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TESTIMONY BEFORE THE ENERGY, UTILITIES AND TECHNOLOGY COMMITTEE

**Resolve, to Establish a Commission to Study Pathways for Creating a Thermal Energy Networks
Program in Maine
L.D. 1619**

**GOVERNOR'S ENERGY OFFICE
April 24, 2025**

Senator Lawrence, Representative Sachs, and Members of the Joint Standing Committee on Energy, Utilities and Technology (EUT): My name is Caroline Colan, and I am the Legislative Liaison for the Governor's Energy Office (GEO).

The GEO testifies neither for nor against L.D. 1619.

Geothermal energy—heat from the earth—is a renewable resource that can be tapped for several applications, including for electricity production and heating and cooling for buildings, and is an eligible resource under Maine's renewable portfolio standard. Naturally occurring and manmade hot water reservoirs below the earth's surface can be accessed by drilling wells into the reservoirs at varying depths up to several miles deep. Much closer to the surface, stable ground temperatures can be used as either a heat sink or heat source depending on aboveground temperatures. Given Maine and the northeast's geologic conditions, the most technically feasible geothermal applications in the region are likely more surface level geothermal heat pumps and district geothermal systems.

Geothermal heat pumps are used across the U.S. today and the Efficiency Maine Trust offers rebates for residential geothermal heat pumps covering up to one third of the project cost up to \$3,000 which has resulted in roughly 30 installations a year in the last two years. There are fourteen registered vendors who install residential geothermal systems in the state on Efficiency Maine's vendor list. District heating and cooling systems, also known as "thermal networks" are systems of connected geothermal heat pumps or direct use applications that can provide heating and cooling to buildings, campuses, or communities with concentrated building density and heating demand. It's our understanding that this bill is focused on exploring opportunities to expand the use of these thermal networks in Maine.

While the Technical Report¹ for the Maine Energy Plan did not explicitly model geothermal heat pumps and networks, it highlights the technology as one option for mitigating winter peaks and providing reliability and flexibility services in a future with higher electricity loads. The Report notes:

Ground-source systems have higher initial cost [compared to air-source heat pumps] due to the added cost of installing piping in the ground for heat exchange, but have higher efficiency,

¹ <https://www.maine.gov/energy/sites/maine.gov/energy/files/2025-01/Maine%20Pathways%20to%202040%20Analysis%20and%20Insights.pdf>



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especially at extreme outside temperatures, because ground temperature changes little throughout the year. This greater efficiency is particularly valuable in extreme cold conditions, where air-source heat pumps become less efficient and require more power, creating high winter peak electric demands. Ground-source heat pumps can help to mitigate the demand peaks that air-source heat pumps cause in cold weather, and thus can reduce the need for additional electric infrastructure and costs.

The fact that ground-source heat pumps were not explicitly modeled here does not imply that these may not be a useful technology, at least in some instances. This may be particularly true if advances in drilling technology reduce the initial cost premium, improving the economics relative to air-source heat pumps. Maine's low building density may make networked geothermal impractical in most of the state, although it does suggest that standalone ground-source heat pumps may be able to avoid some problems encountered in more densely populated regions, where small lots and densely packed buildings can make it challenging to install a ground loop.

As noted, it can be more difficult to find an adequate site or evaluate site feasibility for a geothermal system than other heating sources as geothermal resources and underground geologic conditions must be explored. These evaluations can add to development costs. In other states, pilot projects that replace existing natural gas networks have also been deployed. Limited procurement and permitting experience, as well as limited public awareness and understanding of geothermal could also create challenges or delay project development.

Given these existing challenges, GEO agrees that more study is likely necessary to advance the feasibility and markets for geothermal systems in Maine in strategic locations. This committee recently expressed interest in exploring geothermal in unanimously supporting L.D. 300 which includes a study of geothermal power generation or space heating and cooling systems. L.D. 300 directs the GEO to submit a report to the EUT Committee in January of 2027 and allows for a bill to be reported out at that time. Given the similarities in these two proposals, the committee may wish to wait for the L.D. 300 study and report out an additional bill on this topic at that time or the sponsor may wish to write a letter to the GEO with additional recommendations for areas of focus in conducting the L.D. 300 study. If the committee moves forward with this bill as drafted, GEO would recommend extending the due date for the report.

Thank you for your consideration.

Caroline Colan, Legislative Liaison
Governor's Energy Office