

CB17-2025 - Introduced by Christiana Rigby Short Title: Geothermal Energy Devices Tax Credit Act

Good evening members of the Howard County Council. Thank you for allowing me to testify on CB-17, Geothermal Energy Devices Tax Credit Act.

My name is Phil Webster and I use he/him pronouns. I am a 30 year resident of Howard County. I have a PhD in Mechanical Engineering, am a retired scientist from NASA Goddard and a member of the Howard County Environmental Sustainability Board.

I am a firm supporter of geothermal heat pump technology as one of the many tools to combat climate change and to reduce the use of energy for Howard County residents. A heat pump is more energy-efficient than gas furnaces, often using up to 3 times less energy to provide the same amount of heat. When configured in a geothermal system, the efficiency is even greater.

Our family invested in a geothermal heat pump in 2022 (\$43,745), replacing an aging gas furnace. Including the Federal Tax Credit (\$11,376), BGE Rebate (\$1,000), Maryland State Grant (\$3,000) and the Geothermal Renewable Energy Credits (~\$100/month), it was less expensive than a comparable heat pump (\$26,924) by approximately \$1800.

And we reduced the energy we use from gas by nearly 40%. That works out to 2.5 metric tons of CO2 equivalent per year or more than half of an automobile.

Geothermal is not for everyone. The regulations regarding siting the bore holes are complex, limiting the implementation in Howard County. There is very limited applicability for multi-family housing. The upfront costs, while quickly recovered, are high. However, geothermal is a very valuable tool for reducing greenhouse gases and energy costs. And the tax rebate in this bill will provide additional incentive.

There is a very interesting application for geothermal heat pumps for entire neighborhoods, which may be applicable in this bill, in the WARMTH Act implemented by the General Assembly last year.

Utility costs are rising, at a rate greater than inflation. I am sure your constituents have voiced their concern about this to you. It is very visible on the social media app NextDoor.

Of particular interest is the rising cost for gas service. According to the press release from the Maryland Office of People's Council's [report](#) "Maryland Gas Utility Spending".

"If Baltimore Gas and Electric maintains its customer counts, the typical BGE residential customer who paid on average \$240 per month for their winter gas bill over the years 2022-2024 will see their bill increase to more than \$400 per month by 2035. With even modest declines in customer counts—expected to result from competition from modern electric appliances—average winter bills in 2035 could easily reach well above \$500 per month for gas service alone."

Further, from the Office of the People's Counsel,

"Maryland gas customers will be asked to spend \$41.5 billion from 2024 through 2045 to compensate the gas companies for their gas infrastructure spending," and "The companies' latest proposals demonstrate the gas utilities' commitment to locking in massive investments in their fossil fuel systems as fast as they can despite the near certainty that technology and climate policy will render those investments obsolete."

There is a lot of discussion about the ability of the electric grid to support the load due to electrification. The Maryland PSC conducted a study at the request of the General Assembly. The Brattle Group's [Electrification Study for Maryland](#) showed that electricity demand growth in the High

Electrification Scenario would be comparable to or lower than historical growth rates. Most of Howard County is in the BGE service area which has a higher summer peak than winter peak and this is projected to last through 2029. This means that the aggregate cost for summer cooling will exceed the cost of winter cooling. For an individual home, replacing a standard heat pump with a geothermal system will use less energy in the winter. Replacing a methane gas furnace will use even less energy.

Geothermal systems used as air conditioning have an added benefit that is often overlooked. A heat pump, as it's name implies, moves heat from a cold place to a warm place. An air conditioner moves heat from inside a space, generally about 70°F to the exterior, often greater than 90°F, which is against the thermal gradient. This takes energy, and the warmer the exterior temperature is, the greater the energy use is. This is analogous to a water pump which moves a fluid "uphill". For a geothermal system, in which the bore hole temperature is in the mid 50's year round, means that the heat pump is actually moving the heat *down* the thermal gradient, using significantly less energy.

Geothermal heat pumps are sound economic and climate policy and this bill would have great symbolic impact. I urge you to pass the Geothermal Energy Devices Tax Credit Act.

Thank you and I would be happy to answer any questions.