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April 21, 2026

**Shorelands and Environmental Assistance Program**

Clean Energy Coordination  
Washington State Department of Ecology  
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Olympia, WA 98504-7600  
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**Re: Public Comment on Draft Legislative Update — Geothermal Energy Collaborative Process (Publication 26-06-005)**

Dear Shorelands and Environmental Assistance Program Staff:

On behalf of Darcy Solutions, I am submitting the following comments on the Washington Department of Ecology's April 2026 Draft Legislative Update for the Geothermal Energy Collaborative Process. Darcy Solutions designs and delivers groundwater-enabled geothermal heating and cooling systems for commercial and institutional buildings. As a company doing business in Washington State, we are pleased to have participated as an interested party in this process and appreciate the Department's thoroughness in engaging stakeholders across the state.

These comments are offered both from Darcy's specific perspective as a provider of geothermal heating and cooling via a submerged closed-loop heat exchange design, and in support of the broader geothermal heating & cooling industry's interest in ensuring that Washington's geothermal legislative framework captures the full scope of the state's geothermal resources and their collective contribution to the state's electric grid and climate goals.

Our core observation from reviewing the draft legislative update is that it frames Washington's geothermal opportunity primarily as one of electricity supply — adding new geothermal electric power generation to the grid. While adding geothermal power supply is an important goal for Washington State, we believe that the State's overarching objective should be defined and understood more broadly as achieving the greatest net positive impact on the Washington grid from all geothermal resources combined. Geothermal heating and cooling technologies reduce electricity demand by displacing less efficient conventional heating and cooling systems — effectively "freeing up" grid capacity at scale. When viewed alongside geothermal electricity generation, the combined net grid impact is substantially greater than either resource developed and deployed alone. Washington's legislative framework should reflect both sides of this equation.

With that framing in mind, Darcy offers the following specific comments:

**1. The Final Report Should Frame Geothermal Resources in Terms of Net Grid Impact — Not Supply Alone**

The draft legislative update is organized around a single value proposition: geothermal energy as a source of baseload electricity to help Washington meet its clean energy requirements under the Climate Commitment Act and the Clean Energy Transformation Act. This framing is understandable given Senate Bill 6039's directive, but it is incomplete.

Washington's grid faces compounding pressures: surging load growth driven by data center development and electrification of transportation and buildings; increasing uncertainty in the Pacific Northwest hydroelectric fleet due to climate change, drought, and less reliable snowpack; and the overall need to balance the grid with baseload capacity along with the growth and addition of

renewables (principally solar and wind, supported by storage). In this context, the State is rightly looking to leverage its geothermal resources and develop geothermal electricity to add additional baseload supply.

However, we believe that the demand side of Washington's grid equation should receive equal attention as part of the final legislative update. Geothermal heating and cooling technologies — including ground-source heat pumps, submerged closed-loop systems, and district-scale thermal energy networks — can deliver the same thermal comfort as conventional electric resistance or fossil fuel systems at a fraction of the electricity consumption, due to their use of stable ground or groundwater temperatures as a thermal resource. At meaningful scale, this demand reduction is equivalent in grid impact to adding new generation capacity — and it can be developed and deployed in a fraction of the time required to develop new generation and its associated transmission.

As such, we request that the final June 2027 legislative report explicitly evaluate the net grid impact of Washington's geothermal resources — combining the supply contribution of geothermal electricity generation with the demand reduction contribution of geothermal heating and cooling technologies. This framing would:

- Provide a more complete picture of geothermal's total value to the Washington grid and its ability to support grid reliability and the state's clean energy goals.
- Allow policymakers and utilities to assess geothermal resources holistically when planning for load growth and generation adequacy.
- Ensure that investments in geothermal heating and cooling infrastructure are recognized as a complement to — not a separate track from — geothermal electricity development.

We also note that geothermal heating and cooling technologies make a significant independent contribution to Washington's decarbonization goals by displacing fossil fuel heating systems, but we emphasize that the grid reliability argument is the primary case for integrating these resources into the state's geothermal legislative framework.

## **2. The Scope of the Final Report and Regulatory Guidance Should Include Geothermal Heating and Cooling**

Consistent with the net grid impact framing above, we respectfully request that the final June 2027 legislative report include substantive treatment of lower-temperature, building- and district-scale geothermal heating and cooling technologies. The draft update acknowledges these applications in passing but explicitly excludes them from the primary focus of this effort.

We offer the following reasons why inclusion is warranted:

- Washington's 2021 State Energy Strategy explicitly identified ground-source heat pumps as a key zero-emission heating and cooling technology option and called for accelerating their deployment for residential and commercial customers. The final geothermal report should be consistent with and reinforce that strategy.
- The 2024 Biennial Energy Report highlighted "networked geothermal systems for community-scale heating and cooling" as a priority area. The final report is an appropriate vehicle to advance that recommendation.
- Geothermal heating and cooling projects are already underway across Washington — at Seattle Public Schools, Goldendale hospital, Central Washington University, Bellingham Technical College, and the City of Vancouver — demonstrating clear market readiness. The regulatory and policy gaps affecting these projects deserve analytical attention alongside utility-scale electricity projects.
- The regulatory guidebook and model ordinances recommended in the preliminary recommendations will, if scoped exclusively to electricity generation, create a policy vacuum

for the geothermal heating and cooling sector. Local governments adopting model ordinances may be ill-equipped to evaluate or permit geothermal heating and cooling projects.

We request that Ecology explicitly include building- and district-scale geothermal heating and cooling in the scope of the final legislative report, the regulatory gap analysis, and the recommended guidebook and model ordinances.

### **3. The Technology Description Should Be Expanded to Include the Full Spectrum of Geothermal Heating and Cooling Technologies**

The draft update describes three types of geothermal technologies — conventional, enhanced, and advanced geothermal systems — all framed exclusively in the context of electricity generation. Consistent with the scope expansion requested above, we also request that the technology section address the variety of lower-temperature geothermal systems used for heating and cooling, which operate on fundamentally different principles and serve a different but complementary function on the grid.

Lower-temperature geothermal heating and cooling technologies include, among others:

- Conventional ground-source heat pump systems that exchange heat with soil or rock at shallow depths.
- Open-loop systems that draw groundwater, extract or reject heat, and return water to the aquifer or a discharge point.
- Submerged closed-loop systems in which a heat exchanger is placed directly within the groundwater body, with no water extracted or discharged — a non-consumptive design with a distinct regulatory profile.
- District-scale and community thermal energy networks that aggregate multiple buildings onto a shared geothermal loop.
- Low-temperature aquifer thermal energy storage systems that use groundwater to store and recover thermal energy across seasons, providing load-shifting benefits that complement intermittent renewable generation.

We request that the final report's technology section be expanded to describe this spectrum, distinguishing lower-temperature heating and cooling applications from the electricity-generating technologies that are the current focus — and clarifying that the regulatory framework for each category must be calibrated to its specific characteristics.

### **4. The Subsurface Database Mandate Should Be Expanded to Include Low-Temperature Geothermal Resources Relevant to Heating and Cooling**

Senate Bill 6039 directed the Washington Geological Survey to develop a public-facing subsurface database that includes all data relevant to the development of geothermal resources. We commend this overall initiative and request that its scope be explicitly expanded and refined in two ways.

First, the database should include data relevant to conventional geothermal heating and cooling resources — not only the high-temperature hydrothermal resources that are the focus of the electricity generation collaborative process. This would include shallow geothermal gradient data, soil and rock thermal conductivity measurements, and information about the suitability of subsurface conditions for ground-source heat exchange across the state.

Second, the database should also incorporate comprehensive groundwater resource mapping relevant to geothermal systems that leverage groundwater as a thermal medium. This means data on aquifer extent, depth, temperature, and hydraulic characteristics — not for the purpose of water extraction, but to support siting and design of geothermal heating and cooling systems that interact thermally with groundwater. Such mapping would benefit any technology in this category, from open-loop systems to submerged closed-loop designs, and would support developers, local

governments, and utilities in identifying where groundwater-enabled geothermal resources are a viable solution.

We further recommend that expanding the database in these ways be reflected as a standalone recommendation in the final June 2027 legislative report — separate from the broader database development effort — to ensure it receives dedicated attention and funding consideration from the legislature. This expansion would require modest additional investment but would substantially increase the utility of the database for the full range of geothermal stakeholders in Washington State.

## **5. The Regulatory Gap Analysis Should Address Non-Consumptive Geothermal Systems and the Applicable Permitting Framework**

The draft update acknowledges that a full regulatory gap analysis is underway, with results expected in fall 2026, and specifically addresses water rights as a topic requiring analysis. We urge Ecology to ensure this analysis addresses the regulatory treatment of geothermal heating and cooling technologies — particularly those that interact with groundwater in non-consumptive ways.

Washington's existing permitting frameworks for geothermal and water resources were largely designed with extractive or open-loop systems in mind. Some geothermal heating and cooling technologies — including certain closed-loop designs — are non-consumptive: they interact thermally with groundwater without pumping water from the aquifer. Whether and how existing permit requirements apply to such systems is not clearly established in Washington, and that ambiguity has real consequences for the permitting pathway and project economics across the geothermal heating and cooling sector.

We request that Ecology's gap analysis:

- Evaluate how Washington's existing geothermal and water resource permitting frameworks apply — or do not apply — to the range of geothermal heating and cooling technologies, including non-consumptive designs that do not pump groundwater.
- Assess whether existing permit categories were designed with extractive or open-loop systems in mind, and whether they should be modified or supplemented to appropriately address non-consumptive designs.
- Identify whether a pre-application consultation pathway exists — or should be created — for project proponents to resolve regulatory classification questions before incurring permitting costs.
- Ensure that regulatory requirements calibrated to the water quality and environmental risks of open-loop and enhanced geothermal systems are not applied uniformly to non-consumptive designs, which present a substantially lower risk profile.

Clarity on these questions would reduce regulatory uncertainty for a category of commercially ready geothermal technology that is already active in Washington.

## **6. The Recommended Regulatory Guidebook Should Cover the Full Range of Geothermal Heating and Cooling Technologies**

The preliminary recommendations call for a regulatory guidebook covering geothermal project development from exploration through decommissioning. Consistent with the requests above, we also request that the guidebook explicitly address lower-temperature geothermal heating and cooling applications — including the full spectrum of technologies described in Section 3 above — with particular attention to:

- How each technology type is treated under Washington's water rights, well drilling, and environmental permitting frameworks, with clear distinctions between consumptive and non-consumptive designs.

- Guidance on which permits and approvals are required — and which may not be required — for non-consumptive geothermal designs, as distinct from open-loop systems.
- Guidance for local governments on how to evaluate and permit building-scale and district-scale geothermal heating and cooling projects, including model language for incorporation into comprehensive plans and development regulations.
- Guidance on aquifer thermal energy storage systems, including how they interact with existing water management frameworks.

If the guidebook is scoped exclusively to utility-scale electricity generation, it will not serve the developers, building owners, school districts, universities, hospitals, and municipalities that are actively pursuing geothermal heating and cooling projects in Washington today — and who would benefit from a clear regulatory roadmap.

## **Conclusion**

Darcy Solutions strongly supports Washington's geothermal energy collaborative process and the state's leadership in advancing clean energy resources. The challenges Washington's grid faces — surging load growth, data center expansion, increasing uncertainty in the hydroelectric fleet, and the integration of other clean energy resources — call for a comprehensive geothermal strategy that captures the full value of these resources, both as a source of baseload electricity supply and as a means of reducing electricity demand through highly efficient heating and cooling.

We ask that the final 2027 legislative report, regulatory gap analysis, and recommended guidebook reflect this complete picture. Specifically, we request that Ecology:

- Frame the final report's analysis of geothermal resources around net grid impact — the combined contribution of geothermal electricity supply and geothermal heating and cooling demand reduction.
- Expand the scope of the final report and regulatory guidance to include building- and district-scale geothermal heating and cooling technologies.
- Update the technology description to encompass the full spectrum of geothermal heating and cooling systems, distinguishing them from electricity-generating applications and from one another based on their use of groundwater and their regulatory implications.
- Expand the SB 6039 subsurface database mandate to include shallow geothermal resource data and groundwater resource mapping relevant to geothermal heating and cooling systems that leverage groundwater — and add this expansion as a standalone recommendation in the final report.
- Ensure the regulatory gap analysis addresses how Washington's existing permitting frameworks apply to non-consumptive geothermal designs, and identify where clarification or new guidance is needed.
- Ensure the recommended regulatory guidebook addresses the full range of geothermal heating and cooling technologies and provides clear guidance for developers and local governments.

We would welcome the opportunity to discuss these comments further with Ecology staff and to contribute technical expertise to the collaborative process as it moves toward the final 2027 report. Please do not hesitate to contact us.

Sincerely,

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