1000 Maine Avenue, SW| Suite 700 | Washington, DC 20024 | www.washingtongas.com

COMMITTEE: EDUCATION, ENERGY, AND THE ENVIRONMENT

TESTIMONY ON: SB 570 PUBLIC UTILITIES – THERMAL ENERGY NETWORK SYSTEMS – AUTHORIZATION AND ESTABLISHMENT (WORKING FOR ACCESSIBLE RENEWABLE MARYLAND THERMAL HEAT (WARMTH) ACT)

POSITION: NEUTRAL

HEARING DATE: FEBRUARY 29, 2024

Washington Gas respectfully submits this neutral testimony on **Senate Bill 570 – Public Utilities – Thermal Energy Network Systems – Authorization and Establishment (Working for Accessible Renewable Maryland Thermal Heat (WARMTH) Act)**

Washington Gas ("the Company") provides safe, reliable natural gas service to more than 1.2 million customers in Maryland, Virginia, and the District of Columbia. Washington Gas has been providing energy to residential, commercial, government, and industrial customers for more than 175 years, and currently serves more than 500,000 Maryland customers in Montgomery, Prince George's, Charles, St. Mary's, Frederick, and Calvert Counties. Gas employs over 400 people within Maryland, including contractors, plumbers, union workers, and other skilled tradespeople. We strive to improve the quality of life in our communities by maintaining a diverse workforce, working with suppliers that represent and reflect the communities we serve, and giving back through our charitable contributions and employee volunteer activities.

Background

The Company appreciates the opportunity to inform legislation concerning the development of Thermal Energy Network Systems ("TENS") pilots in Maryland through the Working for Accessible Renewable Maryland Thermal Heat Act ("SB 570"). TENS involve harnessing the low-grade geothermal resource indirectly - in combination with a heat pump - to provide heating and cooling to a building. Temperatures at about 30 feet below the surface remain relatively constant year-round—between about 50°F (10°C) and 59°F (15°C). For most areas in the United States, this means soil temperatures are usually warmer than the air in winter and cooler than the air in summer.[1] Ground-source heat pumps ("GSHP") are a type of heat pump that use this constant ground temperature of the earth as the heat exchange medium, instead of the outside air temperature.[2] According to the EPA, geothermal heat pumps can reduce energy consumption --

[1] Department of Energy – Geothermal Technologies Office. Geothermal Heat Pumps
[2] Department of Energy. Geothermal Heat Pumps

and corresponding emissions -- up to 44% compared with air-source heat pumps ("ASHPs") and up to 72% compared with electric resistance heating with standard air-conditioning equipment.[3] TENS entail multiple GSHPs sharing a common system of interconnected looped pipes carrying constant temperature water to and from the premise, and geothermal boreholes deployed at a street segment scale. The idea is that these can be interconnected with additional underground pipe systems and scaled over time to serve entire neighborhoods, municipalities, or territories – much akin to how today's utility networks operate.[4]

Legislation and regulatory proceedings similar to SB 570 encouraging gas utilities to implement TENS pilots have been passed in several states; Massachusetts gas utilities are leading in the development of these pilots. Both Eversource and National Grid have begun construction on TENS and expect to have a pilot program up and running by the fall of 2024.[5] [6] Other states, including Minnesota[7] and New York[8], have passed legislation promoting networked geothermal and utilities in those states have pilot proposals under review for approval with their respective Commissions.

Interest in using thermal energy to heat and cool homes is growing because of the substantial limitations and drawbacks arising from all-electric households and appliances, especially related to the overall impacts on the electric grid required to support electrification. US DOE's Oak Ridge National Lab recently stated the impact of widespread GHP deployment include:[9]

1. Net reduction in annual electricity consumption and greenhouse gas (GHG) emissions
2. Reduced need for annual power generation
3. Reduced need for power generation capacity and storage capacity
4. Alleviating transmission build-out requirements
5. Reduced summer and winter resource adequacy requirement

Washington Gas is an innovative company and is supportive of leveraging its unique talent and expertise to provide alternative energy sources and believes the deployment of this technology has the potential to offer several benefits to its Maryland customers. Washington Gas would be among the first gas-only utilities to deploy TENS with its customer base. However, the Company has concerns with specific provisions in SB 570 and has offered several amendments, included at the end of this document. The Company is taking a neutral stance on SB 570 and is optimistic that a fair and equitable TENS pilot program can be developed in Maryland.

Avoided Costs

Unlike ASHPs, TENS do not burden an increasingly constrained electric grid and help to avoid the high costs otherwise needed to upgrade the State's electricity generation, transmission, and

[3] Department of Energy – Benefits of Geothermal Heat Pump Systems
[4] Home Energy Efficiency Team (HEET). Networked Geothermal: System Components & Benefits (2023).
[5] Eversource. Geothermal Pilot Project in Framingham (Jan. 2024).
[6] National Grid. Networked Geothermal Program (Nov. 2023).
[7] Minesota. Natural Gas Innovation Act (2021).
[8] New York. Senate Bill S9422 (2022).
[9] Department of Energy – Oak Ridge National Lab Grid Cost and Total Emissions Reductions Through Mass Deployment of Geothermal Heat Pumps for Building Heating and Cooling Electrification in the United States (November 2023)

distribution system to serve new electric heating loads. In particular, the State's electric grid is projected to switch to become "winter-peaking" (instead of summer-peaking) in the case of high ASHP adoption.[10] A winter system peak is driven largely by the use of electric heating during the coldest hours of the year, often when renewable energy is not outputting to the grid. TENS can alleviate stress on the grid during this new peak, lowering the amount of electricity generation, transmission, and distribution capacity needed to accommodate the winter peak. SB 570 does not explain which mechanisms the State may use to fairly compensate gas customers or incentivize the use of such systems in the interest of avoiding these significant grid upgrade costs, nor does it specify whether gas customers will be compensated at all. For reference, in November 2023, Con Edison in New York proposed to its regulators that network costs for its thermal energy network pilots should be recovered from both its electric and gas customer classes, in order to minimize overall rate impacts and avoid cross-subsidization, due to anticipated reductions in electricity usage and overall electric infrastructure needed to serve the avoided incremental load.[11]

Customer Choice

If SB 570 is passed, the Company is open to partnering with customers that are interested in participating in an initial TENS pilot. However, the legislation does not examine what may happen to customers that choose to opt-out of a TENS pilot. Customer choice must be paramount when piloting relatively unproven technologies. Some customers may not wish to participate in a pilot and may prefer to continue using natural gas. The Company's customer base continues to grow in Maryland, and Marylanders continue to express interest in new natural gas connections. There is a natural hesitancy for customers to bring new energy sources and appliances into their homes and SB 570 offers no guarantee that they will be provided the same comfort and reliability as their prior configurations, or whether they will be able to revert to their original appliances if the pilot is unsuccessful. In Massachusetts, Eversource Energy's TENS pilot program, which is the furthest along of any such pilot in the country, had a customer participation rate of ~80% and guaranteed that participants can continue using natural gas for their stoves, water heaters, and clothes dryers for the pilot's duration and may return to their original equipment and gas service afterwards.[12] Using networked ground-source thermal energy to heat and cool homes is a nascent technology and customers that may be unsure about the pilot should be assured that they will not be forced to convert their appliances if they do not want to; this will encourage participation and help to facilitate buy-in from local communities.

Requirements for TENS Pilot Proposals

The Company has not done a full evaluation of the requirements laid out in SB 570, but it is clear that the 80% LMI threshold and requirement for a pilot system to be at the "end of the gas system"

[10] Maryland Public Service Commission. PSC Electrification Study Scenario Shows Moderate Growth in Electricity Demand, Significant Gas Demand Reduction (Dec. 29, 2023).

[11] Con Edison. Case 22-M-0429, Proceeding to Implement the Utility Thermal Energy Network and Jobs Act. STAGE 1 FILING – FINAL UTEN PROJECT PROPOSALS (November 30, 2023). *"As proposed in the January UTEN Proposal, the Company proposes to recover costs from electric customers through the Monthly Adjustment Clause for Company customers and through a surcharge for New York Power Authority customers…The rate impact for the pilots and UTENs will, in the longer term, be lower when recovered across the larger electric rate base than the gas rate base and paired with the offsetting impact of increased electricity usage."*

[12] Eversource. Geothermal Pilot Reference Guide

within the legislation will meaningfully restrict the segments of the gas network for which the initial pilots may be proposed. While LMI customers can benefit from a TENS pilot, the Company is concerned about energy affordability and the long-term financial sustainability of these systems. Proponents point out that GSHPs have no variable fuel costs but, as seen in Massachusetts, pilot-scale TENS have high upfront costs, costing between $70,000-$100,000 per participating customer.[13] [14] In Massachusetts, much of this cost is shouldered by a mix of state and federal funding sources, as well as surcharges assessed on non-participating customers. This model is not sustainable if the costs of future systems do not fall with scale, potentially straining the State's budget and, by proxy, the State's taxpayers in the short-term, and burdening participating customers and the utility in the long-term. The LMI requirements in SB 570 would mean that, in the case of financial unsustainability, these costs would be placed on select neighborhoods with the highest energy burdens.

Additionally, the requirements would not maximize the effectiveness of the pilot. The purpose of a pilot is to explore the benefits and physical operations of a TENS, and in order to productively do that the pilot must be able to include a diverse customer base, including multiple building types and sizes (e.g., single-family homes, multi-family, commercial, mixed-use, etc.). Eversource's pilot is designed to serve a neighborhood with several different types of buildings, including residential homes, a community college, and the local fire department, for a total of five (5) commercial buildings and 32 residential buildings that previously received delivered fuels (heating oil or propane) or natural gas services.[15] Maryland should take a similar approach to fully understand what the potential benefits and drawbacks are of a TENS pilot. This approach is consistent with the bill's goal to facilitate the proposal of TENS pilots in communities that express interest in participating, including those that do not meet the unnecessarily stringent and contradictory LMI requirements.[16] It is important for emerging technologies, such as TENS, to be accessible and applicable for a broad range of customers. While the economics and operational feasibility of TENS remains unproven and require real-life evaluation in Maryland, the State should refrain from preemptively limiting the scope of customer participation during this evaluation period.

Cost Recovery

A TENS pilot by a gas-only utility is unprecedented in Maryland, and while the concept is promising, it needs to be squared with existing and proven utility regulatory processes and financial structures. SB 570 does not consider what may happen to both the utility and its participating customers if the pilot system is not made permanent. Cost recovery for the utility and

[13] National Grid. Geothermal District Energy Demonstration Program (Dec. 15, 2021). The Massachusetts DPU approved a budget not to exceed $15.6 million. The National Grid pilot intends to serve 150-200 customers, and therefore has a cost to customer ratio of $78,000 - $104,000.

[14] Eversource Energy. General Increase in Base Distribution Rates for Gas Service and a Performance Based Ratemaking Mechanism (Oct. 30, 2020) The Massachusetts DPU approved Eversource's proposed geothermal demonstration project scenario 2 with a budget of $10,261,606 and a customer count of 140, making the cost to customer ratio $73,297.19.

[15] Eversource. Geothermal Pilot Reference Guide

[16] On page 8 of SB 570 it states, "A municipal corporation, county, or community organization may submit neighborhoods to gas companies for consideration as part of a pilot system."

protections for the customers must be guaranteed to ensure no parties are burdened by the undeniably high costs associated with testing this concept on behalf of the State.

Jobs and Workforce Alignment

TENS require drilling boreholes and laying pipe in the rights-of-way and operating a shared utility network. These are all skills and competencies held by today's gas utilities and their workforces, who will be critical to enabling clean energy in Maryland. The Company's expertise in these areas should be leveraged to evaluate and implement TENS.

Decision Whether to Make Pilot Systems Permanent

SB 570 limits the parties whom the Public Service Commission must consult on whether a TENS should be made permanent at the end of the pilot period to the Maryland Energy Administration ("MEA") and Maryland Office of People's Counsel ("OPC"). The gas utility operating the TENS pilot and the participating customers will also have important perspectives on the benefits and drawbacks of the TENS concept and must be involved in the process of determining if a pilot is made permanent. This should be codified in SB 570.

Conclusion

At Washington Gas, our core values are safety, collaboration, integrity, inclusion, and learning. The Company is committed to working with stakeholders to help achieve Maryland's GHG emission reduction targets. There is a role for existing and future technology innovation to support diverse pathways to decarbonizing Maryland. and the State can leverage existing infrastructure to preserve affordability, reliability, safety, and security of service. The Company is advocating for TENS pilots to be explored in a responsible way to benefit the State's energy customers and ecosystem.

Washington Gas agrees that networked geothermal energy systems could ultimately be both beneficial and promising for customers, although questions and challenges remain. We look forward to working with the Committee if the legislation moves forward. Washington Gas respectfully requests the attached amendments be considered and included in SB 570. Thank you for your consideration of this information.

Contact:
Manny Geraldo, State Government Relations and Public Policy Manager
M 202.924.4511 | manuel.geraldo@washgas.com

ADDENDUM: PROPOSED AMENDMENTS

Amendment 1 – Definition of public interest

Context:

TENS pilots should be explored for those areas where they can provide the greatest net benefit to the public. Approving projects that do not meet this threshold would not be in the best interest of Maryland's ratepayers.

WGL Position:

"Public interest", in the context of 7-1002 (C)(2): "if the Commission determines that a proposal is in the public interest, the Commission shall approve the proposal", should be defined to mean that the projected benefits of the pilot will outweigh the projected costs, calculated by using the same test that the Commission must use to determine the projected costs and benefits of the projects proposed for inclusion.

Proposed Amendment:

WGL proposes the following section be amended as shown by red text:

> Insert a new definition 7-1001(K) that states: A pilot system is in the "public interest" if the net benefits are greater than the net costs using the cost test described under 7-1002 (C)(3)(I).
> Note: the existing 7-1001 (K) will become 7-1001 (L)

Amendment 2 – Allowing "pilot system" to include any area of Maryland

Context:

About 1 in 10 Maryland households use heating oil, propane, or kerosene for heating,[17] fuels which are commonly delivered via truck to homes that are not connected to the State's gas system. The absence of gas infrastructure should not disqualify customers from having access to TENS, nor should it disqualify utilities from developing TENS pilots in areas that are well suited to the technology.

WGL Position:

The current definition of "Pilot System" includes " ... to Replace Gas Infrastructure with a Thermal Energy Network System", implying that the only pilots that can be proposed are in areas currently served by natural gas. Gas companies should be able to offer pilot systems in other areas, such as those currently served by electric resistance heating, fuel oil and propane, allowing for greater GHG reductions and potential cost reductions to end-users.

Proposed Amendment:

WGL proposes the following section be amended as shown:

> 7-1001 (I) should read: "Pilot System" means a pilot thermal energy network system developed by a gas company ~~to replace gas infrastructure with a thermal energy network system~~.

[17] EIA. Maryland State Energy Profile. December 21, 2023

Amendment 3 – Key dates for pilot program

Context:

TENS are a relatively new technology that are currently not offered by the State's electric, gas, or water utilities. The State's utilities should be given sufficient time to properly assess, design, and develop TENS pilots, including engaging external consultants, to ensure pilots best serve the public interest.

WGL Position:

Key pilot program dates should be delayed in order to provide sufficient time for utility planning.

Proposed Amendment:

WGL proposes the following section be amended as shown by red text:

7-1002 (A)(1) should read: On or before July 1, 2025 ~~October 1, 2024~~, each gas company shall:

7-1002 (B)(1) should read: On or before March 31, 2026 ~~July 1, 2025~~, each gas company…

7-1002 (C)(1) should read: On or before September 1, 2026 ~~December 31, 2025~~, the Commission may approve, approve with modifications, or reject a proposal.

7-1002 (F)(3) should read: Funding under this Subsection may be provided only before January 1, 2027 ~~October 1, 2025~~

Amendment 4 – Minimum number of low- and moderate-income (LMI) customers and related requirements for pilot system proposals

Context:

It is important for LMI households to be able to reap the benefits of novel energy technologies such as TENS. It is also important for novel energy technologies such as TENS to remain accessible and maximize benefits to all customers in Maryland.

WGL Position:

The requirement for all pilot proposals to serve at least 80% LMI customers should be removed and instead require that at least one (1) pilot proposal from each gas utility must serve at least 40% LMI customers. Gas utilities should not be required to propose any additional pilots, but any additional pilot proposals will not have an LMI requirement and gas utilities may propose any number of additional pilots. This would allow utilities to propose pilots for geographic areas and customers that considering other factors.

Proposed Amendment:

WGL proposes the following section be amended as shown by red text:

7-1002 (B)(1) should read: On or before March 31, 2026 ~~July 1, 2025~~, each gas company shall submit ~~either~~ at least one ~~or two~~ proposal ~~proposals~~ for a pilot system to the Commission for approval.

7-1002 (B)(2) should read: ~~A~~ At least one proposal for a pilot system from the gas companies shall ensure that at least 40 ~~80~~% of its customers are from low- or moderate-income housing.

Amendment 5 – Customer solution retaining gas service

Context:

Eversource Energy (MA) has stated that customers participating in their networked geothermal pilot program, which is the furthest along of any networked geothermal pilot in the country, are able to continue using natural gas for stoves, water heaters, and clothes dryers.[18]

WGL Position:

Customers who opt out before a pilot system is built should be able to choose to keep their existing gas appliances. This would make the pilot program less risky for natural gas utilities and their customers and grant more freedom to the participating neighborhood by ensuring gas can still be delivered to the buildings for gas-powered appliances if customers choose.

Proposed Amendment:

WGL proposes the following section be amended as shown by red text:

Insert a new section 7-1002 (B)(3)(I) that states: Customers that choose to opt out of a pilot system before the proposal for the pilot system is submitted may choose to retain any and all existing natural gas appliances, at their choice.

Amendment 6 – Focus pilots on appropriate areas of gas system

Context:

Defining what qualifies as the ”end of the gas system” is nuanced, and keeping this requirement may unduly limit the areas of their networks for which gas utilities can propose cost-effective and beneficial projects.

WGL Position:

The requirement for the proposal to address neighborhoods at the end point of the gas system should be removed. Removing this language allows for other types of customers to be considered for a TENS pilot, including commercial buildings.

Proposed Amendment:

WGL proposes the following section be removed:

[18] Eversource. Geothermal Pilot Reference Guide “We don’t intend to touch any hot water systems, gas stoves or gas dryers.”

Remove 7-1002 (B)(6)(IX): Neighborhoods at the end point of a gas system where a full transition from gas systems to electrification could be facilitated within the pilot period or within 5 years after the pilot period concludes;

Note: All subsequent numerals in 7-1002 (B)(6) should be renumbered.

Amendment 7 – Commission approval of pilot systems

Context:

Utilities have to know they will receive direction from the Commission in the form of rejection or approval with or without modifications by a certain date.

WGL Position:

It should be clarified that the Commission must issue a decision with regards to pilot proposals. This will ensure that gas utilities get a decision from the Commission on their proposed pilots by December 1, 2025.

Proposed Amendment:

WGL proposes the following section be amended as shown by red text:

7-1002 (C)(1) should read: On or before September 1, 2026 ~~December 31, 2025~~, the Commission must ~~may~~ approve, approve with modifications, or reject a proposal.

Amendment 8 – Decision to make pilot systems permanent

Context:

As currently constructed, the bill limits those who should advise the Commission on whether a pilot system should be made permanent at the end of the pilot period to the Maryland Energy Administration ("MEA") and Maryland Office of People's Counsel ("OPC"). . This arrangement should be expanded to explicitly require inputs from the utilities who will own and operate the TENS pilots and the participating customers that take service under these pilots.

WGL Position:

The gas utility that owns a TENS pilot and customer that owns the connected heat pump should be involved in determining whether a pilot system should be made permanent. The current arrangement ignores the expertise that gas utilities will gain operating and maintaining TENS, which should factor into decisions concerning the long-term viability of specific projects. Similarly, participating customers who will be reliant on the systems for heating and cooling should they be made permanent must be given the opportunity to comment on whether the technology is acceptable for meeting their future energy needs.

Proposed Amendment:

WGL proposes the following section be amended as shown by red text:

7-1002 (D)(2)(I) should read: Once the 2-year period under paragraph (1) of this subsection has passed, the Commission, in consultation with the Administration, ~~and~~ the Office of People's Counsel, the electric company, gas company, or water company that

owns and manages the pilot system, and the participating customers, shall determine whether to make the pilot system permanent. This decision should include utility monitoring metrics on efficiency, cost and robust customer satisfaction determinants over the course of at least three heating and cooling seasons to determine levels of success and next steps. Recovery for these activities will be included in the recovery mechanism.

Amendment 9 – Cost recovery for non-permanent systems

Context:

A prudent plan for a pilot system includes a description of the procedure that must be followed if a pilot project is not made permanent. The utilities and their customers must be protected in this scenario.

WGL Position:

The bill should contain language stating that the gas utility will be able to recover all costs associated with decommissioning the pilot system in an accelerated fashion if it is determined that the pilot system will not be made permanent. This would allow gas utilities to recover all costs associated with a TENS pilot if a given pilot system is not made permanent. For example, costs related to system decommissioning.

Proposed Amendment:

WGL proposes the following section be amended as shown by red text:

Insert a new section 7-1002 (D)(2)(III) that states: If a pilot system is not made permanent, as described under subparagraph (I) of this paragraph, the Commission shall approve recovery of all costs necessary for a gas company to comply with this decision

Amendment 10 – Customer access to program funding

Context:

The bill draws on EmPOWER and other funding sources to finance home electrification and energy efficiency upgrades. Financing like-for-like gas appliance replacements or upgrades and weatherization upgrades will allow an ‘apples-to-apples’ analysis of energy savings and costs with modern equipment.

WGL Position:

Weatherization and appliance replacement funding should be able to be given to customers who choose to opt out of a TENS pilot. It should also finance like-for-like gas appliance replacements or upgrades and weatherization upgrades that can deliver energy efficiency and emissions savings to customers who choose to opt out of pilot projects.

Proposed Amendment:

WGL proposes the following section be amended as shown by red text:

Insert a new section 7-1003 (A)(2) that states: The Administration shall ensure that customers in a given neighborhood that opt out of a pilot system and choose to retain their gas service have access to funding sources and energy savings measures described in 7-1003 (A)(1).

Note: The existing 7-1003 (A)(2) will become 7-1003 (A)(3), and the existing 7-1003 (A)(4) will become 7-1003 (A)(5).

Amendment 11 – Cost recovery for proposal development

Context:

Allowing utilities to recover necessary costs associated with proposal development will incentivize them to propose new pilot systems.

WGL Position:

The requirement that the costs incurred from developing a proposal must be "reasonable and in the public interest" as determined by the Commission should be removed and instead account for the expected costs as described in this bill. The requirement for carrying costs to be appropriate as determined by the Commission should be removed. This more fully aligns the gas utility with its costs.

Proposed Amendment:

WGL proposes the following section be amended as shown by red text:

7-1002 (G)(3) should read "the Commission shall approve a request under paragraph (1) of this subsection on finding that the proposed plan and costs are necessary to meet and respond to the requirements outlined in this section. ~~are reasonable and in the public interest~~."

7-1002 (G)(4) should read "At a gas company's next rate case proceeding following the approval of a request under this subsection, the Commission shall authorize recovery of prudently incurred costs associated with developing the proposal and any carrying costs ~~that the Commission determines are appropriate~~."