



September 4, 2025

Before the Washington Utilities and Transportation Commission  
RE: Northwest Natural Gas Company d/b/a NW Natural's Vancouver Thermal Energy Pilot  
Project  
Docket UG-250458

To Jeff Killip, Executive Director and Secretary.

HEET is pleased to file these comments with the Utilities and Transportation Commission ("Commission") in support of NW Natural's (NWN) Vancouver Thermal Energy Pilot Project.

HEET is a thermal energy innovation hub with a mission to evolve the energy system to meet the needs of the future. We are a 501(c)3 non-profit based in Boston, Massachusetts, and are globally-recognized experts on Thermal Energy Networks (TENs), having created the Gas to Geo Pathway using this technology in 2017. Our work led to the nation's first gas utility-owned TEN in Framingham, Massachusetts, built by Eversource Gas. HEET's research team has been funded by the Commonwealth of Massachusetts to collaborate with Eversource throughout the project and collect data with the aim of maximizing learnings from this groundbreaking project to better inform pilot projects such as the one proposed by NWN.

HEET is impressed by the care and rigor of NWN's Pilot proposal. NWN's decision to develop a pilot project that serves Vancouver City Hall demonstrates a keen awareness of the importance of community engagement in the success of TENs projects. Vancouver City Hall's participation will help to assure community members and developers that the project has the backing of city officials and a path to implementation, and that the technology works - particularly given City Hall's current reliance on geothermal heat pump technology.

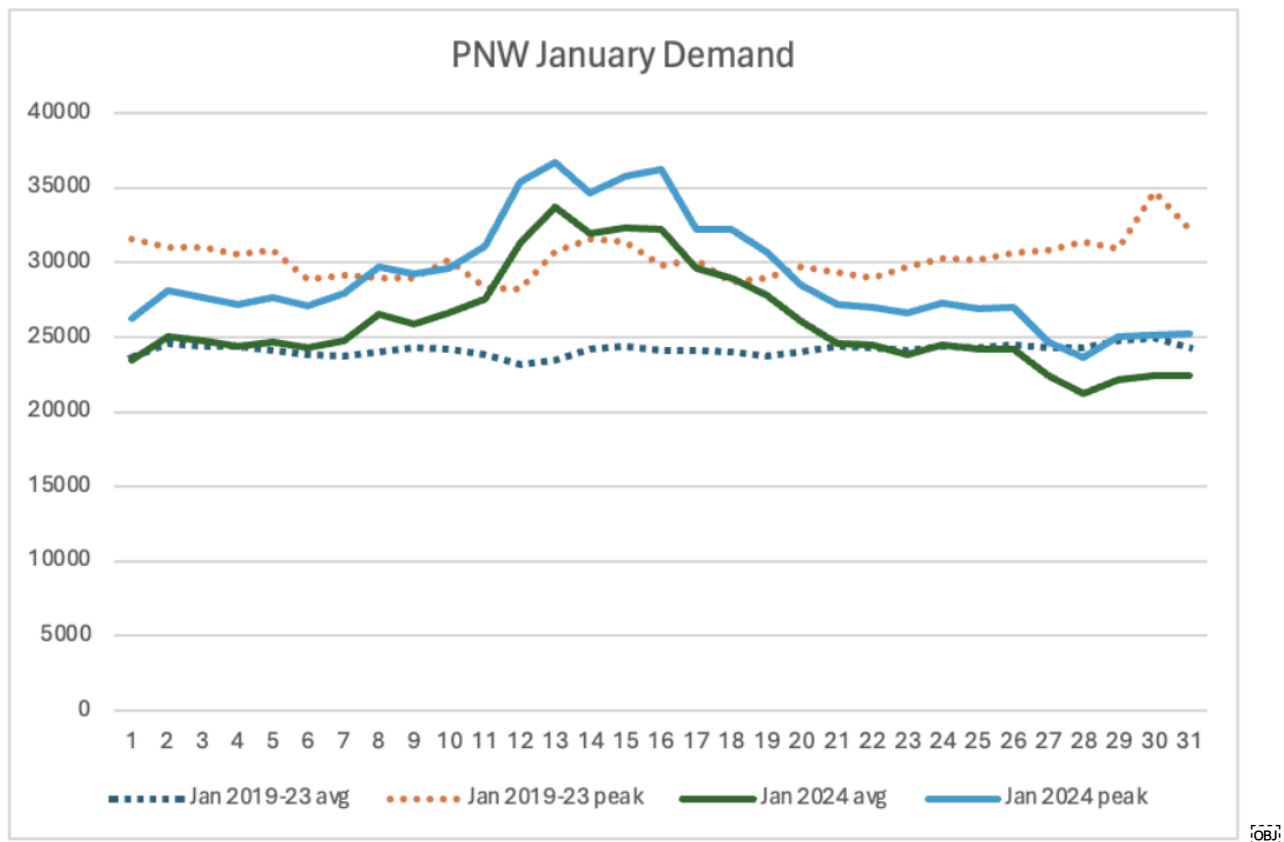
HEET recommends that the Commission support this proposal, and makes the following suggestions on *grid benefits and rate design, public data sharing, and labor provisions*.

#### Inclusion of Grid Benefits in Commission Decision-making

A key area of emerging interest in TENs nationally, given rising concern with increasing grid demands, is the quantification and monetization of grid impacts from geothermal and thermal energy networks. HEET wishes to highlight to the Commission this potential economic benefit and cost savings of the proposed Pilot. The estimate of grid benefits and potential avoided electrical infrastructure costs described in paragraph 44 of the filing could help inform cost allocation and the design of customer rates, as well as future expansions of this network.

The Vancouver Pilot system is designed to deliver a Coefficient of Performance of 6, which would establish a new benchmark for efficient, clean heating and cooling in Washington. System efficiency is critical both for its ability to offer affordable heating and cooling to residents, and also because of

system benefits to the electrical grid. In the Pacific Northwest, winter peak electric demand has increased in recent years, due in large part to colder temperatures. This winter peak will continue to climb as Vancouver residents continue to electrify their heating. Research, including by HEET's Executive Director Zeyneb Magavi, shows how the unparalleled efficiency of TENs reduces winter peaks, reducing the need for costly new generation resources and T&D infrastructure.<sup>1</sup>



Source: US EIA Grid Monitor

NWN's filing proposes sharing energy consumption and power demand data with Clark Public Utilities (CPU), in order to understand "how these energy and capacity benefits might translate into an incentive structure to support the pilot" (paragraph 44). HEET strongly supports this proposal, and recommends that the data sharing discussed below be amplified by inclusion of grid impacts. Sharing such impact data between utilities will support Integrated Energy Planning as more customers electrify end uses and electric utilities confront the need for infrastructural upgrades to mitigate grid constraints. It is also of note that TENs have the potential to serve as Demand Response tools.

Finally, we wish to acknowledge that in the current state of this rising industry, designing customer rates for TENs pilots is challenging for a number of reasons. First, designing rates around a pilot can lock in the relatively higher costs of initial projects, which do not benefit from learning curves, or the declining

<sup>1</sup> Buonocore, J.J., Salimifard, P., Magavi, Z. et al. Inefficient Building Electrification Will Require Massive Buildout of Renewable Energy and Seasonal Energy Storage. Sci Rep 12, 11931 (2022). <https://doi.org/10.1038/s41598-022-15628-2>



marginal cost of TENs at greater scale. Additionally, cost-effective metering approaches for customer billing is not yet an established norm but an area of development. For this reason, we recommend that pilot TENs rates should be simple and ensure pilot participants are not disadvantaged relative to neighbors using other forms of heating and cooling. TENs infrastructure is typically highly durable, with the lifespan of geothermal heat pumps approximately twice that of air source heat pumps, and the network pipe infrastructure expected to have a lifespan of well over 50 years. This allows cost recovery through rates to be spread out over a long timeframe to manage pilot customer rates while utilities learn, share these learnings, and thus bring this technology to scale in the most cost-effective way for ratepayers.

#### Public Data Sharing

HEET recommends the Commission require all TENs pilots participate in the public TENs database that HEET has built in collaboration with NREL and other members of the LeGUp research team. This open-access database is hosted in perpetuity at Harvard's Dataverse and is intended to provide decision makers, designers, and others the opportunity for rapid learning and optimization of design and deployment. The database recently launched with the recent completion of the first gas utility project in Framingham, Massachusetts.

Participation by NWN in this national data sharing effort will maximize the public value of the project by allowing this pilot to inform the design of future TENs, including potential expansions of this pilot. This recommendation builds upon NWN's stated intention to "to support shared learning and system-wide scalability of thermal energy networks" (paragraph 45 of the filing).

In addition to serving customers with highly efficient heating and cooling, a key component of the value of TENs pilots is the design, operations, and cost data they produce. Geothermal heat pumps are a proven technology, as indicated by Vancouver City Hall's reliance on the technology. However, networking geothermal heat pumps together is a relatively recent design innovation that is both proven to work and does not have established design best practices. In this "Demonstration Phase" of utility TENs scaling, project engineers are learning how to optimize systems for cost and efficiency through key project design choices including pipe diameter, pump speed, and design temperature window.

By requiring transparent reporting of basic TENs design and operation parameters, the Commission will foster cost-transparency, enable the optimal use of diverse thermal resources, and encourage interconnection between TENs. Empirical design data from the Vancouver Pilot and other projects will improve future projects both in Washington and beyond, delivering value to ratepayers beyond the customers served by this pilot project. For this reason, Maryland's Working for Accessible Renewable Maryland Thermal Heat (WARMTH) Act legislatively requires that TENs pilots share key design data through HEET's database, though in other states it is directed by regulators.

It is important to note that HEET's database does not violate any utility or commission customer privacy and infrastructure security concerns and carefully requires only basic system-level data. We therefore encourage the Commission to maximize the value of this Vancouver Pilot to ratepayers by requiring that

it share the core data set established in this database, joining the growing number of TENS pilots whose data is committed to driving innovation and increasing efficiency.

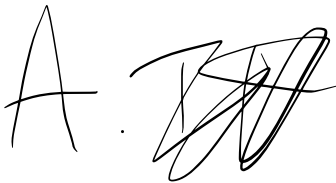
#### Workforce Considerations

Observing many projects and states in the pilot or demonstration phase of a thermal network, HEET recommends that the Commission support NWN in identifying opportunities for both training and/or deploying its existing utility workforce as well as any gaps or challenges in the existing geothermal workforce. One emerging and critical aspect of scaling this technology nationally is thoughtful workforce planning. This is a consideration that is very much locality specific as well as project specific, though documenting and sharing these learnings is relevant for all. The Vancouver Pilot is an open loop design, which may offer key learnings as many other projects nationally are closed loop designs.

#### Conclusion

HEET reiterates its support for NWN's Vancouver Pilot Project, and looks forward to engaging as needed in this docket as this Project moves forward towards implementation. We welcome any supplementary questions or requests for technical support from the Commission.

Signed,

A handwritten signature in black ink, consisting of a large capital 'A' followed by a stylized, cursive name that appears to be 'Iliff'.

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