BEFORE THE

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of NORTHWEST NATURAL GAS COMPANY DBA NW NATURAL Vancouver Thermal Energy Pilot Project	 DOCKET NO. UG-250458 PETITION

I. INTRODUCTION

1 Pursuant to RCW 80.28.450 and 80.28.460, Northwest Natural Gas Company ("NW Natural" or the "Company") petitions the Washington Utilities and Transportation Commission (the "Commission") for an order acknowledging the Company's proposed thermal energy network ("TEN") pilot project in Vancouver, Washington. Specifically, NW Natural is "submit[ing] the project for review and validation of costs assessments to the [C]omission per RCW 80.28.450.

2 Pursuant to RCW 80.28.470(2), NW Natural is also petitioning the Commission to use an alternative process from what is specified in RCW 80.28.470(1) to estimate the cost to deploy a thermal energy network pilot project. Specifically, NW Natural is petitioning the Commission to use its current estimate, based on schematic design, as permitted by RCW 80.28.470(2). NW Natural proposes that this estimate be used by the Department of Commerce to calculate any potential grant award under RCW 43.31.033(4). This process is an alternative to RCW 80.28.470(1), which would appear to require NW Natural to first fully design the project and complete a request-for-proposals to finalize construction costs. The RCW

80.28.470(1) process creates additional risk, expense and an elongated time horizon, making it a much more difficult pathway to pursuing and completing a TENs pilot project.

3 Finally, NW Natural is seeking to use the alternative process as specified in RCW 80.28.470(2) in order to facilitate an open dialogue about this project. NW Natural understands that Department of Commerce grant funding available for all TENs pilot projects has been reduced from $25 million to $4.8 million since the time the Company began seriously pursuing this project. This reduction is a material change that will affect the amount that utility customers must pay for TENs pilot projects. Although NW Natural is not seeking cost recovery in this proceeding, it nonetheless views this filing as a way to begin discussions of how TENs development should proceed in light of these funding cuts. The Company would like to facilitate an open dialogue between itself, the Commission, and any other interested entities about the benefits, costs, and trade-offs of the project, knowing that the all-in costs will likely be higher than originally anticipated as a result of the limited grant funding available. NW Natural understands that the Commission has previously acknowledged that the Company as complied with the notification requirements in accordance with RCW 80.28.460(2), giving NW Natural priority to develop the TEN pilot project, but this acknowledgement did not discuss or evaluate the merits of the project. NW Natural looks forward to substantive discussions regarding the project, which will fully meet the heating and cooling needs for a mix of residential, commercial, and office space in downtown Vancouver and, if successful, can be expanded to other buildings.

4 In support of this Petition, NW Natural states as follows:

II. NAME OF PETITIONER

5 NW Natural is in the business of furnishing natural gas service within the State of Washington as a public service company and is subject to the regulatory authority of the Commission as to its rates, service, facilities, and practices. Its full name and mailing address for the purposes of this proceeding are:

> Northwest Natural Gas Company
> c/o Zachary Kravitz
> Vice President of Regulatory Affairs and Resource Planning
> 250 SW Taylor Street
> Portland, OR 97204-3038

6 The name and address of the Company's attorney for purposes of this proceeding are:

> Ryan Sigurdson
> Regulatory Attorney (WSBA #39733)
> 250 SW Taylor Street
> Portland, OR 97204-3038

III. SUPPORT FOR PETITION

A. Legal Authority

7 In 2024, the Washington legislature passed House Bill 2131 ("HB 2131") (codified as RCW 80.28.450-480; RCW 43.31.033). HB 2131 permits natural gas utilities, such as NW Natural, to construct TENs to meet the heating and cooling needs of their customers. As stated above, however, prior to constructing such a network, NW Natural must "submit the project for review and validation of costs assessments to the [C]ommission."[1] As part of its review, the Commission must consider a number of factors concerning the project, such as being able to fully meet the space heating of customers served by the TEN, as well as other policy and societal objectives, in addition to a number of factors that the Commission may consider.[2]

[1] RCW 80.28.450.
[2] RCW 80.28.460.

Importantly, as stated above, this Petition is not seeking cost recovery of NW Natural's TEN pilot project. Instead, per RCW 80.28.450, NW Natural will seek to recover "the costs of building and operating the project from ratepayers in a rate case filing before the [C]ommission" after seeking the Commission's approval in this proceeding.

8 HB 2131 also makes TEN pilot projects eligible for grants from the Department of Commerce to offset the cost of the TEN.[3] The maximum amount of this grant "the difference between the gas company's lowest reasonable cost resources under its current business practices and the costs of building and operating the thermal energy network pilot project," as determined by the Commission.[4] In deciding to award a grant, the Department of Commerce must consider the information that NW Natural provides in this Petition, as well as the Commission's "findings and conclusions . . . regarding the pilot project."[5] NW Natural has provided a copy of this Petition to the Department of Commerce.

B. Background

9 NW Natural has been tracking the progress of TENs since the first utility-operated TEN began development outside of Boston in 2021. By actively learning from this project, as well as other TEN projects proposed by various utilities since that time, NW Natural began development of its own pilot project that meets the swift timelines outlined in HB 2131. Specifically, NW Natural has learned that focusing on new construction for an initial pilot—as opposed to retrofitting existing buildings—is faster and easier to complete. Second, NW Natural learned the importance of having a local community champion that can help pull the pilot project

[3] RCW 43.31.033.
[4] *Id.*
[5] *Id.*

forward. Finally, NW Natural learned that load diversity is key to optimizing thermal energy assets.

10 Applying these learnings to the TENs development in its service territory, NW Natural selected a new construction site where the TEN will supply 100 percent of the heating and cooling plus domestic hot water to three new buildings planned for construction in Vancouver's Waterfront Gateway district, as well as the existing Vancouver City Hall. The TEN design is based on the developer site plan as of March 2025. Vancouver's existing City Hall, located across from Building 1, consists of 124,000 square feet of office space. Building 1, located on Esther Street and Phil Arnold Way, is currently planned to provide approximately 185 units of market-rate housing and 16,000 square feet of retail space. Building 2, located on the southwest corner of Esther and 6th Streets, is currently planned to provide approximately 155 units of market-rate housing and 8,800 square feet of retail space. Building 4,[6] located across the street from Building 1 and adjacent to Building 2, was originally planned as office space as depicted in Figure 1 below but is currently planned as an additional 90 units of market-rate housing and 4,000 square feet of retail space. Building construction is expected to begin in late 2026. The total conditioned square footage is expected to be approximately 430,000.

11 Because the new buildings are still in the planning stage and have not yet been permitted, NW Natural recognizes the actual building sizes and use may change. Any such changes will be incorporated into the next stage of TEN design work but will not fundamentally change the network. Figure 1, below, shows a map of the project area.

[6] Building 3, to the far west side of the development, was originally in scope as affordable housing, but was on a separate track with its own developer, architect and funding and was further in development than the TEN pilot could accommodate; therefore, Building 3 is not in scope for this pilot.

Figure 1

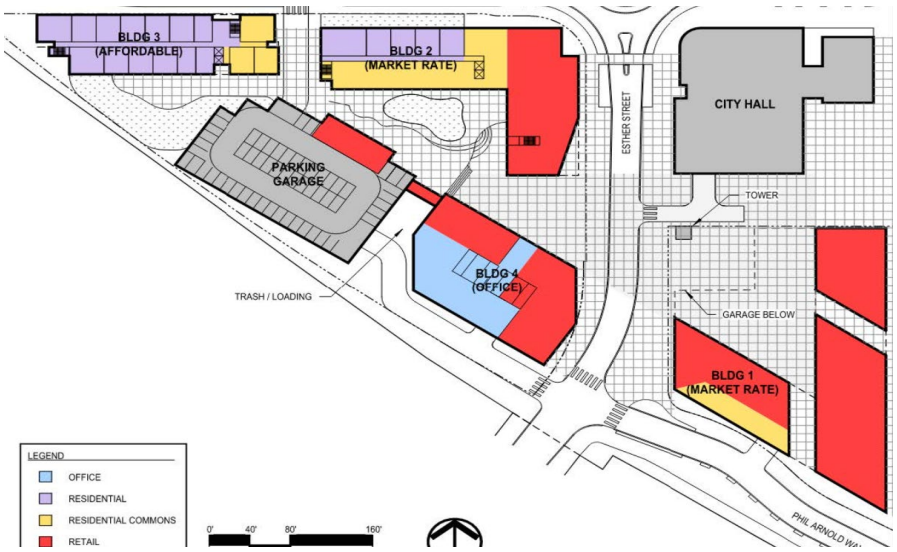

Figure 1: Waterfront Gateway site map

12 NW Natural selected this project for five reasons. First, based on its learnings from other TENs projects across the country, NW Natural decided to focus on new construction. With new construction, there are fewer decisionmakers (i.e., a handful of developers can decide to install TENs in their new residential housing, as opposed to existing construction where that decision must be made by a multitude of individual property owners). Given the accelerated timeframe of HB 2131, where TENs are scheduled to be placed in service prior to December 5, 2026, reducing the number of decisionmakers can speed up the project and allow us to connect more customers than if we focused on retrofitting existing construction.

13 Second, new construction provides the cost and construction efficiency of utilizing trenches already open for other utilities rather than digging up paved streets.

14 Third, as stated above, NW Natural also learned from other utilities that have successfully completed a TEN that a community champion is critical to the success of any TENs project. In this regard, NW Natural is very appreciative to the City of Vancouver, who reached out to

the Company upon passage of HB 2131, eager to partner with NW Natural to develop TENs in the city. With the City, NW Natural explored multiple sites but ultimately chose this project due to the load diversity, development timeline, and nature of building use.[7]

15 Fourth, the Vancouver TENs pilot project allows for increased efficiency as a result of thermal energy load diversity, which is another important learning that the Company has incorporated from other TENs projects across the country. The proposed NW Natural pilot project includes multi-family residential buildings, City Hall, and commercial space. With these buildings connected to the TEN, load sharing occurs when there are simultaneous heating and cooling loads. The heat pumps in heating mode extract heat from the ambient temperature loop ("ATL") while the heat pumps in cooling mode reject heat to the ATL. The rejected heat is balanced by the extracted heat such that the thermal energy sources do not need to meet the entire thermal energy demand.

16 Fifth, due to the public nature of this development, specifically the plaza and adjacent farmers' market in downtown Vancouver, there is ample opportunity to educate and engage the public via active and passive methods regarding the TEN development and its superior energy efficiency and energy optimization compared to alternatives.

C. Statutory Criteria that the Commission Must Consider

RCW 80.28.460(2) – Intention to Deploy a Pilot Project

17 Per RCW 80.28.460(2)(a), NW Natural has already received priority to develop a TEN pilot in downtown Vancouver. The Company plans to deploy this project within 30 months of June

[7] Other sites assessed faced the following limitations: one site was too far along in design to pause for development of a TEN design, one was not far enough along for the Company to meet the timeline dictated in HB 2131, and one site lacked load diversity and would primarily be used only during business hours and would, therefore, sub-optimize thermal assets.

6, 2024 (December 5, 2026) in order to maintain this priority, but will seek extensions as appropriate and necessary.

RCW 80.28.460(3)(a) -- The number and type of customers served, including the percent of low-income customers served.

18 While this development will target occupants seeking market-rate housing, the site was selected for its ability to connect a diverse, high-density mix of customers within a compact, infrastructure-ready footprint. The pilot will deliver thermal service to an estimated 430 new market-rate multifamily units, 36,800 square feet of retail commercial space, and Vancouver's City Hall. These buildings, located within a couple of city blocks, represent a cross-section of residential, commercial, and public-sector customers, enabling the pilot to test and refine a scalable service model across multiple customer classes.

19 To support both near-term delivery and long-term growth, NW Natural will implement what it has named the Street Loop system. This design was chosen after detailed evaluation of three total design options due to its balanced construction profile, streamlined integration within the public right-of-way, and, critically, its positioning for future customer expansion. The Street Loop will be installed in a configuration that allows new buildings to connect over time, unlocking a broader impact beyond the initial pilot footprint.

20 As explained above, Building 3, which is currently planned to be affordable housing, was originally planned to be served by the TEN pilot, it was on a separate track with its own developer and was further in development than the TEN pilot could accommodate. However, NW Natural's project team has identified logical future expansion targets to occur after completion of the pilot, including Esther Short Commons, a nearby affordable housing complex operated by the Vancouver Housing Authority. Built in 2004, Esther Short Commons

would greatly benefit from the energy savings such a TEN connection would provide and may be able to receive government funding to retrofit the complex to be compatible with a TEN connection. Other potential future network extension connections include civic buildings, condominiums, and small business office options in downtown, future mixed-use development sites, and a senior housing facility could further expand the pilot's long-term public value and benefit disadvantaged and historically underserved community members.

21 By concentrating service among a densely clustered customer base and building in future growth capacity, NW Natural will establish a flexible, high-impact model that can be expanded in the future.

22 Figure 2, below, shows the design of the Street Loop that will serve the TENs pilot project.

Figure 2

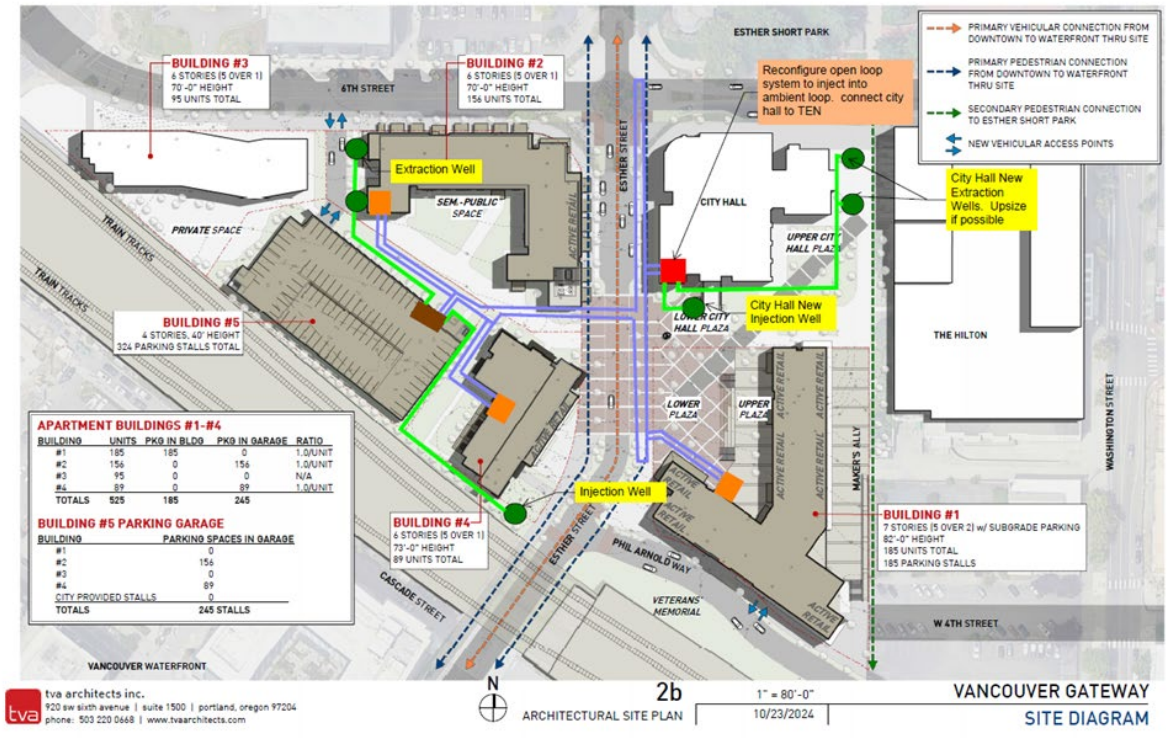

Figure 2 2: Street Loop TEN Design

RCW 80.28.460(3)(b) -- The use of the existing natural gas workforce and other labor considerations, such as efforts to transition the natural gas workforce to thermal energy work, training, recruiting, job creation and retention, payment of prevailing wages, and state-registered apprenticeship utilization.

23 NW Natural has a long-standing commitment to a collaborative and transparent relationship with its union partners. With over half of its workforce unionized for nearly a century, the Company maintains a strong partnership with its union partners, built on mutual respect and shared goals. NW Natural recognizes the union as a key stakeholder in cultivating a workplace where employees feel valued, supported, and empowered. This commitment is reflected in its collective bargaining agreement, which ensures fair wages, competitive benefits, and a safe, inclusive work environment.

24 NW Natural will use the pilot as an opportunity to evaluate how its existing utility workforce can support the delivery of thermal energy systems. As part of this effort, the Company will assess the potential to leverage internal personnel, in partnership with labor, including construction technicians, pipeline maintenance crews, and customer operations staff, to support pilot operations and maintenance.

25 To guide this evaluation, NW Natural will analyze and identify where existing capabilities align with the technical requirements of ambient loop systems and ground-source heat pump technologies. This analysis will also help pinpoint retraining and upskilling opportunities in geothermal system operation, loop maintenance, and system controls.

26 Prior to completion of the pilot project, NW Natural will assess the extent to which operations and maintenance could be delivered by internal staff or through contract services. This assessment will inform future workforce planning and labor engagement. Once the staffing

model is finalized and the broader scope of the workforce needs are defined, NW Natural may pursue formal support from workforce development partners and seek alignment on such items as prevailing wage and jurisdictional scopes of work.

27 Looking ahead, NW Natural will use the pilot to inform potential future workforce development strategies that support utility-led thermal infrastructure at scale. This may include exploring partnerships with technical colleges, trade schools, and/or workforce development organizations. The Company will evaluate outreach strategies to connect with historically underrepresented workers, such as through community-based organizations in Clark County, as it considers expansion into nearby disadvantaged census tracts, consistent with the Washington Environmental Health Disparities Map.

28 This pilot will serve as a platform for designing a replicable, equity-driven utility workforce model that honors NW Natural's workforce commitments while preparing for increasing decarbonization measures in the future.

RCW 80.28.460(3)(c) -- The ability to maintain infrastructure safety and reliability.

29 NW Natural will maintain high standards of infrastructure safety and reliability through engineered design features, operational oversight, and integration with existing utility-wide safety systems. The TEN pilot will be monitored and controlled through a centralized Supervisory Control and Data Acquisition ("SCADA") platform, enabling real-time control, monitoring, and metering of the ambient temperature loop (ATL), open loop wells, and energy transfer station ("ETS") system. Redundant assets will be incorporated into the system to ensure uninterrupted service in the event of equipment failure.

30 Each building's ETS will be equipped with safety measures, including valves that can isolate the ATL from each building. System maintenance protocols will be adapted from NW Natural's utility-standard operations and maintenance procedures to ensure consistent performance and regulatory compliance. The ambient loop will be filled with water and treated with corrosion inhibitors and biocides. Air separators and automatic feed stations will maintain system pressure and prevent cavitation, which is critical for ensuring long-term reliability and system health.

31 Pump station enclosures are under evaluation, with both above-grade and below-grade options under consideration. Regardless of final placement, the infrastructure will be subject to NW Natural's enterprise-wide physical and cybersecurity protocols, including adherence to Transportation Security Administration (TSA) Pipeline Security Guidelines. All buried piping will be installed with tracer wire and location tape to support long-term asset tracking and prevent excavation damage. The high-density polyethylene (HDPE) piping selected for the system carries a 50-year warranty.

32 In addition, NW Natural will leverage internal safety systems and initiatives, including its Journey to Zero Safety Initiative (focused on reducing workplace injuries), the Pipeline Safety Management System (a voluntary safety framework that exceeds regulatory standards), and the Enterprise Safety Management and Reporting System (used to log field observations and track hazards in real time).

33 The metrics NW Natural intends to track safety and reliability:

1. Number of workforce safety incidents
2. TENs system up-time
3. Cause of TEN shutdowns (planned/unplanned)

4. Duration of shutdowns (planned/unplanned)

RCW 80.28.460(3)(d) -- The ability to meet 100 percent of the pilot project customers' demand for space heating.

34 NW Natural has designed the TEN to meet 100 percent of the space heating demand for all connected buildings, including residential units, commercial tenants, and Vancouver City Hall. Each building will be equipped with a distributed heat pump system calibrated to meet peak winter heating conditions as defined through energy modeling during the design phase.

35 Year-round heating capacity will be achieved through geothermal resource sizing and loop flow design, without the inclusion of thermal energy storage ("TES"). TES is not included in the design because the open-loop geothermal system, supported by a high-yield aquifer, is capable of directly meeting peak capacity demands. Additionally, since the majority of electrical load in the system comes from in-unit heat pumps on the customer side, utility-side TES would not enable meaningful load shifting or generate cost or operational benefits. As a result, TES would increase capital cost without delivering corresponding value to the system.

36 By maintaining ownership of the thermal energy assets, NW Natural will apply its utility-standard operations and maintenance protocols to ensure consistent year-round performance. NW Natural's experience in maintaining such infrastructure, combined with dual-pump redundancy, SCADA-monitored controls, and the high-capacity geothermal resource will enable the TEN system to deliver uninterrupted space heating across seasonal and peak load conditions.

RCW 80.28.460(3)(e) -- Whether the pilot project creates benefits to customers, communities, and society at large including, but not limited to, public health benefits such as improved air quality in areas with disproportionate environmental or public health burdens and disadvantaged communities as identified by the environmental health disparities map described in RCW 43.70.815, and increased affordability of thermal energy options;

Equity Benefits Per the WA Environmental Health Disparities Map

37 The Vancouver TENs pilot project is designed not only to deliver high-efficiency, non-combustion heating and cooling, but also to generate benefits that extend beyond individual customers to the broader community. While the initial buildings to be served are market-rate residential and commercial properties, the project is sited within census tract 042400, an area that scores among the most impacted in the state across all metrics of the Washington Environmental Health Disparities Map. This includes scores of 10 out of 10 for overall environmental health disparities and health disparities, and 9 out of 10 for diesel pollution and disproportionate impact, social vulnerability, and lead exposure risk. Locating the state's first utility-led thermal energy network in such a high-need area reflects NW Natural's commitment to equitable infrastructure investment and ensures that the pilot aligns with Washington's climate justice objectives.

Public Health Benefits, Specifically Emissions Reductions

38 Compared to all-electric air source heat pumps that these new buildings would likely use due to current Washington building codes, the project represents a replicable model for reducing system-wide emissions. Based on modeling by Salas O'Brien, the TEN configuration is expected to achieve a 36 percent reduction in greenhouse gas emissions compared to a fully

electric business-as-usual scenario which already included a ground source heat pump system serving City Hall.[8]

Affordability Programs and Propose Customer Affordability Strategies

39 Although the initial buildings served by the pilot are market-rate, NW Natural is actively working to ensure that the TEN customers will not pay more for thermal service under the TEN model than they would under a standard business-as-usual scenario using code-compliant electric equipment for both heating and cooling.

40 While final rates and incentives will depend on several outstanding variables, including final equipment cost inputs and grant award size, NW Natural's intent is to develop a rate that is cost-competitive with baseline equipment, ensuring that early adopters of this clean thermal infrastructure do not face cost burdens relative to standard practice.

41 As part of future exploration, NW Natural may evaluate the viability of options such as:

- Partnering with local housing agencies to pre-screen public housing eligibility for future TEN nodes or rate tiers,
- Offering income-qualified bill discounts or enrollment support in partnership with community-based organizations,
- Structuring future rates to support energy-burdened customers, should subsequent phases include connections to affordable housing or community-serving facilities.

[8] NW Natural notes that calculating a specific amount of greenhouse gas reductions depends on the emissions factor used and that stakeholders can disagree about what this factor should be (i.e., the emissions intensity of the incremental electric generation to serve additional load). To hopefully avoid such disagreements in this filing, NW Natural has presented a relative reduction of 36 percent in greenhouse gas emissions that is not dependent on a certain emissions factor.

Anchoring Broader Community Benefits in NW Natural's Existing Programs and Partnerships

42 NW Natural will leverage its existing community engagement infrastructure to guide future community benefit strategies related to the TEN pilot. This includes engagement with NW Natural's Community and Equity Advisory Group ("CEAG") and Community Affairs Manager (CAM) team during project implementation, utilizing them as existing forums for meaningful participation by community stakeholders in future decisions about expansion, workforce development, and public benefit.

43 These structures provide a strong foundation for integrating equity and community perspectives into long-term thermal energy planning. As part of the broader community value proposition, NW Natural will also draw upon:

- Its track record of philanthropic support, with over 380 nonprofits served, and deep partnerships with workforce equity organizations such as Constructing Hope and the Urban League;
- Internal programs that support career pathway development for underrepresented workers, which can be adapted to support a new class of clean energy and thermal infrastructure jobs;
- The positioning of this pilot as a bridge between NW Natural's equity commitments and Washington's climate justice mandates, even if the first phase does not directly serve equity-prioritized customers.

This engagement will support NW Natural's goal of ensuring that the TEN pilot not only delivers clean energy to its initial customers, but also sets the stage for equitable, community-centered expansion in future phases.

RCW 80.28.460(3)(f) -- Coordination with any electric utility providing electrical service to areas served by the pilot project;

44 NW Natural initiated discussions with Clark Public Utilities ("CPU"), the local electric utility, to explore how the Vancouver TENs pilot project could deliver measurable electric load and capacity savings. These conversations focused on helping CPU evaluate the pilot's potential to reduce peak electricity demand and overall system usage, particularly by using highly efficient ground-source heat pumps that displace less efficient electric alternatives. The TEN design results in meaningful grid savings and NW Natural and CPU are now assessing how these energy and capacity benefits might translate into an incentive structure to support the pilot. This collaboration reflects the type of joint planning between gas and electric utilities encouraged by Washington State House Bill 1514, which promotes coordinated investment and resource optimization across utility systems. While the pilot is not designed as a grid-responsive resource in the traditional demand response sense, it is expected to provide consistent peak load reduction that aligns with CPU's broader goals of improving grid efficiency and affordability. As part of this project, NW Natural will continue to coordinate with CPU by sharing key TEN technical system, energy consumption, and power demand data that can inform CPU's grid system planning, reliability, and peak demand reduction efforts. CPU has provided a letter of support for the Vancouver TENs pilot project, included in Attachment 1.

45 In parallel, NW Natural is actively coordinating with peer natural gas utilities across Washington to support shared learning and system-wide scalability of thermal energy networks. Lessons from the Vancouver TENs pilot will be disseminated through structured engagement with our peer utilities.

RCW 80.28.460(3)(g) -- Whether the pilot project furthers the climate justice mandates of chapter 70A.02 RCW and the emissions reduction mandates of chapter 70A.45 RCW;

46 The Vancouver TEN pilot supports the climate justice mandates of RCW 70A.02 and the emissions reduction goals of RCW 70A.45 by investing in non-combustion thermal infrastructure that is located on-site in an area with high environmental health disparities. As stated above, the project site, located in census tract 042400, scores a 10 out of 10 in overall Environmental Health Disparities on the Washington Environmental Health Disparities Map. It also ranks 9 out of 10 in diesel pollution and disproportionate impact, 9 out of 10 in social vulnerability, 9 out of 10 in lead exposure risk, and 10 out of 10 in health disparities. These indicators confirm the community's disproportionate exposure to environmental burdens and health risks, positioning the pilot to deliver meaningful, place-based emissions benefits.

47 Although the pilot will initially serve market-rate buildings, the ambient loop has been designed to accommodate future expansion to nearby affordable housing and public-serving facilities as explained above. NW Natural will use equity screening tools, including the RCW 70A.02 criteria and Environmental Health Disparities Map, to inform future decisions on node siting, community partnerships, and workforce engagement.

48 NW Natural already maintains a strong foundation in equitable workforce practices and will leverage these efforts in support of the TEN pilot project. The Company partners with community-based organizations such as the Urban League, Women in Trades, Constructing Hope, and Incight to attract candidates from historically underrepresented populations. These partnerships include hosting job fairs, posting job openings on targeted hiring platforms, avoiding exclusionary language, and continuously refining hiring processes to minimize bias.

NW Natural's Communications team amplifies these efforts through social media outreach to broaden engagement.

49 NW Natural also operates two pre-apprenticeship internship programs, one for Construction and one for Customer Field Service, that provide year-long, paid on-the-job training for diverse candidates. These programs prepare participants for full-time employment with the company and include structured advancement and mentorship. Building on these initiatives, NW Natural's Organizational Effectiveness team supports a range of belonging-focused programs, including Employee Resource Groups (ERGs) and mentoring. Together, these existing initiatives will be leveraged to support inclusive workforce engagement as the TEN pilot advances.

50 To align with State requirements for procedural justice, NW Natural intends to implement community engagement strategies that center meaningful participation by overburdened and vulnerable populations. Engagement activities will be shaped by best practices described in RCW 70A.02.050, which outlines standards for equitable communication and inclusive decision-making. NW Natural will also leverage its CEAG to convene structured meetings and share project updates, ensuring transparency and accountability as the pilot progresses.

51 Regarding the emissions reduction goals of RCW 70A.45, emissions modeling conducted by Salas O'Brien estimates that the TEN pilot will achieve a 36 percent reduction in Scope 2 greenhouse gas emissions relative to a fully electric air-source heat pump ("ASHP") scenario as explained above. Even though the comparison excludes natural gas, it nonetheless demonstrates the significant emissions reduction potential of the TEN model, especially considering that City Hall already has a ground source heat pump. These findings reinforce

the pilot's role as a replicable decarbonization strategy that can contribute to the state's long-term emissions reduction targets.

RCW 80.28.460(3)(h) -- Whether the pilot project advances financial and technical approaches to equitable and affordable building electrification

52 The Vancouver TEN pilot will advance affordable building decarbonization by introducing a centralized, utility-managed thermal energy system that leverages a shared ambient loop and a centralized open-loop geothermal energy source. While each building, and each unit, will maintain its own HVAC equipment, the system design avoids reliance on less efficient, standalone ASHPs. This configuration will reduce total system energy consumption, improve overall efficiency, and enable more elegant mechanical system design compared to conventional approaches. More importantly, by offering a scalable model for efficient, decarbonized building operations in new developments, the TEN pilot provides a replicable pathway to support financially and technically viable decarbonization.

53 The TEN system is designed to achieve a maximum coefficient of performance (COP) of approximately 6.0, which significantly outperforms conventional ASHPs. This higher performance translates into greater system-level energy efficiency. By replacing distributed electric resistance or ASHP systems with centralized infrastructure, the system can also reduce total electric demand and reduce the cost of electrical infrastructure directly serving each new building. Because NW Natural will own and maintain the thermal infrastructure, building owners can reduce their investment and management of the system compared to individual HVAC systems, further reducing financial burdens. Combined with grant-funded capital costs

and a system-wide cost recovery approach, this model offers a clean, affordable solution for decarbonization that aligns with Washington's climate and equity goals.

54 As a utility-led initiative, the pilot will benefit from centralized ownership, planning, and administration, setting it apart from developer- or customer-owned systems. NW Natural's approach will enable coordinated long-term infrastructure planning, transparent rate setting, and future access to utility-administered incentives. By distributing infrastructure and operational costs across a broader customer base, the utility model further mitigates financial risks for individual property owners and tenants while ensuring professional, consistent service delivery. These advantages position the TEN as an equitable platform for future decarbonization efforts.

55 While the initial pilot will serve market-rate mixed-use buildings, NW Natural has accounted for future expansion to community-serving facilities, including affordable housing, and other civic buildings. The ambient loop layout and system capacity have been designed to accommodate these connections in later phases, helping advance broader equity goals.

56 In parallel, the pilot will generate insights to inform future cost allocation and rate design strategies. NW Natural will assess usage data and cost recovery mechanisms with an eye toward energy efficiency incentives and affordability pathways for income-qualified customers in future expansion areas. Rate development and equity considerations will be guided by pilot results and ongoing coordination with regulatory agencies.

57 Ultimately, the Vancouver TENs pilot project is slated to demonstrate how centralized thermal energy infrastructure can support efforts to overcome technical, financial, and logistical barriers to decarbonization in dense, mixed-use contexts. NW Natural intends to share lessons

learned with peer utilities, local sustainability offices, the Commission, and the Department of Commerce to support broader decarbonization efforts statewide.

RCW 80.28.460(3)(i) -- Whether the pilot project will develop information useful for the commission's adoption of rules governing thermal energy networks

58 NW Natural will publish a public-facing final report and include a dedicated Technology and Knowledge Transfer (TKT) task to document lessons learned throughout the pilot. These deliverables will be designed to generate actionable insights for Commission rulemaking process on utility-led thermal energy networks.

59 To support this, NW Natural will conduct structured consultations with key stakeholders, such as the Commission, Department of Commerce, labor representatives, technical experts, and community partners, at major project milestones. These check-ins will be used to review project activities, gather feedback, and identify rulemaking-relevant takeaways in areas such as: rate design and customer billing transparency; interconnection practices and safety protocols; labor and workforce development alignment; and community engagement strategies. This approach will allow for meaningful stakeholder input and knowledge sharing, and it will enable NW Natural to align pilot findings with future regulatory design efforts across the state.

60 Further, NW Natural is proposing a number of metrics intended to help NW Natural monitor the performance of the TEN pilot project and better understand how to operate and maintain future TEN projects. Proposed metrics are focused on measuring technical performance, safety and reliability performance, financial performance, customer experience, and societal impacts. The information gathered through these metrics is expected to aid the commission in adopting rules governing thermal energy networks. See Attachment 2 for proposed metrics.

RCW 80.28.460(3)(j) -- Enrollment in an electric utility demand response program;

61 NW Natural has been in close coordination with CPU; at this time, there is not a demand response program offered by the local utility but as that changes, NW Natural will help facilitate enrollment of the TENs customers.

RCW 80.28.460(3)(k) -- The potential to enable gas pipeline decommissioning and its potential to supplant the need for gas pipeline replacement and the need to spend on gas pipeline replacement programs.

62 Although the TEN will primarily serve new construction that will not require conventional natural gas service for space heating or domestic water heating, the project represents a meaningful opportunity to explore how utility-owned thermal energy networks can be planned and deployed as alternatives to traditional natural gas service. Through this project, NW Natural will generate lessons about utility coordination, infrastructure scoping, and long-term planning that could inform approaches to expanding TENs in the future.

RCW 80.28.460(3)(l) -- Whether the thermal energy network is a distributed system that uses ambient temperature fluid and high-efficiency heat pump equipment in each building in the network.

63 The TEN pilot is designed as a distributed ambient loop system. Based on the preferred Street Loop design, the ATL will consist of a closed loop buried pipe system circulating water with a small amount of chemical treatment that inhibits corrosion and bacteria growth.

64 The thermal energy network will circulate ambient temperature fluid through a central ambient temperature loop, driven by a primary pump station that distributes energy throughout the network to heat pumps located within each building. Each building connected to the loop will

be equipped with a dedicated energy transfer station (ETS), which includes circulation pumps and a heat exchanger that pulls geothermal fluid from the ATL to deliver energy to the building. As the heat pumps within each building extract heat from or reject heat to the ATL, the ATL will balance needed energy flow to satisfy each heat pump's needs.

65 The ATL will be designed to operate within a moderate temperature range and serve as a shared thermal reservoir, allowing buildings to either extract or reject heat depending on their individual heating and cooling needs.

66 Each building connected to the TEN is intended to use decentralized, high-efficiency GSHPs, specifically:

- GSHPs will be installed at the building level, downstream of each ETS.
- Each ETS will transfer thermal energy from the ATL to the building's internal distribution loop, which will then supply thermal energy to the GSHPs.
- The ATL supply water temperature differential from one energy source to the next energy source shall not be more than 10°F at design conditions. This design limit ensures consistent operational efficiency for all heat pumps connected to the system while allowing sufficient margin for capacity and flow control across the network.

This decentralized GSHP architecture will ensure that the TEN system is modular and demand-responsive, allowing each building to independently control indoor temperatures without relying on centralized delivery of conditioned air or hot/chilled water.

D. Statutory Criteria that the Commission May Consider

RCW 80.28.460(4)(a) -- Greenhouse gas emissions reductions;

67 As stated above, the TEN pilot is projected to achieve a 36 percent reduction in carbon emissions compared to a business-as-usual (BAU) scenario using conventional fully electric heating systems.

RCW 80.28.460(4)((b) -- The use of waste heat, ground-source heat, geothermal resources, or other nonfossil fuel and noncombustion sources, and the use of electric heat pumps;

68 The pilot project will rely primarily on an open-loop geothermal well field as its source of thermal energy. Through a centralized ambient temperature loop, geothermal energy will be circulated between connected buildings, where distributed ground-source heat pumps located in each building will extract or reject heat based on individual load conditions. The system will be fully electric. No backup will be required to meet end-use needs under the current system design.

RCW 80.28.460(4)(c) -- The ability to provide the pilot project customers' hot water demands.

69 Domestic hot water ("DHW") for all connected buildings will be supplied through building-level heat pump water heaters connected to the ambient temperature loop. The system has been sized to account for DHW demand based on occupancy type and usage estimates developed during the modeling phase. This design ensures year-round delivery of 100 percent of DHW needs without reliance on gas or electric resistance heating.

RCW 80.28.460(4)(d) -- The ability to provide the pilot project customers' cooling demand.

70 Cooling for all connected buildings will be delivered through the same systems used for heating. These systems are capable of extracting heat from indoor spaces and rejecting it to

the ambient loop. The loop is designed to maintain thermal balance and accommodate concurrent heating and cooling demands across a diverse mix of building types. System modeling has included detailed cooling load calculations based on expected summer temperatures, building envelope performance, and internal heat gains.

RCW 80.28.460(4)(e) -- The consideration of options to provide thermal energy storage.

71 TES is not included in the design because the open-loop geothermal system, supported by a high-yield aquifer, is capable of directly meeting peak capacity demands. Additionally, since the majority of electrical load in the system comes from in-unit heat pumps on the customer side, utility-side TES would not enable meaningful load shifting or generate cost or operational benefits. As a result, TES would increase capital cost without delivering corresponding value to the system.

72 A dedicated backup heating system is not required for the initial pilot due to the system's built-in redundancies and the reliability of the thermal resource. The design includes dual-pump redundancy (N+1) and thermal load balancing across buildings and ETS units. These features, coupled with the consistent production capacity of the open-loop geothermal source, will allow the system to meet heating needs without additional backup. Backup power may be considered in future system expansions, but it is not included in the scope of this pilot due to the expected reliability of the current configuration.

RCW 80.28.460(6) – Performance Metrics

73 See Attachment 2, as well as our explanation above regarding how we satisfy the requirements of RCW 80.28.460(3)(i).

RCW 80.28.470 – The Cost of the Project

74 Pursuant to RCW 80.28.470(2), NW Natural is petitioning the Commission to use an alternative process from what is specified in RCW 80.28.470(1) to estimate the cost to deploy a thermal energy network pilot project. RCW 80.28.470(1) appears to require NW Natural to first fully design the project and then submit a request-for-proposals to finalize construction costs. RCW 80.28.470(2), however, permits NW Natural to petition the Commission to use an alternative process. Specifically, NW Natural is petitioning the Commission to use its current design estimate to move forward with the project that is based on the schematic design of the Vancouver TENs pilot project provided by Salas O'Brien. As mentioned above, NW Natural contracted with Salas O'Brien to provide the schematic design of a TEN to support the Vancouver TENs pilot project. Salas O'Brien has extensive experience designing TEN projects across North America. Please see Attachment 3, Basis of Design Report and Confidential Attachment 4, the Energy Report. Both of these reports were completed by Salas O'Brien as part of our design work for the project.

75 The team of NW Natural, City of Vancouver and the developer of the new buildings that will be served by the project—Lincoln Property Company—met at least semi-weekly from December 2024 through June 2025 to understand the site's thermal needs, limitations, feasibility of various loop options and available thermal resources. This resulted in a schematic design supported by all entities and serves as the basis for the detailed cost estimates provided by JLD Cost Consulting. NW Natural has included this cost estimate as Confidential Attachment 5.

76 Schematic design represents approximately 30 percent design completeness. NW Natural decided to use 30 percent design as an alternative to the process contemplated in RCW

80.28.470(1) for four reasons. First, it gives NW Natural the opportunity to share the project with the Commission and interested entities for discussion at a much earlier stage than would otherwise be possible if the Company had waited until design was complete. By doing so, NW Natural is seeking to have open dialogue about TENs projects, especially in light of reduced funding available for Department of Commerce grants to offset the cost of the project. NW Natural understands that the $25 million originally envisioned for such grants statewide is now $4.8 million. This reduction in funding is a material change that will almost certainly increase costs to utility customers, although NW Natural notes that utility scale geothermal tax credits remain available despite recent changes to federal tax law. NW Natural currently anticipates that this tax credit will be available for this project.

77 Second, it would cost approximately $440,000 to develop the final design in addition to approximately $230,000 that NW Natural has already spent on the project. Although NW Natural is committed to the TENs project, the Company and our customers should not incur additional costs in developing the project without some assurance of Commission support, especially given the substantial reduction in state grants that are available for these pilot projects. NW Natural understands that the Commission's approval of cost recovery is not guaranteed even if the Commission grants NW Natural's petitions in this filing. However, under HB 2131 the Commission has considerable discretion to approve or reject a TENs pilot project with no clear legal standard to apply to such projects. Given this considerable uncertainty, the Company is seeking some initial discussions and feedback that it should continue to invest in this project.

78 Third, 30 percent design completeness allows NW Natural to move faster than it otherwise could in constructing the Vancouver TENs pilot project. If NW Natural had to wait until design

was complete and a request-for-proposals conducted, then the Company would have to pause the project and wait for Commission approval, even though all the necessary steps have been taken to begin construction. This delay may mean not meeting the December 2026 deadline set by the bill. On the other hand, the 30 percent design completeness is a natural point to pause and consider if the Company should continue to pursue project. In short, a company, even if it was not Commission-jurisdictional, would likely pause the project at this point and consider whether it should go forward.

79 Finally, NW Natural serves a relatively small number of customers in the state, making this pilot project a major investment in its Washington service territory. As such, the Company is seeking input from the Commission as soon as practicable on this TENs pilot project, especially due to cuts in the amount of grant finding available from the Department of Commerce, increasing the cost of the project to the Company's customers.

80 The 30 percent design includes cost contingencies to provide a conservative (worst case) estimate. The amount of these cost contingencies will be reduced over time as NW Natural moves towards 100 percent design. Figure 3 below reflects a high-level cost summary; a detailed estimate is available in Confidential Attachment 5.

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Figure 3

TEN Component	Schematic Design cost estimate
Open Loop	[redacted]
Pump house and ETS	[redacted]
Vault	[redacted]
Heat pumps	[redacted]
SCADA Control System	[redacted]
Contingency	[redacted]
Insurance	[redacted]
Taxes/Fees	[redacted]
Other (Indirect, Misc. Electrical, , etc.)	[redacted]
Total	**$12,800,000**

NW Natural notes that the cost of the heat pumps are not included in the estimate prepared by our consultant, but are necessary for the project. The Company estimated the cost of the heat pumps based on a similar project by the building developer, Lincoln Property Company. Also, the cost, above, does not reflect the benefits of the utility-scale geothermal tax credit or any energy efficiency credits that may be available through CPU. NW Natural, however, is pursuing these avenues to lower the overall cost of the project.

81 RCW 80.28.470(1) also requires NW Natural to compare the cost of the TENs pilot project to the "lowest reasonable cost alternative resource for heating services under the gas company's

current business practices." NW Natural is not seeking an alternative process for this calculation. Instead, it estimates the cost of extending gas service to these buildings in downtown Vancouver to be approximately $38,000.

82 If the Commissions approves the alternative process to estimate the cost of the Vancouver TENs pilot project, NW Natural will complete design work and issue a Request for Proposals for TEN construction based on construction documents and the final drawings and specifications.

IV. CONCLUSION

83 NW Natural appreciates the work of the Commission, Staff, and interested parties for their work to date on TENs. In support of the project, NW Natural has secured letters of support from the City of Vancouver, Clark Public Utilities, and Lincoln Property Company. These letters of support are attached to this filing as Attachment 1. In accordance with RCW 80.28.450, RCW 80.28.460 RCW, 80.28.470(2), NW Natural respectfully requests that the Commission review and validate the costs assessments of its Vancouver TENs pilot project, including the alternative process used to develop this cost estimate.

Dated this 29th day of July 2025.

Respectfully Submitted,

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