens Institute
- Nooksack Salmon Enhancement Association
- NW Energy Coalition
- Pollution Prevention Resource Center
- Project InnerSpace
- Puget Soundkeeper Alliance
- RE Sources
- Renewable Hydrogen Alliance
- Skagit Citizens Climate Lobby
- Skagit Valley Clean Energy Alliance
- Spark Northwest
- Sustainable Connections
- The Nature Conservancy
- Washington Conservation Action

- Whatcom Community Foundation
- Whatcom Land Trust
- Wind River Trust

Utilities and public utility districts

- Avista Corporation
- Big Bend Electric Cooperative
- Cascade Natural Gas Corporation
- Chelan County Public Utility District (PUD)
- Clallam County PUD
- Clark Public Utilities (Clark PUD)
- Cowlitz County PUD
- Douglas County PUD
- Franklin PUD
- Lewis County PUD
- Okanogan County PUD
- Olympic View Water and Sewer District
- Public Generating Pool
- Puget Sound Energy
- Seattle City Light
- Skamania County PUD
- Snohomish PUD
- Thurston PUD
- Washington Public Utility Districts Association
- Whatcom County PUD

Appendix B. Workshop Summaries

November 2025 Workshop Summary

Workshop dates

The Department of Ecology (Ecology) and the Department of Natural Resources held virtual public workshops November 6 and November 11, 2025. A virtual Tribal forum was held on November 18, 2025.

Background

To support the state's transition to clean energy, the [Legislature recognized geothermal energy](#)⁷⁰ as a potential resource for clean energy and directed Ecology to bring people together to talk about its associated opportunities and risks.

The collaborative process is an early look at issues because there is interest in developing the state's geothermal resources. There are currently no proposed geothermal projects in Washington to deliver electricity to the power grid. The process will have statewide considerations, but it is focused on the three geothermal resource areas identified by the Department of Natural Resources: Mount Baker, Mount St. Helens, and the Wind River valley south of Mount St. Helens. Findings and recommendations from the collaborative process will be provided to the governor and Legislature in an interim report due June 30, 2026, with a final report due June 30, 2027.

Ecology and the Department of Natural Resources held an informational session in August 2025 and the [meeting recording and presentation slides](#) are available online.⁷¹

Purpose and Agenda

The purpose of the workshops was to provide background information on the collaborative process, geothermal technologies, and the geographic focus areas. We also solicited input on opportunities and risks for geothermal development. The agenda included an agency welcome, a recap of the August 2025 informational session, exploration of the three focus areas, group discussion on opportunities and risks, and next steps.

The [presentation slides](#) are available online.

Attendees

⁷⁰ <https://lawfilesexternal.wa.gov/biennium/2023-24/Pdf/Bills/Session Laws/Senate/6039-S.L.pdf?q=20250603125300>

⁷¹ <https://ecology.wa.gov/regulations-permits/sepa/clean-energy/geothermal>

Attendees across all workshops included representatives from 10 Tribes and approximately 90 interested parties from utilities, industry, organizations, individuals, academia, and federal, state, and local agencies.

Collaborative process feedback and response

Overall, there was a high level of interest in the collaborative process and how it will inform communities and Tribes about geothermal development. Utilities also expressed interest in understanding risks and opportunities of geothermal energy due to its ability to provide constant, or firm, power and to address peak power needs. Input received at the August and November workshops will guide development of future workshop topics and presentations.

This process is just starting, and more detailed information will be shared at future workshops as it is available. The intent of the process is to consider input from Tribes, local communities, utilities, and academic and research institutions at this early stage. This will be done in a transparent and iterative way by sharing summaries of feedback on the website and by bringing the questions into subsequent workshops for follow-up and discussion. As we learn more about the technologies and areas, we will include that in workshops too.

The Department of Natural Resources provided information on the three focus areas at the workshop. Additional information is available at the interactive [Washington Geothermal Experience](#)⁷² website and in the [Play Fairway report](#). The collaborative process will focus on these three areas but will also look at statewide considerations.

Input and findings will be included in the legislative reports in June 2026 and June 2027. These will provide information for next steps by legislators, developers, Tribes, or communities.

Summary of feedback

This section summarizes themes heard during the workshops. These themes and any responsive data or information will be included in discussions in future workshops.

Opportunities

- Geothermal energy as a renewable, carbon-free source of firm power; potential for geothermal energy in Washington to support utilities in meeting Clean Energy Transformation Act requirements
- Potential for geothermal microgrids to support local or Tribal energy resiliency
- Opportunities for education; student curriculum and visitor education for Mount St. Helens National Monument
- Incentives and financial assistance for developers and communities to facilitate deployment; funding additional studies on resource potential

⁷² <https://storymaps.arcgis.com/stories/6038a47202a04a5da71c2251ec11c2c1>

- Local jobs and economic benefits

Risks

- Impacts on cultural resources and Tribal rights, interest, and resources
- Seismic impacts on surface infrastructure, including nearby hydropower resources
- Broad evaluation of geological hazards, including ground deformation
- Release of heat into the environment and impacts on resources
- Wildlife and fish impacts; including nesting seasons and migration corridors
- Recreational impacts
- Air quality impacts, including fugitive dust and greenhouse gas emissions
- Visual quality and aesthetics; impacts to protected viewsheds including the Columbia River Gorge National Scenic Area

Research needs

- Learning about geothermal energy technologies and infrastructure needs
- Understanding data gaps for the focus areas and the geothermal technologies
- Research on seismicity to characterize potential impacts, especially with regards to the focus areas and volcanoes
- Temperature data availability and collection
- Characterizing injection fluids and potential water quality impacts
- Strategies to manage seismic and water quality risks
- Lessons learned from the oil and gas industry and geothermal projects in other areas of the U.S. and internationally
- Research in others area of the state that may be developed for geothermal resources, including the Columbia basin and eastern Washington

Siting and development factors

- Early engagement with Tribes
- Focus areas are undeveloped and in remote locations; consider access and overall footprint of development
- Statewide transmission capacity constraints for new generation sources
- Transmission infrastructure needs in the remote locations of the three focus areas
- Water availability and water rights
- Potential for induced seismicity
- Cost of development relative to amount of energy that would be generated; economic cost-benefit analysis of geothermal power
- Strategies for hiring local workers

Regulations and policy

- Regulatory roadmap for geothermal energy development
- Regulatory differences for the different technology types
- State and federal leasing processes and alignment
- Identifying gaps and recommendations to address gaps

Next steps

Input received at the November workshops will guide development of future workshop topics and presentations. In-person workshops for the three focus area communities will begin in early 2026. The dates and times of future workshops will be announced on our [website](#)⁷³ and via [email](#).⁷⁴ Additional feedback can be emailed to use at cleanenergy@ecy.wa.gov.

⁷³ <https://ecology.wa.gov/regulations-permits/sepa/clean-energy/geothermal>

⁷⁴ https://public.govdelivery.com/accounts/WAECY/subscriber/new?topic_id=WAECY_370

Spring 2026 Workshop Summary

Background

To support Washington State's transition to a clean energy, the [Legislature recognized geothermal energy](#)⁷⁵ as a potential resource directed the Department of Ecology (Ecology) to bring people together through a collaborative process to discuss opportunities, risks.⁷⁶ The effort includes working closely with experts from the state departments of Archaeology and Historic Preservation, Commerce, Fish and Wildlife and Natural Resources, and the Energy Facility Site Evaluation Council.

The collaborative process is an early look at issues because there is interest in developing the state's geothermal resources. There are currently no proposed geothermal projects in Washington to deliver electricity to the power grid. The process will have statewide considerations, but it is focused on the three geothermal resource areas identified by the Department of Natural Resources: Mount Baker, Mount St. Helens, and the Wind River valley south of Mount St. Helens. Findings and recommendations will be provided to the governor and Legislature in an update on June 30, 2026, with a final report on June 30, 2027.

We held workshops in August and November of 2025. Ecology is also engaging with Tribes and held a Tribal forum in November 2025. Presentations and workshop summaries are available [online](#).⁷⁷

Spring 2026 workshops overview

In early spring 2026, we convened three in-person workshops and one virtual workshop:

- Mount Baker focus area workshop took place on February 26 in Bellingham, WA
- Mount St. Helens focus area workshop took place on March 4 in Woodland, WA
- Wind River valley focus area workshop took place on March 5 in Stevenson, WA
- Statewide virtual workshop was held on March 17, 2026

In addition to the workshop opportunities, Ecology offered to meet individually with Tribes. and Tribal feedback is incorporated into this workshop summary.

The purpose of the workshops was to provide background information on the collaborative process and geothermal technologies and solicit input on opportunities and risks of geothermal development specific to the three focus areas. Workshops were advertised using agency blog and social media posts, radio ads, email and newsletter updates, and direct outreach to Tribes, industry groups, and organizations. Communications were provided in Spanish and English.

The agenda included a welcome, overview of geothermal energy and the collaborative process, a question and answer session, and an 'open house' where participants asked further questions

⁷⁵ <https://lawfilesexst.leg.wa.gov/biennium/2023-24/Pdf/Bills/Session%20Laws/Senate/6039-S.L.pdf?q=20250603125300>

⁷⁶ <https://lawfilesexst.leg.wa.gov/biennium/2023-24/Pdf/Bills/Session%20Laws/Senate/6039-S.L.pdf?q=20250603125300>

⁷⁷ <https://ecology.wa.gov/regulations-permits/sepa/clean-energy/geothermal>

and provided feedback on posters related to opportunities and risks. The virtual workshop agenda was similar and included breakout group discussions on statewide opportunities and risks. Combined presentation slides from the in-person and virtual meetings are available on the [process webpage](#).⁷⁸ All workshops offered Spanish interpretation.

An online comment form was also available in English and Spanish to provide feedback through March 31, 2026, and we received four comment letters.

Workshop participants

Participants included representatives from five Tribes and approximately 115 interested parties representing utilities, industry, environmental and nongovernmental organizations, community members, academia, and federal, state, and local agencies (details are in Appendix A).

Mount Baker area workshop

There were 39 attendees at the Mount Baker workshop in Bellingham, representing community members, non-governmental organizations, geothermal industry, utilities, and Tribes.

Mount St. Helens area workshop

There were 11 attendees at the Mount St. Helens area workshop in Woodland, including community members, Tribes, utilities, local government, a private timber company, environmental organizations, and nongovernmental organizations.

Wind River valley area workshop

The Wind River valley area workshop in Stevenson included 11 participants, representing community members, Tribes, environmental organizations, nongovernmental organizations, geothermal industry, and a private timber company.

Virtual workshop

The statewide virtual workshop included 71 participants, representing local governments, Tribes, utilities, businesses, geothermal industry, environmental organizations, academic and research institutions, federal agencies, state agencies, and interested community members.

What we heard

This section first describes overarching questions and feedback themes raised at the workshop series, then discusses focus area-specific input.

What we heard across all workshops

During the spring workshops participants showed high interest in the collaborative process and how outcomes and findings will inform communities and Tribes about geothermal energy development. Participants raised a wide range of questions reflecting interest in both the technical feasibility and broader planning context of geothermal energy in Washington. Several recurring themes and questions emerged across workshops:

⁷⁸ <https://ecology.wa.gov/regulations-permits/sepa/clean-energy/geothermal>

- **Geothermal facilities and technology.** Participants asked about geothermal plant development, operations and decommissioning, differences between conventional, enhanced, and advanced geothermal systems, examples of geothermal and hybrid systems with biomass, what kinds of polymers are used in drilling fluids and hydraulic fracturing, and about lifecycle greenhouse gas emissions. Participants also noted the need for more information about geothermal systems and associated land footprints.
- **Energy generation capacity.** Participants asked about the generating capacity of geothermal plants and the anticipated scale of development in the focus areas and statewide.
- **Infrastructure and siting.** Participants noted the proximity to transmission infrastructure and transmission system capacity and to transportation should be considered. Some participants noted that geothermal plants may help alleviate transmission bottlenecks by serving as a local or regional generation source. Others noted challenges in transmitting electricity from remote sites, including associated costs and increased wildfire risk from transmission infrastructure. Some suggested developers consider how geothermal could align with other energy projects and provide opportunities to upgrade transmission lines.
- **Seismicity and subsurface risks.** Participants asked about waste fluid and the potential for injecting it into the subsurface for the different technologies. They asked if seismicity standards would follow those used in other states such as California, what geographic area would be evaluated for risk, and if infrastructure would be included in risk analysis. They also noted secondary impacts such as potential damage to underground geologic networks that could pose risks to a project.
- **Co-benefits.** Participants commented that geothermal energy creates opportunities for multi-use applications, including both electricity generation and direct-use heating and cooling. Participants asked about using excess heat as a byproduct of geothermal energy production and if communities need to be located near a facility to harness it. Participants also expressed interest in distributed energy from geothermal plants. Some noted geothermal projects could use filtering technology to extract minerals from subsurface fluids and these minerals sold to offset plant operating costs.
- **Environmental and recreational impacts.** Possible environmental risks raised by participants include habitat destruction, negative effects on undeveloped areas, and harm to endangered species, including salmon. There were concerns on the large amount of biodiversity in each focus area that could be impacted. They stated projects could impact recreational activities restrictions on public use of leased lands, and visual changes to the landscape. They also asked about odor emissions from sulfurous water.
- **Water impacts.** Participants raised several concerns related to water. They noted projects could impact water quality and water supply, including groundwater contamination. They asked if fracking for geothermal development could generate wastewater, which would require treatment to avoid groundwater and surface water

contamination. Participants noted clarity around water rights and subsurface rights will be important considerations for projects.

- **Tribal and cultural resource impacts.** Several participants noted the potential for direct, indirect, and cumulative risks to cultural and Tribal resources and rights from project development and operations. They raised concerns about impacts to Traditional Cultural Properties.
- **Planning and governance considerations.** Participants asked about focus area selection, permitting, agency coordination, and about proposed projects. Participants noted that all of the focus areas contain or are near U.S. Forest Service managed federal lands and that developers should coordinate with the agency on siting. Some participants commented that geothermal is a renewable resource that provides clean, firm power. Participants noted that geothermal energy is potential power source for data centers.
- **Regulatory and policy issues.** Participants noted that it will be important to establish a clear regulatory framework and determine which agencies or entities will oversee geothermal facilities throughout their lifespans. This includes ensuring compliance and conducting long-term monitoring after facility closures. Participants commented that a programmatic environmental impact statement for geothermal could help clarify constraints and requirements. Some participants suggested clarifying restrictions governing public use of leased geothermal land and subsurface development rights.
- **Local impacts and economic opportunities.** Participants asked about economic benefits for communities, including if counties receive economic benefits beyond lease payments and job creation, such as tax credits or financial incentives. Some participants commented that geothermal energy provides economic opportunities that can enhance local competitiveness by creating jobs, supporting workforce development, enabling cost-competitive energy production, and helping to revitalize rural economies.
- **Research and education needs.** Participants suggested several research needs, including economic comparison of geothermal energy to other clean energy technologies. They referenced research that could help inform geothermal energy development: Pacific Northwest National Laboratory studies on geothermal potential in southeast Washington, and the United States Geological Survey and Confederated Tribes of the Umatilla Indian Reservation studies on Columbia River basalts. They noted providing information about geothermal energy technologies and impacts could improve community awareness and participation.

Summary of feedback unique to the focus areas

Participants provided comments specific to the focus areas.

Mount Baker

Opportunities

- Geothermal development could support utility planning for local clean energy sources in Whatcom and Skagit counties.

Risks

- Limited data and modeling available for assessments of seismic risks, including potential impacts to dams in the Mount Baker region.
- There is volcanic risk in the focus area around Mount Baker and facilities could be in the path of lahars if an eruption were to occur.
- Tribes raised concerns on impacts to Tribal and cultural resources from exploration activities and future operations. Swinomish Indian Tribal Community staff expressed specific concerns with these impacts and cumulative pressures from hydropower infrastructure and increased recreational use. They stated that all of the Mount Baker area is important to the Tribe for natural, cultural, and Tribal resources and they are opposed to geothermal energy development and related transmission lines and roads, including specifically on the south side focus area of Mount Baker, Baker Lake, and Baker River.

Siting/development

- The Nooksack Indian Tribe and the Whatcom Public Utility District have conducted a prefeasibility assessment for the region which may provide useful information for project siting.

Mount St. Helens

Opportunities

- Developers could support public education about geothermal exploration, siting, permitting, and development within Cowlitz County.

Risks

- Drilling could raise water temperatures, putting salmon and steelhead in the Lewis and Wind Rivers at greater risk.
- Development could threaten the ability of salmon to return to Spirit Lake.
- Projects could increase sediment loads downstream and seismic events could contribute to sediment flows like those observed after the Mount St. Helens eruption.
- Induced seismic impacts could affect the Spirit Lake outflow.
- Development near Cougar, WA along SR 503 could increase landslide risks.

Siting/development factors

- Community groups and the USFS have long-term plans to acquire lands for public use and reconnect trails on the north side of the Mount St. Helens study area.

Wind River valley

Opportunities

- Microgrid-scale geothermal systems could power affordable housing in Skamania County.
- Development could provide power to nearby cities, including Vancouver, WA and Portland, OR.

Risks

- Volcanic activity and geologic faults should be considered in the Wind River area.
- Development should consider cumulative impacts of other developments in the region, including transmission projects and data centers.

Siting/development factors

- Development could impact water availability at Carson Hot Springs.
- Groundwater in the area is mineral rich, which may lead to corrosion impacts and long-term maintenance needs for facilities.
- The Wind River valley contains multiple scenic and protected areas. There may be private, state, and federal lands with restrictive policies, conservation easements, or other legal instruments that prohibit geothermal energy development.

Next steps

Findings from the workshops will be provided to the governor and Legislature as part of the Legislative update due June 30, 2026. There will be additional in-person workshops in fall 2026 to provide updates, share study findings, and gather additional input to inform the final legislative report due June 30, 2027.

The dates and times of future workshops will be announced on our [website](#)⁷⁹ and via [email](#).⁸⁰ Additional feedback can be emailed to cleanenergy@ecy.wa.gov.

Appendix A. Workshop attendees

All workshops

- Community members and unaffiliated attendees

Mount Baker

- XGS Energy
- Smart Land Use
- Barker Drilling
- Sustainable Connections
- Wisewood Energy

⁷⁹ <https://ecology.wa.gov/regulations-permits/sepa/clean-energy/geothermal>

⁸⁰ https://public.govdelivery.com/accounts/WAECY/subscriber/new?topic_id=WAECY_370

- Nooksack Indian Tribe
- Whatcom County Public Utility District (PUD)
- Chelan County PUD
- Skagit Valley Clean Energy Alliance
- Skagit Citizens Climate Lobby

Mount St. Helens

- Cowlitz PUD
- Cowlitz County
- Cowlitz-Wahkiakum Council of Governments
- Lewis County PUD
- Yakama Nation
- Weyerhaeuser
- WA Conservation Action

Wind River valley

- Wind River Trust
- Yakama Nation
- Weyerhaeuser

Virtual workshop

- Alpine Flamingo
- Big Bend Electric Cooperative
- Cascade Natural Gas Corporation
- Chelan County PUD
- City of Oak Harbor
- Clean Air Task Force
- CleanTech Alliance
- Confederated Tribes of the Colville Reservation
- Cowlitz County PUD
- Cowlitz Economic Development Council
- Darcy Solutions
- David Evans and Associates, Inc.
- EarthGen Washington
- Energy Northwest
- Fervo Energy
- Front and Centered
- Geothermal Rising
- GRAM Northwest
- Green Diamond Resource Company
- Hexagon Energy
- Idaho National Laboratory
- John I. Haas

- Kimley-Horn
- Lummi Nation
- McKinstry
- MPERA Geotechnical & Earthquake Engineering
- Nomalo LLC
- NW Energy Coalition
- Ormat Technologies
- Pacific Northwest National Laboratory
- Port of Kalama
- Public Generating Pool
- Puget Sound Energy
- Puget Soundkeeper Alliance
- RE Sources
- Seattle City Light
- Shuttle Systems
- Side x Side Architects
- Tetra Tech
- Triangle Associates
- U.S. Environmental Protection Agency
- UMC, Inc.
- Washington State University Extension
- Whatcom County
- Whatcom Land Trust

Appendix C. Tribal Comment Letters

Note: To request an ADA accommodation for the following documents, please contact Ecology at cleanenergy@ecy.wa.gov.

- Confederated Tribes and Bands of the Yakama Nation
- Snoqualmie Indian Tribe
- Swinomish Indian Tribal Community
- Swinomish Indian Tribal Community Letter to Forest Service
- Tulalip Tribes



Confederated Tribes and Bands
of the Yakama Nation

Established by the
Treaty of June 9, 1855

May 15, 2026

Submitted via Email

WASHINGTON STATE DEPARTMENT OF ECOLOGY
diane.butorac@ecy.wa.gov

RE: Geothermal Energy Collaborative Process
Legislative Report Update

Dear Diane:

I write on behalf of the Confederated Tribes and Bands of the Yakama Nation ("Yakama Nation")¹ regarding i) Washington State Department of Ecology's ("Ecology") draft Geothermal Collaborative Process Legislative Report Update ("Report") to provide findings and recommendations from this process to the governor and Legislature as required by Senate Bill 6039, and ii) Ecology's incorporation of our previous comments on the draft outline of the Report detailed in a letter dated March 12, 2026 and outstanding questions pertaining to the Draft Tribal Outreach Plan.rt.

1. Draft Report - Geothermal Collaborative Process Legislative Report Update

We have reviewed the draft Report and found it helpful to better understand the topics Ecology will be covering during this collaborative geothermal process. While the Report covers most of the major topics that we would like to see addressed during this process, the Report should consider more broadly acknowledging that existing state regulations combined with a changing federal regulatory landscape may not be adequate to both promote the development of the resource for the public benefit and be fully protective of the environment and consequently treaty trust resources. The report could also be improved by providing a stronger emphasis throughout the report on providing recommendations related to Senate Bill 6039 section 4 (3) (i).

While Ecology is planning on performing the bulk of their technical analysis this coming summer and thus the Report does not go in depth on issues pertaining to the current regulatory landscape with respect to geothermal energy production in the State of Washington, it is important at this juncture to share our perspective given that Yakama Nation's Ceded Territories are identified to contain the vast majority of the high favorability areas for geothermal development in the State. State regulations of geothermal fluids (or other geofluids produced for the purposes of mineral extraction) as they are written now are

¹ In submitting this comment, Yakama Nation reserves all sovereign rights, privileges, and remedies guaranteed by the Treaty with the Yakama of 1855 (12 Stat. 951). Submission of this comment does not substitute for formal Government-to-Government Consultation with Yakama Nation.

not adequate to provide both for the further development and conservation of the resource, as well as for the preservation of Tribal Treaty-reserved resources. Western states with a history of oil and gas production have far more rigorous and robust regulatory frameworks for the production of geofluids including geothermal fluids (e.g. California and Colorado). Even Oregon, which does not have such a history, has far more robust regulations than Washington for geothermal energy production. Washington must update its antiquated regulatory framework for geothermal development to incorporate over a century of lessons learned from producing geofluids in the Western United States and Canada before significant development of the resource should begin.

The most concerning flaw in the existing regulations is how RCW Chapter 78.60 attempts to deal with geothermal development impacts to existing surface and groundwater rights. RCW Chapter 78.60 attempts to create a legal separation of convenience between fluids produced for the purposes of energy production and those used for other beneficial uses as defined in RCW 43.27A.020. This limited legal separation is specifically defined under RCW 78.60.040 by stating in part that, “Notwithstanding any other provision of law, geothermal resources are found and hereby determined to be sui generis, being neither a mineral resource nor a water resource and as such are declared to be the private property of the holder of the title to the surface land above the resource...” However, RCW 78.60.060 and RCW 78.60.080 go on to specify that the development of a geothermal resource cannot impair existing water rights.

This limited legal separation between a geothermal resource and a water resource for the existing economical geothermal reservoirs ignores the same physical reality of the connection between surface water and groundwaters that Washington State recognized in RCW Chapter 90.44 eighty-one years ago. This legal separation is further confounded by the precedent established in *Postema v. Pollution Control Hearings Board*² that even one molecule of impact to a more senior water right constitutes impairment. If such a permanent separation of surface and groundwaters, even those groundwaters at such depths, pressure and temperature to be considered a geofluid, could be assured the United States would have long ago established a deep geologic repository for its nuclear waste. The legal separation is inconsistent with long established scientific fact.³

Artificial legal separation of surface and groundwaters, or groundwaters and geofluids for geothermal projects, invites uncertainty for the project proponent and conflict between affected users. This propensity for conflict is borne out in other States with similar legal frameworks concerning the production of geothermal fluids and water rights including Utah

² 142 Wn.2d 68 (2000)

³ <https://doi.org/10.3133/cir1139>

and Nevada.⁴⁵ Utah has active pending legislation (UT SB0021) as of the date of this letter that would specify that geothermal fluids cannot be used without a water right. Nevada introduced a similar bill (AB109) that is still active. Both of these bills are in response to significant concerns in the respective states between geothermal development and impacts to water rights.⁶⁷

For many Tribes, hot springs are either themselves, or associated with, significant cultural resources. Tribes in Washington State also commonly hold unquantified water rights for the preservation of Treaty-reserved fish populations. To the extent that hot springs are associated with usual and accustomed fishing areas or hunting and gathering activities reserved under treaties, Tribes hold implied Treaty-reserved water rights to the water flowing from hot spring. Some Tribes also hold rights to water underlying their physical reservations, which will be unique to each Tribe and their respective treaties.

The State's existing efforts to identify potential areas with high geothermal development favorability have largely relied on mapped surface features such as faults, volcanic vents, and hot springs. Geothermal reservoirs that are indicated by such surface expressions also tend to have more significant connections to overlying ground and surface waters. Washington needs to create a better legal framework - one that doesn't attempt to sidestep the recognition provided by RCW 90.44 of the connection between surface and groundwaters - that provides greater developer certainty while reducing the likelihood of harm to other impacted water right holders. We strongly encourage Ecology to explore this issue during the course of their Geothermal Collaborative Process.

Other shortfalls in Washington's regulations for geothermal energy development and production include restrictive disclosure rules on release of geologic data, no regulations concerning hydraulic fracturing, no requirements to analyze for preferential flow pathways such as faults or wells around injection wells (WAC 173-218-115 for carbon sequestration wells provides a useful template), RCW 78.60.160 provides the authority for WDNR to implement unitization of geothermal reservoirs but no such rules have been implemented, thresholds for induced seismicity otherwise known as Traffic Light Protocols amongst other issues. We encourage Ecology to deeply explore how to improve these and other shortfalls in Washington's geothermal regulations.

⁴ <https://le.utah.gov/interim/2025/pdf/00004054.pdf>

⁵ <https://www.leg.state.nv.us/App/InterimCommittee/REL/Document/32284>

⁶ https://www.biologicaldiversity.org/programs/public_lands/energy/pdfs/Dixie_Meadows_geothermal_complaint_121521.pdf?_gl=1*pqalsj*_gcl_au*MTg3MzgzMjgwNy4xNzcyNTE4NzE3

⁷ <https://www.western-water.com/2025/10/20/water-rights-utah-moves-to-clarify-ownership-of-geothermal-resources/>

Additional suggestions for Ecology's consideration on the Report include:

- It would be helpful if the report included a section in the introduction providing case studies about how geothermal energy projects have both harmed and helped Tribes throughout the United States and Canada.
 - Stronger emphasis throughout the report on senate bill section 4 (3) (i), as well as a section that explicitly describes how outreach will incorporate Executive Order 25-10. The section on "Tribal rights, interests, and resources" does not provide sufficient depth to even give the reader a high level understanding of tribal impacts. This section at a minimum should discuss the legal rights tribes have under treaties. As written this section implicitly casts Tribes as being just another stakeholder, when in fact impacts to treaty trust resources are federally protected.
 - Present a recommendation to the legislature to hold an in person Tribal Workshop with technical experts (WDNR, USGS, BLM permittees) to work through concerns and opportunities related to geothermal energy. This could be in a similar format to the Tribal workshop that Ecology held to get feedback from Tribes in response to the *Hirst* Decision.
 - The regulatory and gaps analysis is too general and fails to even make a cursory attempt at providing the legislature with direction as to the current adequacy of existing Washington State regulations. At this juncture we do not have to wait for the technical analysis to be completed this summer/fall to detail all the regulatory gaps that exist in Washington State Law (e.g. hydraulic fracturing, pooling/unitization, etc.) to be able to suggest that changes are likely needed to existing regulations to both promote the development of the resource for the public benefit and to be more protective of the environment. The ability to review report outlines has been very helpful. A commitment to continue that practice in the Report would be appreciated. Specifically, we would like to see a commitment to incorporate opportunities to comment on both draft technical reports produced by Ecology's contractor HERO, and scopes of work or report outlines into the 'Engagement Timeline' figure on pg. 25 of the report.
 - Consider exploring how different subsurface uses may conflict or overlap with each other's uses in the future. Where there is a conflict between landowners overlying the same reservoir that want to use it for different incompatible or conflicting purposes (waste storage, carbon sequestration, gas storage, groundwater withdrawals, geothermal, mineral production, etc.) how would the state decide who gets priority?⁸⁹
2. Integrating Previous Yakama Nation Feedback on the Draft Report Outline and Draft Tribal Outreach Plan

⁸ <https://iopscience.iop.org/article/10.1088/1748-9326/8/1/014037>

⁹ <https://iopscience.iop.org/article/10.1088/1748-9326/8/1/014037>

While we are encouraged that some of the feedback from our November 12th and March 12th letter can be seen to have been incorporated into the draft Report, the Yakama Nation has not yet received a final copy of the Tribal Engagement and Consultation Plan. Given that the plan was drafted in early November 2025 just after Governor Ferguson's Executive Order 25-10 on the State's relationships with Tribes, we are particularly interested in whether the engagement plan has been adjusted in any way from its draft form to better conform with Executive Order 25-10.

We are also disappointed that this report does not include our recommendation for fully funding tribal participation in the process, especially for these early policy framework discussions of an emerging technology. Not fully funding Senate Bill 6039 with respect to tribal engagement presents a barrier to meaningful engagement. As with the near-extirmination of salmon populations due to the construction of hydroelectric dams beginning almost a century ago, modern 'green' energy development is once again proceeding apace to the detriment of Treaty-reserved resources with little to no benefit accruing to affected Tribes. The state has an obligation to stop history from repeating itself, and that begins with providing Tribes adequate resources to be involved in developing policy that is protective of tribal interests for these emerging energy technologies whether that be geothermal, offshore wind energy, fusion, or any other yet to be discovered method of energy production.

Our last major disappointment and the reason for why this letter covers many of the same points as the March 12th letter is that despite Ecology's acknowledgement of significant advances in geothermal technology, this draft Report does not similarly make the connection that our existing regulations do not contemplate these new technologies and thus existing regulations may require updates or we may need new regulations entirely. The report also does not acknowledge our previous comments on the seriousness of the difficulty that water rights will present to the development of this resource.

Sincerely,


Gerald Lewis, Chairman
YAKAMA NATION TRIBAL COUNCIL

cc via email: Kenneth Martin Deputy Policy Director Environment, Transportation and Infrastructure kenneth.martin@gov.wa.gov.

Kate Broun, Senior Policy Advisor Climate and Energy
kate.brouns@gov.wa.gov
Owen Roe, Senior Policy Advisor Natural Resources owen.rowe@gov.wa.gov
Senator Liz Lovelett liz.lovelett@leg.wa.gov
Representative Alex Ramel alex.ramel@leg.wa.gov
Jessica Czajkowski Assistant State Geologist and Assistant Director of
Geoscience & Data Management jessica.czajkowski@dnr.wa.gov
Kelsay Stanton Mining and Minerals Program Manager
kelsay.stanton@dnr.wa.gov

Greg King

Comment from the Snoqualmie Indian Tribe



May, 7, 2026

Permit Coordinator / Senior Planner
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Re: Snoqualmie Indian Tribe Comments on the Geothermal Energy Collaborative Process Draft Legislative Update

Dear Alex Shin,

The Snoqualmie Indian Tribe [Tribe] is a federally recognized sovereign Indian Tribe and a signatory to the Treaty of Point Elliott of 1855, in which it reserved to itself certain rights and privileges and ceded certain lands to the United States. As a signatory to the Treaty of Point Elliott, the Tribe specifically reserved, among other things, the right to fish at usual and accustomed areas and the "privilege of hunting and gathering roots and berries on open and unclaimed lands" throughout the modern-day State of Washington. The Snoqualmie people have stewarded these lands and waters since time immemorial, and the Tribe seeks to work collaboratively with the Department of Ecology to ensure the protection of cultural and natural resources for future generations.

The Snoqualmie Tribe appreciates the opportunity to provide input on the state's ongoing geothermal collaborative process. We support Washington's efforts to explore clean, reliable, and renewable energy resources, and we value the early and continued Tribal engagement described in the 2026 Draft Legislative Update.

At the same time, the Tribe emphasizes that any geothermal exploration or development must fully protect Tribal rights, cultural resources, and the lands and waters that sustain our people. We are particularly concerned about technologies that rely on creating or enhancing subsurface permeability including hydraulic fracturing and similar methods used in enhanced geothermal systems which may increase risks of induced seismicity, groundwater impacts, and disturbance of cultural or environmental resources. These concerns are consistent with the potential impact categories identified in the state's materials, including seismicity, water quality, and Tribal resources. If these technologies are being considered, they should only be done so with early Tribal consultation and a full environmental assessment of short- and long-term impacts to ensure that they will not result in the loss of ecological functions, impacts to human health and well-being, or the permanent degradation of Tribal resources.

We look forward to continued government-to-government consultation as the state refines its analysis, addresses data gaps, and evaluates siting factors. The Snoqualmie Tribe encourages the state to adopt a



safety minded approach, ensure rigorous assessment of risks, and prioritize the protection of culturally significant landscapes and ecosystems in all phases of geothermal planning and decision-making.

Thank you for the opportunity to comment.

Sincerely,

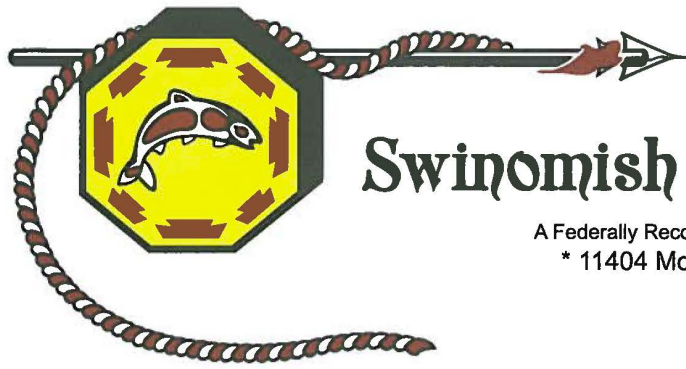
Signed by:

Greg King

Greg King L.G.

Geologist

Snoqualmie Indian Tribe



Main Office: 360.466.3163

Facsimile: 360.466.5309

Swinomish Indian Tribal Community

A Federally Recognized Indian Tribe Organized Pursuant to 25 U.S.C. § 476

* 11404 Moorage Way * La Conner, Washington 98257 *

May 15, 2026

Alexandra Shin
Permit Coordinator/Senior Planner
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Submitted online and sent electronically via email to: cleanenergy@ecy.wa.gov

RE: Geothermal Collaborative Process – Draft Legislative Update

Dear Ms. Shin,

The Swinomish Indian Tribal Community (“Swinomish” or “Tribe”) submits these comments on the draft legislative update for the Geothermal Energy Collaborative Process (“Collaborative Process”), a process directed by SB 6039 passed in 2024. Below the Tribe offers its comments and concerns with the proposed areas for geothermal energy development identified through the Collaborative Process, and the potential for geothermal project development in culturally sensitive areas with impacts to Treaty-protected natural resources. The summary of our comments and concerns includes:

- New geothermal energy development cannot come at the expense of the Tribe’s adjudicated Treaty rights to hunt, gather, fish and exercise sacred ceremonies and cultural practices on Mount Baker.
- Mount Baker is a volcano with active fault lines running throughout, and under no circumstances should fracking for EGS be allowed.
- Geothermal energy development cannot be allowed to have any adverse impacts on water quantity, water quality, or groundwater connectivity that support the strong Baker Lake Sockeye salmon population. All such impacts must be avoided.
- Under no circumstances should any geothermal energy development be used to power artificial intelligence (AI) data centers.

About the Swinomish Indian Tribal Community

The Swinomish Tribe is a federally recognized Indian tribe and political successor in interest to certain tribes and bands that signed the 1855 Treaty of Point Elliott, which among other things reserved fishing, hunting and gathering rights and established the Swinomish Reservation on Fidalgo Island in Skagit County, Washington. The Swinomish Reservation sits at the mouth of the Skagit River, the largest river system draining to Puget Sound and the only river in the Lower 48 states that still has all species of wild Pacific salmon and steelhead spawning in its waters. Since time immemorial, the Swinomish Tribe and its predecessors have occupied and utilized vast areas of land and water in northern Puget Sound up to the Canadian border to support the Swinomish way of life.

Fish and fish habitat are crucial to the cultural, spiritual, subsistence and commercial activities of the Swinomish Tribe. The Tribe exercises Treaty-reserved fishing, hunting and gathering rights in its usual and accustomed areas (“U&A”), which includes an extensive portion of the Salish Sea, including throughout the San Juan Islands, and the entirety of the Skagit River watershed and all of its tributaries. These same rights and resources are at the heart of the Tribe’s Treaty rights and cultural and spiritual practices and are central to the Tribe’s identity and life ways. These lands include areas throughout the Mount Baker-Snoqualmie National Forest and Skagit River basin, one of the three focus areas identified in the Collaborative Process. The Tribe has Traditional Cultural Properties on Mount Baker and throughout the Skagit River watershed that must be considered as part of any geothermal energy planning effort or project proposal.

Siting Concerns and Relevant Prior and Ongoing Interest

Despite Ecology’s reassurances throughout the Collaborative Process public engagement that there are no geothermal projects under active consideration, significant exploratory work has been conducted around one of the three focus areas identified on the south side of Mt. Baker, located within the Skagit River watershed. This northernmost focus area is the subject of a recent geothermal resource prefeasibility assessment released in December 2025¹, which was conducted for the Nooksack Tribe and Whatcom County Public Utility District (PUD) and funded by Climate Commitment Act revenue. This study builds on prior efforts to investigate geothermal resources in the area, including a previous statewide geothermal favorability assessment,² a recent play-fairway analysis,³ and prior and current consent to lease processes ongoing within the Mount Baker-Snoqualmie National Forest. Substantial investment in investigating geothermal resources in this area has included prior ground-disturbing activities and drilling, and has occurred without meaningful involvement or consultation with the Tribe, even though proposed areas are within the Swinomish’s adjudicated U&A.

The legislature recognized the significance of geothermal siting impacts on Tribal rights in SB 6039 when adding the following language to Chapter 43.31 RCW:

¹ https://www.pudwhatcom.org/wp-content/uploads/2026/02/MtBakerGeoPrefeasibility_Final_Report_12_2025.pdf

² https://dnr.wa.gov/sites/default/files/2025-03/ger_ofr2014-02_geothermal_favorability.pdf

³ https://fortress.wa.gov/dnr/geologydata/geothermal/wgs_play-fairway_final_report_04NOV2021.pdf

“Proposed exploratory drilling projects should be located in areas of high geothermal potential **not impacting federally reserved tribal rights and resources** including, but not limited to, those protected by treaty, executive order, or federal law” (emphasis added).

While this language is specific to cost-share grants appropriated only at the legislature’s will, it acknowledges the significant impact that even exploratory drilling can have on treaty-protected rights and resources. **New geothermal energy development cannot come at the expense of the Tribe’s adjudicated Treaty rights to hunt, gather, fish and exercise sacred ceremonies and cultural practices on Mount Baker.**

Concerns with Potential Project Impacts

The Tribe appreciates and supports efforts to transition Washington’s energy generation to renewable sources, recognizing that particularly promising sources such as geothermal that can provide utility-scale, reliable, and constant energy production to the grid. However, the risks are substantial, and the Draft Report must give them much more consideration. In particular, new technologies such as Enhanced/Engineered Geothermal Systems (EGS) that rely on hydraulic fracturing (fracking) technology used by extractive fossil fuel industries and deep underground drilling and disturbance of rock to produce the heat resource will have substantial adverse ecological impacts to land, water and cultural resources both individually and cumulatively.

Mount Baker is a volcano with active fault lines running throughout, and under no circumstances should fracking for EGS be allowed.

As Ecology recognizes in the Collaborative Process draft legislative update, potential impacts of geothermal energy generation include effects on Tribal rights, cultural resources, and plant and animal species, as well as possible induced seismicity and water (including groundwater) quality and quantity impacts. The Final Report must quantify all potential water quality and quantity impacts, and recommend avoidance as the first mitigation strategy.

Other impacts of operation may include land subsidence.⁴ These myriad potential impacts are of particular concern in large, protected areas of habitat connectivity and protected watersheds like the Mount Baker-Snoqualmie National Forest. The identified focus area is adjacent to Baker Lake, including tributaries that flow into Baker Lake, waterbodies that support salmonid populations that provide valuable cultural, subsistence, and economic resources for the Tribe. **Geothermal energy development cannot be allowed to have any adverse impacts on water quantity, water quality, or groundwater connectivity that support the strong Baker Lake Sockeye salmon population. All such impacts must be avoided.**

Construction and decommissioning of power generation facilities takes an additional toll through site clearing, road development, heavy equipment, noise impacts, and more. The Tribe has hunted on Mount Baker and surrounding public lands since time immemorial, and impacts to wildlife migration and habitat must be avoided. Furthermore, transmission infrastructure must be

⁴ Dhar et al., 2020. Geothermal energy resources: potential environmental impact and land reclamation. *Environmental Reviews*. 28(4): 415-427. <https://doi.org/10.1139/er-2019-0069>

addressed, as transmission capacity for a utility-scale power plant in this protected area is currently limited, and build-out to update and improve the lines would require additional impacts from construction and use.

Under no circumstances should any geothermal energy development be used to power artificial intelligence (AI) data centers. This burgeoning industry compounds many risks of geothermal energy projects through water use, localized ecological impacts, and threats to Tribal rights, posing additional environmental and community impacts without providing benefits to the broader public. These risks are identified in a recent preliminary report from the Washington Data Center Workgroup,⁵ which emphasized the importance of protecting Washington ratepayers and ensuring data centers cover the costs of their energy needs.

We look forward to additional reports and your continued engagement throughout the Collaborative Process, and thank you for the consideration of our comments.

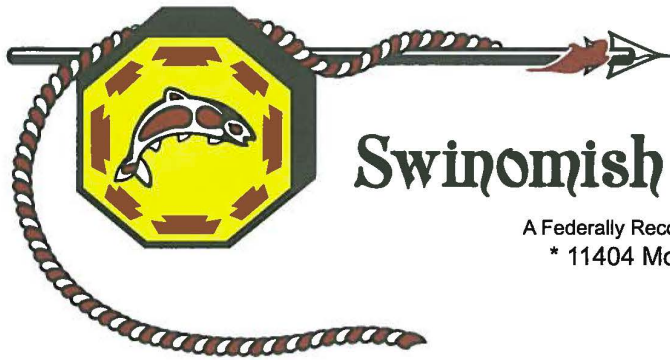
Sincerely,

A handwritten signature in cursive script, appearing to read "Amy Trainer", followed by a horizontal line.

Amy Trainer, Environmental Policy Director
Swinomish Indian Tribal Community

⁵ <https://dor.wa.gov/sites/default/files/2025-12/2025DataCntrWrkgrpPrelimReport.pdf>

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Swinomish Indian Tribal Community

A Federally Recognized Indian Tribe Organized Pursuant to 25 U.S.C. § 476
* 11404 Moorage Way * La Conner, Washington 98257 *

October 10, 2025

United States Department of Agriculture
Forest Service – Mt. Baker Snoqualmie National Forest
And Mt. Baker Ranger District
Attn: Louis “Ted” Neff, Mt. Baker District Ranger
Via email: Louis.Neff@usda.gov

Re: September 10, 2025 Mt. Baker Geothermal Consent to Lease

Dear Mr. Neff,

On behalf of the Swinomish Indian Tribal Community (“Swinomish” or “Tribe”) please accept these comments regarding the U.S. Forest Service’s (“USFS”) initiation of a consultation on a request from the Bureau of Land Management (“BLM”) to grant consent to lease 57,241 acres that have been nominated in the Mt. Baker Ranger District of the Mt. Baker-Snoqualmie National Forest for geothermal energy development. I am in receipt of your September 10, 2025 letter, and refer to it and the proposed consent to lease as “the Proposal” in this letter. The Tribe has numerous questions and concerns with the Proposal listed below, and at this stage is opposed to the consent to lease and any related exploratory activities, such as 3-D seismic testing, that would advance the Proposal.

About the Swinomish Tribal Community’s Treaty Rights and Resources

Swinomish is a federally recognized Indian nation organized pursuant to Section 16 of the Indian Reorganization Act of 1934, 25 U.S.C. § 5123 with a population of approximately 1,200 enrolled tribal members. The Tribe is a present-day political successor-in-interest to certain tribes and bands that signed the Treaty of Point Elliott, 12 Stat. 927 (1855) (“Treaty of Point Elliott” or “Treaty”), a Treaty with the United States that established the Swinomish Reservation and that reserved to the Tribe other rights including without limitation the “right of taking fish at usual and accustomed grounds and stations.” *United States v. Washington*, 459 F. Supp. 1020, 1039, 1041 (W.D. Wash. 1978). The Tribe’s usual and accustomed fishing areas (U&A) extend throughout “the Skagit River and its tributaries, the Samish River and its tributaries and the marine areas of northern Puget Sound....” *Id.* at 1049, Supplemental Finding of Fact 6.

The Tribe also has a Treaty right under Article 5 of the Treaty of Point Elliott to “the privilege of hunting and gathering roots and berries on open and unclaimed lands.” These lands include USFS-managed lands in the Mount Baker-Snoqualmie National Forest.

The Tribe’s reserved rights are to be treated as the “supreme Law of the Land” pursuant to the United States Constitution. U.S. Const. art. 6, cl. 2. Swinomish’s treaty rights, like easements, run with the lands or places they attach to, in perpetuity and are protected from federal, state, and private interference. *See United States v. Winans*, 198 U.S. 371, 381 (1905); *United States v. Oregon*, 718 F.2d 299, 304 (9th Cir. 1983); *United States v. Washington*, 20 F. Supp. 3d 828, 889 (W.D. Wash. 2007).

Comments on the Proposal

The Tribe appreciates your letter recognizing that Swinomish is a “co-steward of the of the forest landscape” and that the “Swinomish Indian Tribal Community may have interests or knowledge of cultural uses or historic properties of religious or cultural significance within or near the proposed lease areas, or information on treaty-reserved rights within or near the area.” As explained in this letter and detailed in the attached declaration of Valentino Villaluz (Exhibit 1), our Tribe possesses reserved Treaty fishing, hunting, and gathering rights in the Proposal area, and there are also many cultural uses and historic properties of religious and cultural significance. We accept your offer of government-to-government consultation and look forward to meeting with you.

As noted above, the Tribe has many questions and deep concerns about the Proposal. **We respectfully request that the USFS deny the proposal based on inadequate information provided and failure to follow required environmental and cultural review processes.**

If for some reason the USFS and BLM proceed, you must deny any proposals within designated wilderness, wilderness study area, and National Recreation Area. The agency must also initiate environmental review to take the “hard look” at direct and indirect effects relating to geothermal development required by the National Environmental Policy Act (NEPA), and carry out consultation under Section 7 of the Endangered Species Act (ESA) and the Section 106 of the National Historic Preservation Act (NHPA). The USFS must also ensure consistency with the Mt. Baker-Snoqualmie National Forest Land & Resource Management Plan and the Northwest Forest Plan, as required by the National Forest Management Act (NFMA) and Federal Land and Policy Management Act (FLPMA).

To the extent the USFS approves the Proposal, the Tribe requests that all the surface occupancy stipulations from 2015 also be carried forward, and additional stipulations developed

in consultation with the Tribe to adequately protect the Tribe's interests. The Tribe requests to be invited to join the interdisciplinary team to develop additional stipulations to protect springs, fish habitat, and the exercise of cultural practices and Treaty rights.

Lack of Adequate Information Regarding the Proposal

The USFS has disclosed insufficient information to the Tribe and the public to assess the Proposal. Requests for additional information have been delayed, likely due to the failure of Congress to pass a funding bill and the associated furlough of USFS staff.

The Tribe has many questions regarding the Proposal, especially the complications of the partial overlap of the 2025 and 2015 (and prior) proposals. The Tribe would like to better understand the following:

- Please explain the sequence of approvals and activities that must take place in order to proceed from consent to lease to active geothermal operations. This will provide much better clarity to the Tribe and the public as to likely effects of the consent to lease.
- Please provide the reasonably foreseeable development scenario, including anticipated ground disturbance, plant size, and transmission. The USFS has provided this information in the EA developed in the same consent to lease context in the Cove Fort geothermal consent to lease decision in 2024.¹
- It is unclear if the 2015 decision is sunseting, or if the 2025 decision would replace that decision. Are the areas that the USFS consented to lease in 2015, but BLM did not propose in 2025 (depicted in green on the map at page 9 of the Proposal), abandoned? Or are those areas still available for potential leasing?
- As explained in more detail below, our rough mapping indicates that approximately 19,000 acres of land are proposed for consent to lease that were not considered in 2015. *See* Proposal page 9 (area depicted in red), *see also* Exhibit 2, "Swinomish Proposal Map." What is USFS' calculation of the acreage and location of the new areas? Why were these new areas added? What resources are potentially affected by the new areas?

¹[https://eplanning.blm.gov/public_projects/2033497/200622055/20115694/251015674/Cove%20Fort%20Geothermal%20Leasing%20EA-FONSI-Final%20DN%20\(1\).pdf](https://eplanning.blm.gov/public_projects/2033497/200622055/20115694/251015674/Cove%20Fort%20Geothermal%20Leasing%20EA-FONSI-Final%20DN%20(1).pdf)

- It appears that the new areas may include some surface waters of Baker Lake and its tributaries. Is that correct? Why are those areas included? Is the consent to lease decision required to follow parcel lines or can the leases be adjusted to natural features?
- In the 2015 proposal covering approximately 81,820 acres, 60,650 acres (roughly 75%) of the areas were subject to no surface occupancy stipulations. Are these areas being repropose for consent to lease? If so, why?
- Will USFS carry forward the same surface occupancy stipulations to the 2025 Proposal?
- What is the process for developing an interdisciplinary team, who is on that team, and how are additional or revised stipulations developed?
- What acreage of the 2025 proposal would be subject to no surface occupancy stipulations, and where would those areas be located?
- How many acres are proposed in Inventoried Roadless Areas, and where?
- Is there any acreage proposed in a wilderness or wilderness study area?
- Why are there areas proposed in Mt. Baker National Recreation Area, if BLM cannot lease those areas for geothermal?
- What exploration or other activities have occurred on USFS-managed lands and surrounding areas, what were the scope of those operations, their impacts, and their findings?
- What geothermal resources are available, and what would be the anticipated number and scale of power plants developed?
- What baseline data is available for geothermal resources in the Proposal, and the extent of interconnection with groundwater, surface water, and springs?
- What current access is there to the potential lease sites? It appears that most of the acreage lacks roads. What road networks or other activities would be required to access the lease sites, and what are the anticipated impacts?

- Interconnection and transmission are essential components of any geothermal operation. How is USFS accounting for this aspect of the consent to lease?
- Is there transmission available for potential projects? If so, where, and if not, what are the anticipated pathways and impacts of additional transmission?
- What would the impacts of construction and operation of new interconnection and transmission lines from the proposed areas be?
- What seismic and volcanic risks are associated with geothermal exploration around a volcano such as Mt. Baker?

Inappropriate Reliance on the 2015 Analysis

The 2025 Proposal states the following:

7 CFR 1b.9(e)(8), specifically 1b.9(e)(8)(i), allows for USDA agencies like the USFS to rely on existing completed NEPA documentation (Environmental Impact Statement, Environmental Analysis [EA], Categorical Exclusion) to provide analysis information to complete a required finding for a current NEPA proposal. In the present undertaking, “the actions covered by the original document and anticipated effects are substantially the same for the current proposal being considered” because the 2025 proposal for consent to lease covers almost exactly the same area as the proposal in an EA completed by the MBS in 2015 for BLM proposals received in 2011 and 2013.

Based on the materials provided, this statement is inaccurate and the reliance on the cited regulations is inappropriate and unlawful.

As is clear from USFS’ own maps attached to the Proposal, the 2015 analysis covers a significantly different area than the 2025 Proposal. The key for the map on page 9 states that “[r]ed areas are lands from the current 2025 nomination **that were not analyzed in the 2015 EA**, but will be covered by relying on the 2015 EA analysis in the current undertaking.” (emphasis added). A cursory review demonstrates that these “red areas” are substantial and include sensitive sites such as Baker Lake and many of the tributaries to Baker Lake.

While USFS did not provide acreage totals, our mapping (Exhibit 2) indicates that approximately 19,000 acres are in the 2025 Proposal that were not part of the 2015 proposal. 19,000 new acres would comprise approximately 33 percent of the Proposal. Two proposals that are at least one-third different by acreage, and that involve different environments and ecological and cultural features, are not “substantially the same” or “exactly the same.”

Reliance on the 2015 analysis is also problematic based on the age and content of that analysis. The 2015 analysis is now more than 10 years old. The 2015 analysis in turn relied on a programmatic EIS from 2008—which is now almost twenty years old.

Geothermal is a rapidly developing industry, and there is much more information now than there was ten years ago. Additionally, our understanding is that some exploration activities have occurred both on USFS lands and nearby DNR lands (*see, e.g.*, Exhibit 3, “Emails Regarding Exploration Activities”), so there is also additional local information about site conditions and impacts. This recent information is clearly relevant data that must be disclosed and analyzed as part of the NEPA analysis.

The letter further states that:

This portion of the new USDA NEPA regulations [7 CFR 1b.9(e)(8)(i)] allows us to determine that the NEPA completed in the 2015 analysis of BLM proposed lands is adequate for the 2025 proposed lands, and gives us the ability to minimize the time needed to complete NEPA documentation while still giving our interdisciplinary team of specialists the ability to create new stipulations for NFS lands determined available for leasing and make determinations about which lands are available for leasing based on the current best available science.

Again, this statement is not supported by the facts or cited regulations. The two proposals are far from the same. The text is also internally inconsistent. How can the proposals be “exactly the same,” yet the USFS is going to develop “new stipulations for NFS lands” and make new determinations “based on the current best available science”? If there are new stipulations and new science (which there is), the proposals and environmental review are not the same, and cannot be treated as such.

While NEPA does not require an agency to formulate and adopt a complete mitigation plan, *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352 (1989), mitigation must “be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated.” *City of Carmel–By–The–Sea v. U.S. Dept. of Transp.*, 123 F.3d at 1142, 1154 (9th Cir.1997); *see also N. Alaska Env't Ctr. v. Kempthorne*, 457 F.3d 969, 979 (9th Cir. 2006). The

anticipated process conflicts with NEPA's mandate to consider environmental impacts and associated mitigation **before** completing NEPA review and the threshold determination.

The Proposal provides no information or assurances about potential impacts or likely mitigation. There is no detail as to whether the surface occupancy restrictions from 2015 will be carried forward, or how they may be revised or added to. The USFS cannot know the scope or extent of environmental impacts before receiving and considering information from the interdisciplinary team and identifying the mitigation measures.

The Tribe requests that USFS assemble its interdisciplinary team to develop surface occupancy stipulations and invite a Swinomish representative to join that team. After review of impacts, best available science, and the proposed stipulations, only then can the USFS carry out an informed NEPA review.

Impacts to Treaty Rights and Cultural Resources

As explained in the accompanying declaration of Valentino Villaluz (Exhibit 1), Swinomish possesses Treaty rights to fish throughout the Skagit Basin and is an adjudicated co-manager. The Tribe also has a reserved Treaty right to hunt and gather on all open and unclaimed lands, which include USFS-managed lands. Tribal members regularly exercise their Treaty rights in and around the Proposal area.

Additionally, the Tribe relies on USFS-managed lands for privacy necessary to carry out ceremonies, prayers, and other culturally significant activities. Tribal members utilize the lands in and around the Proposal for fishing, hunting, gathering, and cultural practices. Springs are particularly important sites.

The Tribe has a small Reservation and relies heavily on public lands to exercise its rights and Tribal members' cultural practices. USFS-managed lands in the Skagit watershed are particularly important because they generally allow hunting and lack the recreation pressure imposed on nearby areas managed by the National Park Service.

Geothermal operations would impair the exercise of Treaty rights. As set forth *infra*, the exploration activities, roads, transmission, construction, and operations pose risk to Tribal members' ability to exercise their Treaty rights to harvest plant, animal, and fish species.

Examples in other regions demonstrate that geothermal exploration and operations can adversely impact nearby springs, even where there are buffers and setbacks. The interconnection between aquifers is often poorly understood, and once harm occurs, it can be impossible to undo. For example, in Jersey Valley, Nevada, a geothermal project caused a springs to permanently run dry. In nearby Dixie Meadows, the United States Fish and Wildlife Service determined that as a

result of interconnection between the geothermal aquifer and groundwater aquifers that feed a spring complex, the proposed geothermal project is likely to adversely affect water quality and quantity in the spring complex and the Dixie Valley toad that resides in the springs. *See* 87 Fed. Reg. 73971, 73984, “Endangered and Threatened Wildlife and Plants; Endangered Species Status for the Dixie Valley Toad” (December 2, 2022)(“In 2011, a 23.5-MW geothermal power plant started production in Jersey Valley, just north of Dixie Valley. Springflow at a perennial thermal spring began to decline almost immediately after the power plant began operation (BLM 2022, p. 1; Nevada Division of Water Resources (NDWR) 2022, unpublished data). By 2014, the Jersey Valley Hot Spring ceased flowing.”).

Land Designation Limitations

According to federal regulations, geothermal leasing is not allowed in several areas that USFS appears to have identified in the 2025 proposal. BLM may not issue leases for, *inter alia*: “Lands contained within a unit of the National Park System, or otherwise administered by the National Park Service,” “Lands within a National Recreation Area,” and “Wilderness areas or wilderness study areas.” 43 CFR § 3201.11 (“What lands are not available for geothermal leasing?”).

The maps provided by the USFS show leasing in the Mt. Baker National Recreation Area. It appears from our rough calculations that these areas comprise approximately 3,800 acres. Because they cannot be leased, the USFS should not consent to lease.

The mapping is not clear as to whether there is leasing in the Mt. Baker Wilderness. If so, those areas should also be denied. Finally, we request that USFS deny areas that are covered by the Roadless Rule. While we are aware that there is a proposal to rescind the rule, at this time it is applicable law that would functionally bar roads and other infrastructure necessary for geothermal operations.

National Environmental Policy Act Timing

The Tribe requests that the USFS carry out careful NEPA review at this stage because it is a critical “go-no-go” threshold after which leasing can be carried out. While the 2015 analysis does not cover the proposal area and the Tribe does not believe it was an adequate environmental analysis, some aspects of the consideration are informative. In 2015, USFS considered reasonable alternatives, prepared an EA, consulted with tribes, and evaluated environmental effects. This is also the approach taken in another recent example in Cove Fort (*see* footnote 1, *supra*).

With specific acreage identified surrounding Mt. Baker, there is sufficient detail to require careful consideration and environmental review.

As stated by the Ninth Circuit, relying on Supreme Court precedent:

[p]roper timing is one of NEPA's central themes. An assessment must be 'prepared early enough so that it can serve practically as an important contribution to the decisionmaking process and will not be used to rationalize or justify decisions already made.'...

The phrase "early enough" means "at the earliest possible time to insure that planning and decisions reflect environmental values." *Andrus v. Sierra Club*, 442 U.S. 347, 351 (1979). The Supreme Court in referring to NEPA's requirements as "action forcing," *Andrus*, 442 U.S. at 350, has embraced the rule that for projects directly undertaken by Federal agencies, environmental impact statements "shall be prepared at the feasibility analysis (go v. no-go) stage and may be supplemented at a later stage if necessary."

Metcalf v. Daley, 214 F.3d 1135, 1142 (9th Cir. 2000) (cleaned up).

The consent to lease phase is where USFS makes an irrevocable decision to allow leasing of geothermal resources on public lands. While BLM will make later leasing and other approvals, those cannot occur but for USFS consent.

Meaningful NEPA review at this stage is particularly important because geothermal exploration and related activities are often provided a categorical exclusion, and further NEPA analysis will likely not occur at that stage. *See, e.g.*, Exh. 3. In June of 2025, the Department of the Interior approved a new categorical exclusion for exploration activities.² The new categorical exclusion applies to geothermal resource confirmation operations plan of up to 20 acres, which can include drilling wells (e.g., core drilling, temperature gradient wells, and/or resource wells) to confirm the existence of a geothermal resource, to improve injection support, or to demonstrate connections between wells.

In other contexts, the consent to lease decision is only undertaken after careful environmental review. For oil and gas, USFS and BLM also share administration. The BLM proposes areas for lease, and as a preliminary step, USFS must consent to leasing. There, "[b]efore consenting, USFS must verify that the leasing of those specific lands 'has been adequately addressed in a NEPA document and is consistent with the Forest land and resource management plan.'" *Ctr. for Biological Diversity v. U.S. Forest Serv.*, 444 F. Supp. 3d 832, 842

2) <https://www.doi.gov/media/document/doi-nepa-appendix-2>

(S.D. Ohio 2020) (citing 36 C.F.R. § 228.102(e)(1)). “BLM's decision to lease, and USFS's consent thereto, *are* decisions to irrevocably commit resources,” and therefore require robust NEPA review. *Id.* at 851.

Endangered Species Act Compliance

“The ESA comes into play whenever USFS determines to make forest lands administratively available for leasing and whenever BLM later designates specific lands from all those administratively available that BLM plans to offer at a lease sale.” *Ctr. for Biological Diversity v. U.S. Forest Serv.*, Civ. No. 2:17-CV-372, 2018 WL 7200718, at *4 (S.D. Ohio Sept. 7, 2018). The relevant agency (the “acting agency”) must ensure that its leasing decision “is not likely to jeopardize the continued existence of” a listed species or destroy or adversely modify a species' critical habitat. 16 U.S.C. § 1536(a)(2).

As set forth in *Karuk Tribe of California v. U.S. Forest Serv.*, 681 F.3d 1006, 1027 (9th Cir. 2012):

We have previously explained that “may affect” is a “relatively low” threshold for triggering consultation. *Cal. ex rel. Lockyer v. U.S. Dep't of Agric.*, 575 F.3d 999, 1018 (9th Cir.2009). “‘*Any possible effect*, whether beneficial, benign, adverse or of an undetermined character,’ ” triggers the requirement. *Id.* at 1018–19 (quoting 51 Fed.Reg. 19,926, 19,949 (June 3, 1986)) (emphasis in *Lockyer*). The Secretaries of Commerce and the Interior have explained that “[t]he threshold for formal consultation must be set sufficiently low to allow Federal agencies to satisfy their duty to ‘insure’ ” that their actions do not jeopardize listed species or adversely modify critical habitat. 51 Fed.Reg. at 19,949.

Section 7 analysis is not avoided by deferring to later project-scale analysis. As explained in the determination that Army Corps of Engineers nationwide permits require Section 7 consultation, “Programmatic-level biological opinions examine how the overall parameters of a nationwide program align with the survival and recovery of listed species.... An agency should analyze those types of potential impacts in the context of the overall framework of a programmatic action. A broad examination may not be conducted as readily at a later date when the subsequent activity would occur.” *N. Plains Res. Council v. U.S. Army Corps of Eng'rs*, 454 F. Supp. 3d 985, 990 (D. Mont.), amended, 460 F. Supp. 3d 1030 (D. Mont. 2020). Similarly, the Ninth Circuit concluded that failure to conduct Section 7 analysis for BLM grazing regulation amendments was unlawful despite agency arguments that such amendments were purely administrative. *W.*

Watersheds Project v. Kraayenbrink, 632 F.3d 472, 498 (9th Cir. 2011). Section 7 consultation was required because the decision would alter property rights on public land and diminish public involvement at later stages.

The proposed leasing areas are in the Skagit River watershed and the Nooksack watershed. Both areas likely contain listed terrestrial and aquatic species that may be affected by the consent to lease and all the activities that flow from that decision. We are aware of potential northern spotted owls, marbled murrelets, and lynx presence. The Skagit and Nooksack basins contain ESA-listed Puget Sound Chinook salmon, Puget Sound steelhead, and bull trout.

Geothermal exploration, construction, and operations involve extensive roading, clearing, construction, and drilling. These activities destroy and fragment habitat and cause extensive noise and continued human presence. All of these impacts meet the low threshold for “may effect” for terrestrial species. Clearing, grading, roads, and dust abatement measures also require water, create polluted runoff, and cause water quality impacts, which “may effect” listed aquatic species.

Geothermal exploration and operations also involve pumping fluid out of aquifers. These aquifers may connect with, and have unanticipated consequences to, groundwater and surface water, with associated impacts to listed aquatic species. As in *Kraayenbrink* and *N. Plains Resource Council*, programmatic Section 7 review is necessary and appropriate. The consent to lease sets in motion activities that “may effect” listed species, changes the legal availability of public lands, and effectively shifts management to the BLM with limited future public involvement for exploration activities

Need for Additional Stipulations

The 2015 proposal contains extensive stipulations that restrict surface area disturbance. The Tribe generally supports continuation of those stipulations. In addition, the USFS should impose the following stipulations prohibiting geothermal exploration or operations under the following conditions:

- Where the operations may impair the exercise of Tribal Treaty rights,
- Where the operations may impair surface water quantity or quality, or
- Where the operations may impair Tribal cultural resources and/or cultural practices, particularly access and use of springs.

The Tribe requests that if the USFS decides to proceed, that the current Proposal be denied. The next step should be to form the interdisciplinary team, invite the Tribe to join,

develop stipulations, and then conduct robust environmental review based on the Proposal and the accompanying stipulations.

National Historic Preservation Act and Consultation

The letter at times refers to the Proposal as an “undertaking,” which is a term of art from the National Historic Preservation Act (“NHPA”). The Proposal is in fact an undertaking for purposes of the NHPA and should be treated as such. The Proposal requires government-to-government consultation and a robust NHPA review under Section 106. *See Pit River Tribe v. U.S. Forest Serv.*, 469 F.3d 768, 787 (9th Cir. 2006).

Conclusion

The Tribe appreciates the USFS outreach regarding the consent to lease for geothermal energy development. However, at this time Swinomish is opposed to this project due to a lack of information, inappropriate reliance on previous NEPA analysis, and because of the likely adverse impacts to listed species and our Treaty rights and resources. We look forward to a government-to-government consultation to further discuss our concerns. Please reach out to Amy Trainer, the Tribe’s environmental policy director [atrain@swinomish.nsn.us] to schedule the consultation.

Sincerely,

A handwritten signature in blue ink that reads "Steve Edwards".

Steve Edwards, Chairman
Swinomish Indian Tribal Community

Cc: Erin Uloth, Forest Supervisor, Mt. Baker – Snoqualmie National Forest

List of Exhibits

Exhibit 1	Declaration of Valentino Villaluz
Exhibit 2	Swinomish Maps of Federal lands proposed lease area
Exhibit 3	Emails Regarding Exploration Activities

Hazen Shopbell, *Chairman*
Deborah Parker, *Vice Chair*
Theresa Sheldon, *Secretary*
Ryan Miller, *Treasurer*



Teri Gobin, *Council*
Glen Gobin, *Council*
Malory Simpson, *Council*

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Alexandra Shin
Permit Coordinator / Senior Planner
Shorelands and Environmental Assistance Program
Clean Energy Coordination
P.O. Box 47600
Olympia, WA 98504-7600

May 15, 2025

**Re: Tulalip Tribes Comments on Geothermal Energy Collaborative Process – Draft
Legislative Update**

Dear Ms. Shin:

We would like to thank the Department of Ecology for the time and effort that Ecology has put in thus far to consider the impacts that geothermal development would have on Tribes, treaty rights, and other Tribal rights.

The Tulalip Tribes is a federally recognized sovereign Indian government, successor in interest to the Snohomish, Snoqualmie, and Skykomish Tribes, as well as other allied tribes and bands, signatory to the 1855 Treaty of Point Elliott. Members of Tulalip, together with other Coast Salish tribes, have strong historical and spiritual ties on the forest lands and waters now managed by state and federal agencies, including the Mount Baker area.

As their original stewards, we have nurtured these forest landscapes for millennia, maintaining balance and resilience through our deep connection to and reliance on these lands. Lands within the Mount Baker area constitute some of the last undeveloped areas within the Point Elliott Treaty ceded territory, where tribes like Tulalip exercise our treaty-reserved fishing, hunting, and gathering rights. These lands continue to provide water, foods, medicines, and places that sustain our people, our lifeways, and livelihoods. As such, we have a profound interest in how these federal forest lands are managed and protected for future generations.

We have attended some of the tribal forums that Ecology has hosted and have reviewed the Draft Legislative Update. Our climate science and clean energy experts' concerns are only minimally represented in this letter as they related to treaty and other tribal rights. Our experts will continue to engage throughout the collaborative process to share feedback. We share our concerns related to treaty and other tribal rights below:

- Tribes and communities are grouped together in such a way throughout the Report that it takes away from the fact that federal recognized Tribes have rights beyond those of

Tulalip Tribes
Board of Directors

communities. Treaty Tribes, like Tulalip, have treaty-reserved rights on state-owned lands. These rights are recognized property rights, and as such, should not be considered in the same manner that the general public's wants and concerns are.

- Related to the "Improve community and Tribal engagement and outreach" (page 7) topic, Ecology focuses on how developers should engage Tribes, but excludes how the State, our trustee, will continue to be involved in active, meaningful consultation, rather than trying to pass on that legal duty to a third party.
- Ecology explains that the community and landscape context for the Mount Baker area is of "deep cultural significance to Tribal Nations" in Whatcom and Skagit counties. However, Tribes like Tulalip that were relocated to present day Snohomish County, also have deep cultural significance to the Mount Baker area and still utilize the area to exercise treaty-reserved rights.
- We suggest changing the language of "Tribal rights" to "treaty and other Tribal rights," to give a more comprehensive layout of the legal landscape.
- We would like more information on how "each potentially affect Tribe" (page 34) will be determined for specific project impact consultations. \
- We also echo the concerns we have shared with the Forest Services' geothermal proposal in the Mt. Baker area: The Mt. Baker Ranger District overlaps with an area that serves as a critically important hunting area for elk, as well as one of only two potential areas for mountain goat, and the habitat they rely on which provides traditional and medicinal plants, these provide significant hunting and gathering treaty-reserved resources which have been in rapid decline elsewhere in our treaty territory. Further, the availability of areas to exercise our treaty-reserved these rights, requires access, resource availability, and often times, privacy, to conduct cultural activities. Such access, availability, and privacy are very limited currently and run the risk of being completely diminished with broad geothermal expansion.

We would like to thank you again for the opportunity to provide feedback to the Draft Legislative Update and look forward to continuing to work with Ecology in the Collaborative Geothermal Process. Please feel free to contact me at agobin@tulaliptribes-nsn.gov to discuss these comments further.

Sincerely,



Andrew Gobin
Director of Treaty Rights and Government Affairs
The Tulalip Tribes

CC: Jason Gobin, Aaron Jones, Libby Nelson, Meralina Morales, Steve Hinton, Phil North