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Committee: Economic Matters
Testimony on: HB 0397, “Public Utilities – Thermal Energy Network Systems – Authorization and Establishment (Working for Accessible Renewable Maryland Thermal Heat (WARMTH) Act)”
Position: Support
Hearing Date: February 22, 2024

The Maryland Chapter of the Sierra Club urges a favorable report for HB 0397. The pilot projects proposed under the WARMTH Act will test an innovative approach to meeting Maryland’s climate goals for buildings.

This bill calls for each investor-owned gas utility (including Baltimore Gas and Electric, Washington Gas, Columbia Gas, and five smaller gas utilities) to propose one or two thermal energy network system (TENS) pilot projects to demonstrate this approach to delivering high efficiency, carbon-free heat and hot water for overburdened and underserved neighborhoods. Thermal energy network systems take advantage of the constant temperature in the ground six feet below the surface. They use boreholes drilled in the ground and transfer heat in the winter and cooling in the summer through pipes laid in the streets. Low-income residents who choose to participate in a TENS pilot would receive replacement appliances and heat pumps as well as weatherization at no cost to the resident. Labor standards in the proposal will assure that employees of the contractors or utilities building the pilots receive appropriate pay and benefits. The infrastructure outside the home would be rate-based and has the potential to provide gas utilities with a new business model by substituting return on assets from a thermal energy network system for the return on assets earned from new gas infrastructure. The two-year test would be evaluated for its cost effectiveness and its climate impact by the Public Service Commission (PSC).

No customer in an area for a proposed TENS will be forced to participate and customers will be able to opt out during the pilots.

The WARMTH Act calls for 80% of the customers in the pilots to come from low- or moderate-income housing. These households have been poorly served by Maryland’s energy efficiency programs. Low-income households account for 20-25% of the total households in Maryland. A disproportionate percentage of these households are Black, Hispanic, and Asian. Energy burdens for low-income Marylanders are six times those of the average Marylander; low-income Maryland residents spend, on average, 12% of their income on energy bills compared to 2% for Marylanders as a whole. These burdens are higher, in part, because many low-income families live in housing that has poor insulation, broken and inefficient fossil-fuel burning HVAC systems, drafty windows, and unreliable electrical systems. Much of the heating and cooking equipment in these homes also poses a health risk. Replacement of appliances with fully electric versions and weatherization for low-income residents would be fully covered under the WARMTH Act by the Inflation Reduction Act and other federal benefits, the EmPOWER program, Department of Housing and Community Development funds and Strategic Energy

Founded in 1892, the Sierra Club is America’s oldest and largest grassroots environmental organization. The Maryland Chapter has over 70,000 members and supporters, and the Sierra Club nationwide has over 800,000 members and nearly four million supporters.

Investment Funds. By focusing the pilots on overburdened and underserved communities and providing the appropriate level of weatherization and appliance replacement, the pilots have the potential to lower costs for these residents and demonstrate that we can effectively serve these communities. Coordination with local groups will help ensure communities understand and accept the TENS pilots when they are deployed in their neighborhoods.

TENS also has the potential to eliminate the health risk from burning methane gas in buildings. Gas leaks can increase levels of nitrous oxides, benzene, and particulates inside buildings, all of which generate health risk. Inside our homes, it also increases the likelihood that children will develop asthma. One study showed that children in homes with gas stoves have a 42% higher risk of asthma.¹ Benzene is also a known carcinogen.

Maryland's Climate Pollution Reduction Plan, recently published, noted that "the lifecycle emissions benefits of networked geothermal, which could be significant when avoided electricity generation emissions are included, would deliver lower lifecycle emissions."² Fuel burned in buildings accounts for approximately 13% of greenhouse gas emissions in Maryland. As Maryland works to achieve its climate goals to reduce greenhouse gas emissions by 60% (from 2006) by 2031 and achieve net zero emissions by 2045, many households will electrify their homes with heat pumps, heat pump hot water heaters, and other efficient electric appliances. Thermal energy network systems can be as much as six times as efficient as gas or electric resistance heating and twice as efficient as air source heat pumps. They could dramatically reduce greenhouse gas emissions if the pilots are successful and TENS projects are widely deployed.

While the recent report of the PSC's Electrification Study showed modest peak demand growth from electrification through 2031,³ utilities have been concerned that the increased load from electrification of heat and hot water could cause large increases in winter peak load for Maryland's electricity distribution systems. Because the temperature of the ground below six feet is a constant 55 degrees Fahrenheit and thermal energy network systems transfer heat that exists in the ground, they do not generate the potential summer or winter peak electric demand of other forms of electric heat. As a result, the impact on summer or winter load is small or even potentially positive, reducing load.⁴

The proposed legislation contains strong labor protections. It will encourage the utilities to offer the construction work on the project to their own employees and any contractor will be required to pay prevailing wages, provide benefits and retirement plans, offer employment to Maryland residents, and develop a plan for minority participation.

¹ Meta-analysis of the effects of indoor nitrogen dioxide and gas cooking on asthma and wheeze in children, International Journal of Epidemiology, December 2013, Pages 1724-1737, Weiwei Lin, Bert Brunekreer, Ulrike Gehring, <https://academic.oup.com/ije/article/42/6/1724/737113?login=false>

² The Climate Pollution Reduction Plan cite is: Maryland's Climate Pollution Reduction Plan, Maryland Department of the Environment, December 2023, page 41, <https://mde.maryland.gov/programs/air/ClimateChange/Maryland%20Climate%20Reduction%20Plan/Maryland%207s%20Climate%20Pollution%20Reduction%20Plan%20-%20Final%20-%20Dec%2028%202023.pdf>

³ Maryland PSC Electrification Study, December 2023, page 3. <https://www.psc.state.md.us/wp-content/uploads/Corrected-MDPSC-Electrification-Study-Report-2.pdf>

⁴ By 2027 all Maryland utilities are expected to be winter peaking according to the PSC's Electrification Study.

The PSC will play an important role in ensuring the pilot TENS projects are in the interest of ratepayers and will help Maryland achieve its climate goals. Proposals will be evaluated by the PSC for ratepayer impacts, cost effectiveness, the impact on greenhouse gas reduction, the impact on electrification, benefits for customers and employees, avoided gas pipe replacement costs, the impact on investments, and costs of distribution and transmission, etc. The construction and operation of the pilots will be monitored by the PSC, and data will be collected by gas utilities and independent researchers. The PSC will evaluate the results of the pilots in 2029.

Gas utilities currently achieve returns for shareholders by earning a regulated return on assets, largely from gas pipeline mains and services in the ground. Thermal energy network systems have the potential to offer gas utilities a new asset base that does not involve distributing (and, almost inevitably, leaking) natural gas. Instead of creating stranded assets by investing to replace gas pipes, the gas utilities could invest and earn a return on borehole and pipe assets to carry warmth and cooling to buildings.

The Maryland Chapter of the Sierra Club is supportive of these pilots which could lead to decarbonization of heat and appliances in Maryland buildings, in line with the goals of the Climate Solutions Now Act. The TENS approach to decarbonization would be more efficient than electric resistance heat or air source heat pumps and lower winter and summer peak demand for electricity, while providing an alternative business model for utilities. The customer and labor protections are appropriate. The PSC will evaluate the cost effectiveness and climate impact of the pilots.

The Maryland Chapter of the Sierra urges approval of this legislation.

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