

TAKOMA PARK MOBILIZATION



Environment Committee

To: Montgomery County Council

Testimony on: Comprehensive Building Decarbonization
Bill No. 13-22

Organization: Takoma Park Mobilization Environment Committee
Person

Submitting: Diana Younts, co-facilitator

Position: Favorable

Hearing Date: July 26, 2022

Dear President Albornoz and Council Members,

Thank you for allowing our testimony today in support of 13-22, Comprehensive Building Decarbonization, a bill that provides for an all-electric construction code with some exceptions.

Direct use of gas, heating oil, and propane in buildings—primarily for space heating and water heating—accounted for 13 percent of Maryland’s greenhouse gas emissions in 2017. The County’s Climate Action Plan sets a goal of 80% reduction in greenhouse gas emissions by 2027 and 100% by 2035. Maryland’s Greenhouse Gas Reduction Act (GGRA), as amended by the Climate Solutions Now Act of 2022, mandates that the entire state – in all sectors of the economy – reduce emissions 60% by 2031 and 100% by 2045. To meet these requirements, the GGRA Plan sets a goal of electrifying fossil fuel end-uses in buildings so that Maryland’s building sector achieves net-zero emissions by 2045 for residential and commercial buildings.¹ The Climate Solutions Now Act specifically requires commercial and multifamily buildings greater than 35000 sq. ft to have no direct emissions for water and space heating by 2040.

In 2021, the MD Commission on Climate Change’s top recommendation for reducing emissions from buildings was to “adopt an all-electric construction code.”⁴ New construction requirements are a sensible first step in the building electrification transition that prevent us from making the problem worse.

All Electric Construction is Cost Effective

The good news is that all-electric new buildings typically have the lowest construction and operating costs. (See Maryland Commission on Climate Change (MCCC) [Building Energy Transition Plan](#).) The MCCC found that all electric construction is typically cheaper or the same cost as conventional construction:

¹ Md. Comm’n on Climate Change, GGRA Plan, Feb. 19, 2021, at XIX, available at <https://mde.maryland.gov/programs/Air/ClimateChange/Documents/2030%20GGRA%20Plan/THE%20203%20GGRA%20PLAN.pdf>.

- For single-family homes, all-electric homes *cost less to construct than new mixed-fuel homes*.
- For multifamily buildings, all-electric buildings cost about the same to construct as mixed-fuel buildings.
- For commercial buildings, all-electric buildings can have higher or lower construction costs than mixed-fuel buildings depending on building type and use.
- All-electric new buildings of all types – residential and commercial – have the lowest total annual costs (including equipment, maintenance, and energy costs) in every net-zero emissions scenario modeled.
- With respect to schools, the three net-zero schools that have already been constructed in Maryland were built at the same cost (including the cost of solar panels) as conventionally constructed schools and have drastically lower operating costs.

Indoor Air Quality

As set forth in the Executive's and PHED Committee Chair Hans Reimer cover letter submitting this legislation, electrification has important health and safety benefits as well. As the [EPA says](#), gas emits a whole stew of toxic chemicals, including PM2.5, NO2, CO, and formaldehyde. [Research](#) has found that all of those chemicals individually have negative impacts on health and combined they are more dangerous. Further, children in homes with gas stoves have a 42 percent increased risk of experiencing asthma symptoms (current asthma), a 24 percent increased risk of ever being diagnosed with asthma by a doctor (lifetime asthma), and an overall 32 percent increased risk of both current and lifetime asthma.

Because lower-income households are more likely to have more people living in smaller spaces, with less ventilation, they are at greater risk of unsafe NO2 exposure. When gas stoves are installed without being vented to the outdoors, the dangers are further increased in part because of varying quality of hood performance, the fact that many do not vent to the outside, and that people fail to use them.

And it goes without saying, buildings fueled by gas sometimes explode, as demonstrated by two low-income multifamily housing buildings in Silver Spring in 2017 and 2022, tragedies that would have been avoided had they been all electric.

The Maryland Commission on Climate Change Predicts a Dramatic Increase in the Cost of Gas Delivery

An additional reason to enact an all electric construction code is that the price of gas is rapidly escalating. The MCCC has projected that gas delivery rates are likely to increase by 2 to 5 times the current rate for consumers left on the gas system, making it all the more important from a cost perspective alone that all Marylanders should transition from fossil fuels. (See MCCC [Building Energy Transition Plan](#).) Additionally, we know that the natural gas infrastructure is rapidly aging and failing, releasing methane with its ~30x the global warming potential of CO2 into the air. A recent [RMI report](#) showed that most gas infrastructure installed today will be abandoned after 2035 due to rising costs.

Maryland gas utilities themselves project that repair and replacement costs for their leaky systems will rise from \$155 mil annually (2022) to \$455 mil annually by 2044 under the Strategic Infrastructure Development and Enhancement Plan (STRIDE) Program. These costs are passed on as a surcharge on ratepayers gas utility bills. The Office of People's Counsel likened the arrangement to the gas utilities

having a credit card with no spending limit and ratepayers footing the bill.

Enacted in 2013, the STRIDE law permits Maryland’s gas distribution utilities to submit five-year infrastructure replacement plans to the Maryland Public Service Commission for expedited cost recovery through a monthly surcharge on customer bills. Annual STRIDE-only gas infrastructure costs have risen each year since 2014. As noted above and shown in the graph below, in 2022, the annual cost is \$150 million, with future annual costs rising to a peak of over \$450 million in 2044. Low income households bear a disproportionate burden of these rate increases because they already have a higher energy burden. Because energy is a regressive cost, low-income households in Maryland dedicate 13% of their annual incomes to energy costs and pay 550% more as a percent of income than non low-income households. The majority of these (55%) are Black, Hispanic, or Asian households.

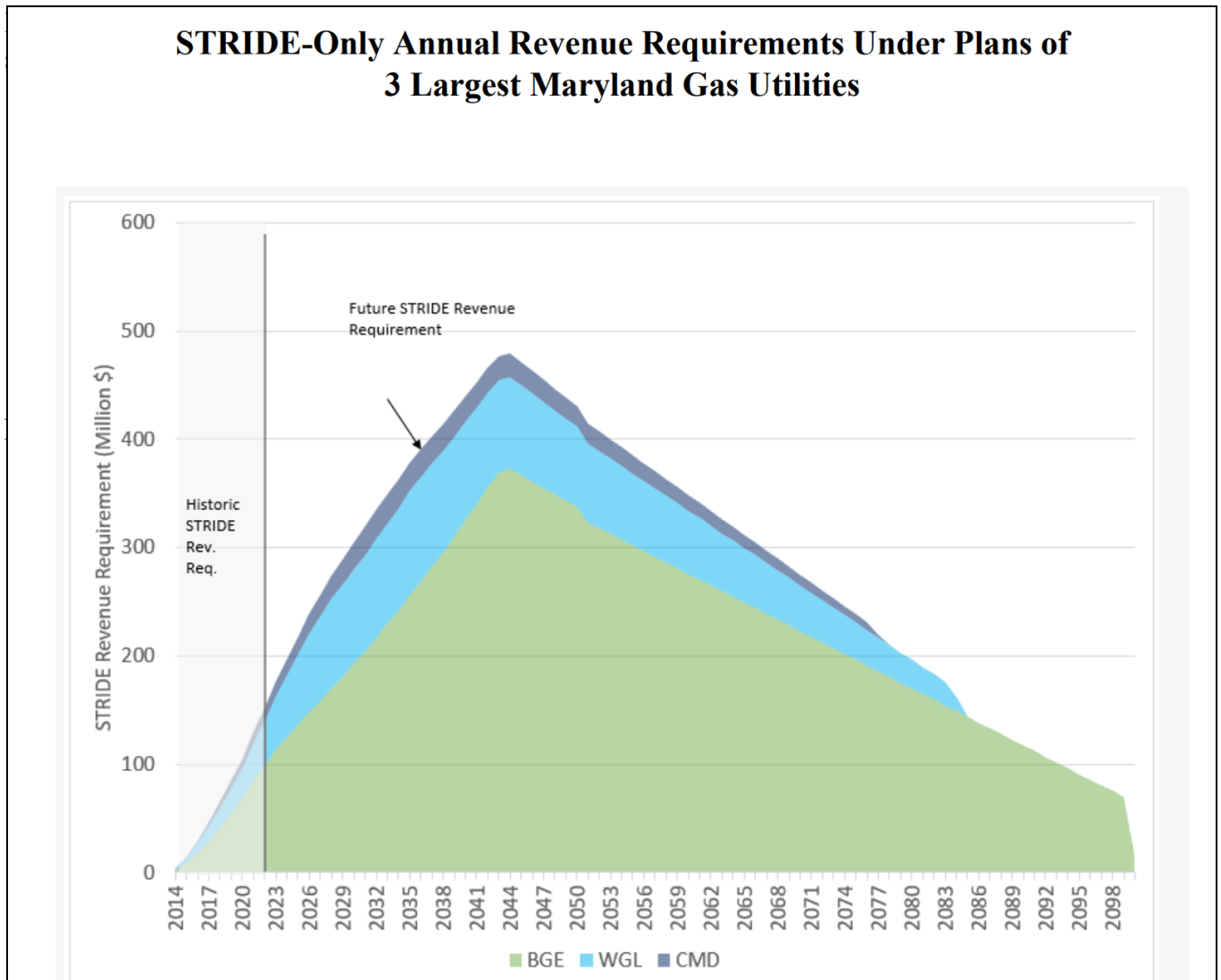


Chart prepared by Office of People’s Counsel

Suggested Amendments

Require Heat Pumps: Because resistance electric heat is cheap to install and expensive to operate (and is an energy hog thus also would be a significant source of greenhouse gas emissions through our still dirty

grid), we suggest that the legislation specify that heat pumps be required. As a model, the County could look to the [Seattle Energy Code](#), Section 403.1.4, and its thoughtful list of exceptions.

Renovations: As drafted, the current proposed legislation severely limits the effectiveness of an all electric construction code because of the limitations on its applicability to remodels. Eliminating those limiting provisions would be a major step towards addressing the greenhouse gas emissions of single family homes and commercial structures. Again, the [Seattle Energy Code](#), Section 403.1.1 has a thoughtful list of exceptions. It is probably also true that for single family homes, an exception should be made for emergency replacements of failed gas heaters.

Consider Following D.C.'s Lead, and Require Net-Zero Construction: Washington D.C. has recently enacted legislation adopting Appendix Z to the International Energy Conservation Code for commercial buildings. Appendix Z requires net zero construction. If Montgomery County is to reach its goal of 100% reduction in greenhouse gas emissions by 2035, buildings will have to be net zero.

Alternatives to the Exemptions and Delays in the Proposed Legislation:

Affordable Housing: Rather than delaying implementation for affordable housing from the code requirements, it is important to include them as quickly as possible so that they do not continue to experience poor indoor air quality and the escalating cost of gas. We recommend amending the bill to include these entities in the bill provisions.

As noted previously, low-income Marylanders pay a disproportionately higher amount for utilities as a percent of income than non-low-income residents. The MCCC GGRA Plan has a goal of retrofitting 100 % of low-income households by 2030. In addition, the Climate Solutions Now Act of 2022 included additional funding for low-income energy efficiency and retrofits. Delaying the electrification requirements for low-income housing is detrimental to residents, works against achieving the state's greenhouse gas reduction goals, and misses an opportunity for state and federal funding.

Schools: We are providing the following information regarding school construction costs to demonstrate why schools should not be delayed:

It is also important to not delay implementation for schools. On June 27th, MCPS adopted a sustainability policy in which it committed to an 80% reduction in greenhouse gas emissions by 2027 and 100% by 2035. All electric construction is a fundamental first step in attaining the goal. Moreover, a number of new schools are in the pipeline and it's a foolish economy for MCPS to fail to design and build a net-zero school (which is already the same or cheaper to build than a traditional school) and then to retrofit that same building later to be net-zero (and in the interim miss out on the vastly reduced operating costs).

Furthermore, the recently enacted HB1290 provides an extra 5% state match for the construction of net-zero schools, and there are recently announced federal monies for net-zero school construction.

The three newly constructed net zero schools In Baltimore City and Howard County demonstrate that they are cheaper than or the same cost as traditional schools to build and cheaper to operate.

Net-zero schools are by far the superior option using only cost considerations. Their initial construction costs are lower than or the same as traditional construction, and their operational costs are far less.

Included below are the construction costs for the three schools and the energy use of Wilde Lake Middle School. Montgomery County Public Schools have an average energy use intensity of 54 kBTU per square foot per year. Wilde Lake has an energy use intensity of 13.7 kBTU per square foot per year and produces twice as much energy as it consumes. The Inter Agency Council on School Construction (IAC) average school construction cost for 2021 was \$405 per sq ft with site preparation and \$341 per sq ft without site preparation. ²

Because the schools were built in different years, we are providing the IAC average costs for 2018 and 2016:

July 2018 Building Construction: w/o site preparation, \$302 per sq ft; w/ site preparation, \$360 per sq ft
July 2016 Building Construction: w/o site preparation, \$282 per sq ft; w/ site preparation, \$335.58 per sq ft

Wilde Lake Middle School Completed August 2017 (\$329 per sq ft, with site preparation & solar panels) - Columbia, Maryland

- New Net-Zero LEED Platinum
- Total construction cost including site preparation and solar panels: \$35,000,000
- Cost including site preparation and solar panels: \$329 per sq ft
- Energy produced during performance period: 821,618 kWh (approximately 2X use)
- Energy use during performance period: 428,301 kWh
- Net Energy Use: -393,317 kWh
- Energy Use Intensity (EUI): 13.7 kBTU/sq ft/yr

Note: Is net negative (it produces more energy than it consumes)

Graceland Park / O'Donnell Heights Elementary/Middle - Substantial Completion Phase 1 Replacement Building August 2020 (\$358.16 per sq ft, with site preparation & solar panels)- Baltimore, Maryland

- Construction cost, including site and solar panels: \$33,752,000.00
- Cost including site and solar panels: \$358.16 per sq ft

Holabird Academy - Substantial Completion Phase 1 Replacement Building August 2020 (\$364.30 per sq ft with site preparation & solar panels) - Baltimore, Maryland

- Construction cost, including site and solar panels: \$34,330,500.00
- Cost per sq ft, including site and solar panels: \$364.30

²https://iac.mdschoolconstruction.org/?page_id=4633

Dispelling Myths and Misinformation:

Gas as Backup System When the Power Goes Out : *Gas systems need ELECTRICITY to work.* If there is a power outage, *gas heaters and appliances do not work* because they have electric starters, controls, pumps, ignitors, and safety valves which will not allow gas to flow if the electric ignitor does not turn on. Some very old direct venting fireplaces and wall heaters would work, but then they also significantly increase indoor air pollutants and when they malfunction they create an enormous carbon monoxide risk. And for buildings that must have or want to have back up systems (such as hospitals and first emergency operations), **battery backup** provides the power (or a diesel generator). A gas boiler does not. Public Safety Codes do not allow Natural Gas for emergency backup

A form letter was circulated to council members that contains misleading information. The letter repeats the canard that gas is needed as a back up when the electricity goes out. As set forth above, it cannot. Further, the letter makes reference to a study conducted in Baltimore³ that found that all electric construction would increase energy costs and increase building costs. That report – put out in 2021 by the National Association of Home Builders – has a number of deficiencies. First, as to energy costs, it is a snapshot of 2020 costs that fails to account for the rising cost of gas as discussed more fully above. 2022 alone had a 40% increase in gas costs, meaning that all of the report's numbers for all electric projects have a much better payback than the report projected. The report also fails to make an apples to apples comparison of construction costs. So, for instance, the report includes the increased cost of some of the necessary electric infrastructure, but fails to include the savings realized in not installing gas infrastructure. Additionally, by looking at Appendix A to the report, you can see that the construction cost for an all electric house is cheaper than the construction cost of a gas house. The body of the report includes higher construction costs because it references higher efficiency heat pumps than likely would be required by the code. Similarly, in its retrofit pricing, it uses top of the line equipment, not code minimum equipment, perhaps adding \$10,000 to the cost for the consumer.

Moreover commercial and multifamily buildings greater than 35,000 square must have no direct emissions by 2040 pursuant to the Climate Solutions NowAct. The cheapest way to meet that requirement is to design and construct a building that already meets that requirement, rather than to design a building that will need to be retrofitted later.

For all of these reasons, we support Bill No. 13-22 and strongly urge the council to include the suggested amendments.

³ [Home Innovation Research Labs Electrification Report - 2021 \(nahb.org\)](https://www.nahb.org/research/2021-electrification-report)

