



Via Electronic Mail

July 25, 2024

Maryland Department of the Environment
1800 Washington Blvd.
Baltimore, MD 21230
BEPS.MDE@maryland.gov

Re: Draft Building Energy Performance Standards Regulation Comments

Dear Secretary McIlwain,

Founded in 1968, the Maryland Chamber of Commerce (the Chamber) is the leading voice for business in Maryland. We are a statewide coalition of more than 7,000 members and federated partners, and we work to develop and promote strong public policy that ensures sustained economic growth for Maryland businesses, employees, and families. On behalf of our members, we are submitting the following comments highlighting our concerns with the proposed building energy performance standards (BEPS) regulation.

I. Manufacturing Definition and Exemption Clarification

Instead of explicitly exempting the manufacturing sector in alignment with the law, MDE only includes Md. Environment Article 2-1202(h)(1) while omitting the specific inclusions remaining under section (h), including:

(2) “Manufacturing”, when performed by companies primarily engaged in the activities described in paragraph (1) of this subsection, includes:

- (i) The operation of saw mills, grain mills, or feed mills;
- (ii) The operation of machinery and equipment used to extract and process minerals, metals, or earthen materials or by-products that result from the extracting or processing; and
- (iii) Research and development activities.

The inclusion of research and development is particularly crucial for the manufacturing sector and cannot be overstated. Buildings used for research and development should be included under the exemption if they serve a manufacturer. For instance, a building

where a company conducts chemical research to support their chemical plant should be considered part of the manufacturing sector and thus exempt from the regulation. Research and development activities are integral to the innovation and improvement processes within manufacturing operations, directly contributing to the efficiency and effectiveness of production. Excluding research and development buildings from the manufacturing exemption would create a significant oversight in the regulation. These buildings must be recognized as part of the manufacturing infrastructure, as already present in statute.

It is essential to ensure that no additional manufacturing buildings are excluded from the definition. The Chamber is concerned that this narrow definition does not encompass the entire manufacturing sector. It is also unclear how individual buildings would be addressed.

For example, if a covered building over 35,000 square feet used for manufacturing is attached to office space, which is common, is only the manufacturing portion of the building exempt from the requirements, or is the entirety of the building exempt? How does the 35,000 square feet+ apply if only a part of that building is subject to BEPS (multi-use buildings)?

Without this clearly outlined, application of the regulation is confusing and inadequate since it focuses on each building's use rather than whether it belongs to and is utilized by the exempt manufacturing sector. Conducting a building-by-building inquiry is unnecessary when the key question is whether the owner or operator is part of the manufacturing sector, as buildings falling under this sector are already excluded by law. A detailed analysis on a building-by-building basis could lead to some buildings, or parts of buildings, owned or operated by the CSNA-exempt manufacturing sector being inadvertently covered under the BEPS regulation.

We strongly recommend defining “manufacturing” using the federal standard. At a minimum, we recommend incorporating the entirety of Md. Environment Article 2-1202 to maintain consistency. To prevent confusion and align with the statutory exemption, MDE should clarify the definition of a "manufacturing building" to encompass the entire manufacturing sector and all its buildings. The regulations must exclude all buildings used by a manufacturing business, including research and development.

II. Exemption Process

An additional process was added in the revised regulations, which requires a building owner to follow exemption procedures outlined in the technical guidance. This additional



administrative step undermines the clarity and certainty that should accompany regulatory exemptions already outlined in the regulation.

It should be straightforward to exempt businesses and building owners based on the regulation itself. Requiring applications and supporting documentation imposes additional time and resource costs. This process also introduces delays and uncertainties for exempted buildings. Additionally, it is concerning that resubmissions for exemption status may be required by MDE. This introduces an even more complicated compliance process for those that have already demonstrated eligibility for exemption.

There is no timeline outlined for the review and approval of exempt status, in which building owners will be left in a regulatory state of limbo. At a minimum, the Department should outline specific timelines in the technical guidance that an exempted building owner and the Department should follow, including submitting the application, the timeframe for MDE to review and notify the applicant of the decision, and the period within which MDE can request additional documentation, if necessary. Additionally, there should be an appeal process for building owners in the event their application is denied, ensuring they have the opportunity to contest the decision if they feel the exemption should apply.

The Chamber recommends MDE eliminate the application process for exempt status and instead grant exemptions directly through clear regulatory language.

III. Energy Use Intensity Standards and Budget Language Conformity

The budget amendment that passed in the 2024 legislative session requires the Department to delay finalizing the Energy Use Intensity (EUI) standards until benchmarking data on current building performance is collected.

We understand that the Department intends to propose final EUI standards in 2027 after the benchmarking is complete. The Chamber remains concerned about the future inclusion of EUI standards as mandatory, despite their temporary removal. We recommend MDE avoid reintroducing EUI as a mandatory standard in the regulations. Instead, it should be used as a reporting target to track building efficiency, aligning with the statute and maintaining focus on net direct emissions.

During the Air Quality Control Advisory Council's September 11, 2023, meeting, stakeholders representing different industries, including the Chamber, provided public comment and letters requesting the Council to recommend removing EUI as a mandate or provide an alternative compliance fee option for EUI. The Council voted to



recommend to MDE that the Department should notify building owners if they are not in compliance with the EUI targets and allow the building owner to submit a compliance plan, rather than moving to fines right away, which would cost up to \$25,000 per day. This is a common practice to address regulatory requirements. However, MDE did not take up this recommendation. The statute reads, “provide maximum flexibility to the owners of covered buildings to comply with building energy performance standards.” **The Chamber urges the Department to factor in compliance flexibility for impacted building owners when finalizing the regulation.**

Additionally, the budget language states that funding for the purpose of final development and submission of EUI targets and standards will not be provided to the Department until actions outlined in the amendment are completed. This includes:

- Calculating benchmarks based on MDE’s analysis of the results of the data submitted by building owners,
- The promulgation of specific exceptions based on building age, regional differences, unique needs of buildings, and the use of district energy systems and biofuels, and
- Consideration of the needs of owners of covered buildings who are not responsible for or do not have access to or control over building energy systems of tenants.

These items have not been completed. The Department, through the budget amendment, is also required to submit a report on EUI compliance costs to building owners and alternatives to EUI, including a recommendation for an alternative compliance fee. Moreover, MDE is required to submit an economic feasibility study of meeting EUI standards. We look forward to MDE’s forthcoming report(s), as required in the budget amendment.

IV. Cumulative Impacts

The Department should heavily consider the cumulative impacts of additional upcoming regulations in the cost review study as required by the 2024 budget amendment, including a clean heat standard and a zero-emission heating equipment standard. This will change the overall cost to building owners substantially. The estimated cost to comply with the previous draft BEPS regulation ranged from \$15-\$25 billion. When factoring in cost impacts to upcoming additional building-focused regulations, that number will surely grow.

The state’s budget deficit continues to increase, leading to real fiscal challenges impacting many programs and state priorities. The cost review study should include the closure of Brandon Shores, data center development, forthcoming regulations, items outlined in the



Governor Moore's Executive Order, and more to provide realistic expectations of the overall costs and feasibility of proposals. By focusing on these considerations, MDE can ensure a comprehensive and balanced evaluation of the cumulative impacts of BEPS, ultimately supporting informed and effective policy decisions.

V. Incorporation by Reference

The Chamber hereby incorporates by reference our comments on the previous BEPS regulation submitted on January 18, 2024, as these comments remain relevant and provide a comprehensive analysis of our position on key aspects of the regulation.

The Maryland Chamber appreciates your consideration of these comments as it is our intention to provide clarity to the BEPS regulations so that businesses, building owners, electricity consumers and energy providers can comply with ease, without undue burden and cost increases. If you have any questions, please contact Hannah Allen at hallen@mdchamber.org.

Sincerely,

Maryland Chamber of Commerce





July 25, 2024

The Honorable Serena McIlwain
Secretary of Environment
Maryland Department of Environment
1800 Washington Blvd.
Baltimore, MD 21230

Via email – BEPS.MDE@maryland.gov

Re: Building Energy Performance Standards – Comments on July 2024 Revised Regulations

Dear, Secretary McIlwain:

NAIOP represents 22,000 commercial real estate professionals in the United States and Canada. NAIOP’s membership in Maryland is comprised of more than 700 local firms and publicly traded real estate investment trusts involved in development, construction, and management of commercial, mixed-use, and light industrial real estate.

On behalf of our member companies, I write to offer comments on the revisions proposed July 15, 2024. This submission is intended to supplement our previous comments including the most recent dated January 18, 2024, [linked here](#). Many of the subjects raised in that and previous comments remain areas of concern.

While we appreciate the opportunity to provide comments prior to the revised regulations being published in the Maryland Register, a number of our member companies thought it would have been appropriate and useful if more time were provided to evaluate and respond to the proposed changes.

➤ **Definition of Manufacturing is Unreasonably Narrow – Energy Star Definitions Should be Used.**

NAIOP member companies are already seeing major manufacturing tenants eliminate Maryland from their relocation options. A narrow definition of manufacturing and a restrictive application of the statutory exemption for manufacturing buildings will be a strong disincentive to retaining or expanding existing in-state manufacturing operations and recruiting new manufacturers to Maryland.

Decarbonizing high heat required for some manufacturing processes poses challenges that are well documented and generally acknowledged. The prospect of limitations on electricity use and regulations that discourage combustion of no and low carbon fuels through future regulation of site Energy Use Intensity (EUI) would be a further disincentive.

The definition of manufacturing had previously been based on what is considered a manufacturing establishment in North American Industry Classification System (NAICS). NAICS designates manufacturing establishments as those engaged in mechanical, physical, or chemical transformation of materials, substances, or components into new products.

The NAICS designation is sufficiently broad to capture manufacturing and associated uses. However, NAIOP expressed concerns that the NAICS was a business activity designation that could be transient, and that tenant turnover could change a building's BEPS category and compliance obligations. We have previously proposed that the building use group classifications in the International Building Code are more appropriate because they are based on the activities that may be located in the building as well as the building's construction and performance characteristics.

The revised regulation proposes a definition of manufacturing that is a truncated version of the definition of Manufacturing in ENV 2-1202. The draft regulation contains the text of ENV 2-1202 (h) (1) but does not include the clarifying language in ENV 2-1202 (h) (2) and (h) (3). Even if the regulation were to reference the full definition, the proposed change would result in a significant narrowing of the exemption for manufacturing as compared to the previous version.

As an alternative to the approaches discussed above, we recommend that MDE follow the Energy Star Portfolio Manager definitions of Manufacturing / Industrial Plant and associated Distribution Center. Deviating from the Energy Star definition of manufacturing and associated building uses runs contrary to the intended exemption for manufacturing activities, hurts regulated entities not covered by the proposed, narrower definition of manufacturing. The proposed definition will create confusion and additional complications as regulated entities and MDE work through applications to determine exemption status.

Of critical importance is that the proposed definition does not clearly cover building areas associated with manufacturing activities that are included in the Energy Star definition. These include production areas, offices, conference rooms, employee break rooms, storage areas, mechanical rooms, stairways, elevator shafts and parts of distribution / warehouse buildings that are used for assembling, modifying, manufacturing, or growing goods, products, merchandise, or raw material. The Energy Start Portfolio Manager Definitions are excerpted below and [linked here](#).

Manufacturing/Industrial Plant

Manufacturing/Industrial Plant refers to sites used for manufacturing, mining, quarrying and oil and gas extraction operations. Typically, a Manufacturing/Industrial plant includes a main production area that contains machinery and equipment used for producing products.

Gross Floor Area should include all space within the building(s) at the plant, including but not limited to production areas, offices, conference rooms, employee break rooms, storage areas, mechanical rooms, stairways, and elevator shafts.

Distribution Center

Distribution Center refers to unrefrigerated buildings that are used for the temporary storage and redistribution of goods, manufactured products, merchandise, or raw materials. Buildings that are used primarily for assembling, modifying, manufacturing, or growing goods, products, merchandise or raw material should be classified as Manufacturing Facility.

Gross Floor Area should include all space within the building(s), including but not limited to space designed to store non-perishable goods and merchandise, offices, lobbies, stairways, restrooms, equipment storage areas, and elevator shafts. This should not include exterior/outdoor loading bays or docks.

➤ **Compulsory Reporting of Electricity Use and Development of Electric EUI Not Authorized by CSNA or FY25 Budget Language**

We have previously expressed concerns about the extent to which we believe provisions of the BEPS regulations exceed MDE's authority. We believe the regulation's compulsory reporting of electricity use and overall Energy Use Intensity (EUI) by building owners goes beyond the directive in the Climate Solutions Now Act (CSNA) that direct emissions be reported and would not be consistent with the FY25 budget language that restricts use of MDE appropriations for the development of electric EUI targets, standards and regulations.

The CSNA authorized MDE to adopt regulations to reduce net direct greenhouse gas emissions from covered buildings. To facilitate the development of these regulations 2-1602(b) of the Environment Article authorizes MDE to require the owners of covered buildings to, "*measure and report direct emissions data to the department each year beginning in 2025.*" The proposed regulations go beyond the authority in the CSNA that requires building owners to measure and report direct building emissions because it also requires measuring and reporting of electricity use which is unrelated to direct emissions.

The CSNA defines direct greenhouse gas emissions as "*Greenhouse gas emissions produced on-site by covered buildings.*" Direct building emissions are a function of on-site fossil fuel combustion not electricity use. It is not necessary to measure and report electricity use in order to benchmark the direct greenhouse gas emissions of a building. Furthermore, EUI targets are commonly separated by fuel type – one for electricity use, one for fossil fuel use. The direct greenhouse gas emissions data reported by building owners will allow MDE to calculate fossil fuel EUI targets consistent with the requirement in the CSNA that the regulations limiting direct building emissions include EUI targets.

The FY25 budget language restricts MDE from spending appropriated funds for development of an EUI regulation until after a number of tasks and studies are completed and reported to the General Assembly. These tasks have not been completed.

First on the list of required actions is, "*calculate building benchmarks based on MDE's analysis of the results of the direct emissions data reported by owners of covered buildings as required by Section 2-1602(b) of the Environment Article.*" This indicates direct emissions must be benchmarked before electricity use.

The second required action is to develop and propose special provisions or exceptions in the BEPS regulations based on building age, the needs of unique building types or occupancies, and the use of district energy systems and biofuels. Third is to consider changes to the regulations addressing the needs of the owners of covered buildings who are not responsible for or do not have access to or control over building energy systems of tenants as provided for in Section 2-1602(c)(2)(iii) of the Environment Article. The proposed regulations do not contain changes addressing these issues.

The budget amendment goes on to require a report containing specific information on energy use intensity costs of compliance and an analysis of alternatives to regulating EUI as a means to meet greenhouse gas emissions targets. This report has not been completed.

The inclusion of electricity use data in the benchmarking requirements exponentially increases the cost, scale and complexity of data collection and management for MDE and regulated entities. Not only will the number of buildings, square footage and tenant spaces required to measure, and report dramatically

increase, but the number of meters and submeters related to electricity use are far higher than the meters and other data points related measuring natural gas, propane, and fuel oil combustion in buildings.

The primary purpose of measuring and reporting electricity use is to serve as the basis for developing an EUI regulation limiting electricity use including buildings that produce zero direct greenhouse gas emissions. The prerequisite actions to development of an EUI regulation set out in the budget amendment have not been met. Furthermore, we do not see how MDE can expand the scope of benchmarking to electricity use and meet the spending prohibitions in the budget amendment.

➤ **Utility Data Availability and Responsibilities**

The current draft regulations require that covered buildings be benchmarked based on 2025 utility data but that building owners report by June 1, 2025, on the energy use for the previous calendar year or 2024. As of this writing we are more than halfway through the 2024 reporting year, concerns about access to and accuracy of utility data continue to grow.

NAIOP has previously requested that the regulations take steps to remove penalties and liability from building owners in situations when they are not able to access the utility data required to be measured and reported to MDE. The regulation in its current form does little to address this, leaving building owners liable for the action or inaction of tenants and utility companies.

In many cases the building owner has no control over energy use or mechanical systems and does not have the right to access utility data, control energy use or make operational decisions that determine target attainment.

A NAIOP member with 20 million square feet of Maryland buildings leased to federal government and department of defense clients is being told information about energy use and staffing levels is a matter of national security and will not be provided. The exemption for federal government buildings does not clearly apply to this situation.

In some cases, NAIOP member companies have spent hundreds of staff hours with sustainability professionals immersed in data reconciliation because they have not been able to obtain data of sufficient quality from their utility providers. In other jurisdictions, tenants have begun withholding information until the building owner pays for the benchmarking data. In other cases, tenants do not respond at all to requests for utility data.

Scenarios that are cause for concern include; utility aggregation tools that do not work properly; utilities that do not have the staff or systems in place to provide data; utilities that cannot or will not verify the accuracy or completeness of data, and; lack of an enforceable obligation on the part of utilities or tenants to provide information to a building owner.

The document linked to the Technical Manual entitled [Utilities Providing Energy Data for Benchmarking in Energy Star Portfolio Manager](#) indicates four Maryland utilities (BGE, Delmarva Power, Pepco, Washington Gas) provide aggregate whole building data. The document indicates that all four include energy use in

multifamily properties. On the other hand, the [Energy Star Portfolio Mapping Tool](#) also linked in the Technical Manual allows users to search by zip code for utilities that provide energy data for benchmarking. That tool indicates that no multifamily data is available for the Baltimore City zip codes that contain Canton and Mount Vernon.

This apparent inconsistency has raised questions about whether there are areas within the major utility service area where aggregate data is not available for multifamily or other building types.

Thank you for considering NAIOP's perspective on these critical issues.

Sincerely,

A handwritten signature in blue ink, appearing to read "T.M. Ballentine", is written over a faint, light blue circular stamp or watermark.

Tom Ballentine, Vice President for Policy
NAIOP Maryland Chapters - *The Association for Commercial Real Estate*



Ch. 212 (HB 1124) of 2019 - State Government - Regulations Impacting Small Businesses

Rodriguez, Alexander <Alexander.Rodriguez@tarkettsports.com>
To: "BEPS.MDE@maryland.gov" <BEPS.MDE@maryland.gov>

Thu, Jul 18, 2024 at 7:47 AM

Good Day,

Hope this email finds you well. After reviewing the latest towards new requirements for energy reporting, I wanted to ask if the exemption documents are currently available or will there be a follow up message identifying timelines on when certain documents will be needed to submitted.

We are a manufacturing facility and we are under the 35,000 sq. ft and base on my understanding of this new requirement we would be exempt from this reporting but we will need to submit the exemption to your office.

Than you for your time and look forward to hearing from you.

Alexander Rodriguez
DOT and Safety Coordinator



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July 19, 2024

Maryland Department of Environment (MDE)
ATTN: Samuel Furio
1800 Washington Blvd.
Baltimore, Maryland 21230

Re: Proposed Building Energy Performance Standards

Dear Mr. Furio,

Thank you for the opportunity to provide input on the proposed Building Energy Performance Standards regulations, as required by the Climate Solutions Now Act (CSNA) of 2022.

We commend the State of Maryland for continuing its leadership on climate change and building decarbonization. Bloom Energy supports well-designed building decarbonization initiatives that are focused on end uses of energy in buildings and avoid inadvertently increasing grid emissions in disadvantaged communities. We believe it is critically important that policymakers acknowledge that the electrification of buildings will unavoidably increase loads on the electric system which in turn will unavoidably increase the amount of electric generation required to match load. It is particularly important to acknowledge these realities because far too often the legacy fossil generators that are already being called upon to match that increased load are located in or near underserved and disadvantaged communities.

Bloom Energy is a manufacturer of solid oxide fuel cell technology that utilizes an efficient non-combustion process to generate power and/or thermal energy on-site at customer locations, which has the effect of displacing the dirtiest "marginal" power plants that supply the grid. Bloom Energy has installed over 1000 non-combustion solid oxide fuel cell systems for customers in thirteen U.S. states as well as in Japan, South Korea, Italy, India and elsewhere around the world. Bloom Energy systems are often deployed in a microgrid format and have proven resilient through outages caused by hurricanes, winter storms, earthquakes, forest fires, and other extreme weather and natural disasters.

A non-combustion fuel cell system in Maryland would immediately reduce greenhouse gas emissions by 40%-65% and smog forming air pollution by over 99% in comparison to the grid power it would displace, while simultaneously increasing reliability and avoiding the use of diesel back-up generators.¹ On-site power projects are virtually always deployed at customer locations in commercial and industrial areas rather than in the underserved and disadvantaged communities that too often host the legacy fossil generators that continue to supply the grid. The current draft BEPS regulations would appear to preclude this option and instead leave customers, including large scale data centers, with only one option – grid power backed up by diesel generators. This approach will, as recent events now demonstrate in both New

¹ GHG emission reductions reflect all-electric and combined heat and power (CHP) project designs.

York² and California³, drive emissions into underserved and disadvantaged communities and cause the population of harmful diesel back-up generators to grow exponentially.⁴

Simply put, the proposed BEPS rule would *penalize smaller and cleaner generators that **do not** generate local air pollution in disadvantaged communities while exempting larger and dirtier power plants that **are** located in disadvantaged communities*. As a result, the proposed rule is fundamentally flawed and should be revised before it is finalized. There are, however, ways to mitigate the risk of this type of unintended consequence and achieve the intended objectives of the BEPS.

First, policymakers should recognize that:

- On-site power generators interact with the electric grid and compete directly against the central station power plants that power the grid. As a result, on-site power generation should not be included within the scope of the buildings sector, but rather should be thought of as part of the electricity sector.
- The electrification of buildings, as well as other sectors of the economy, will compound the risks associated with grid outages even as our economy and society grow ever more dependent upon electricity.
- It is now inarguable that the energy transition is going to take longer and be more difficult than initially expected. Electrification policies that rely upon overly optimistic assumptions for the decarbonization of the electric grid have high potential to backfire on those communities that host legacy fossil plants.

Second, policymakers should ensure that:

- Building electrification policies focus only on the electrification of *end uses of energy in buildings* (heating, cooking, lighting etc.) and are not extended outside the building sector in ways that distort the electric generating sector in favor of higher emitting plants.
- The risks associated with placing every aspect of daily life onto one single system (the electric grid) are seriously analyzed and mitigated. This includes revisiting the question of whether it is beneficial to prohibit microgrids that are cleaner than the electric grid – as the proposed BEPS rule does.
- The rapid growth in the deployment and use of diesel back-up generators that is associated with electrification is accounted for and addressed. As overall load grows the number of diesel back-up generators will grow. Ignoring and/or exempting diesel back-up generators should not be an acceptable response to this trend, particularly when cleaner and more reliable alternatives, such as fuel cell microgrids, are readily available.

²Walton, Robert. 2023. "Nyiso to Keep 4 NYC Peakers Running Past Planned 2025 Retirement to Maintain Reliability." Utility Dive. November 21, 2023. <https://www.utilitydive.com/news/nyc-peakers-planned-2025-retirement-remain-online-reliability-must-run-nyiso/700417/>.

³ "Politico pro: Newsom Embraces Dirty Energy in Bid to Stave off Blackouts." n.d. Subscriber.Politicopro.Com. Accessed July 18, 2024a. <https://subscriber.politicopro.com/article/2023/08/newsom-embraces-dirty-energy-in-bid-to-stave-off-blackouts-00113534>.

⁴ N.d. Diesel Back-up Generator Population Grows Rapidly in The Bay Area and Southern California. Accessed July 18, 2024a. <https://www.bloomenergy.com/wp-content/uploads/diesel-back-up-generator-population-grows-rapidly.pdf>.



Thank you for taking the time to consider these important issues. We remain available throughout this process as a resource regarding building decarbonization and distributed energy resources.

Best Regards,

A handwritten signature in black ink, appearing to read "Brian P. Noonan".

Brian P. Noonan
Sr. Manager, Government Affairs & Policy

Appendix A: Suggested Edits to Proposed MD BEPS

Option 1: Apply BEPS to Buildings, Not Distributed Generation

26.28.01.02

(17) “Direct greenhouse gas emissions or direct emissions” means greenhouse gas emissions produced by end-uses of energy associated with ~~on-site~~ covered buildings, as calculated by the benchmarking tool unless otherwise specified by the Department.

...

(35) Site Energy Use.

(a) “Site energy use” means all energy used within ~~on-site~~ a covered building to meet the energy loads of the building.

Option 2: Accurately Measure Emissions Impacts of DERs

26.28.01.02

(31) Net Direct Greenhouse Gas Emissions or net direct emissions.

(a) “Net direct greenhouse gas emissions or net direct emissions” means:

(i) The sum of all direct greenhouse gas emissions from a covered building; or

(ii) For a covered building connected to a district energy system, direct greenhouse gas emissions plus the greenhouse gas emissions attributable to thermal energy inputs from the district energy system used by the covered building, as calculated using the methodology provided in this regulation; or

(iii) For a covered building with on-site electricity generation, direct greenhouse gas emissions minus the difference between those emissions and the greenhouse gas emissions attributable to the regional electric grid’s marginal generation unit.

(b) “Net direct greenhouse gas emissions or net direct emissions” does not include direct greenhouse gas emissions from a food service facility located within a covered building.



July 25, 2024

Mr. Mark Stewart, Program Manager
Climate Change Program
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, Maryland 21230

Via Electronic Mail to BEPS.MDE@maryland.gov

Re: July 10, 2024, Draft Maryland Building Energy Performance Standards Regulations

Dear Mr. Stewart:

Columbia Gas of Maryland (Columbia) and Chesapeake Utilities Corporation (Chesapeake Utilities) write on our behalf and on behalf of our customers who own or operate buildings in Maryland that are 35,000 square feet or larger. We continue to have significant concerns with the updated draft Maryland Building Energy Performance Standards (BEPS) regulations proposed on July 10, 2024.

Columbia is a natural gas utility providing energy to more than 34,000 residential, commercial and industrial customers in the western Maryland counties of Garrett, Allegany and Washington. Chesapeake Utilities operates natural gas local distribution companies that serve approximately 32,000 customers on Maryland's Eastern Shore in Caroline, Cecil, Dorchester, Somerset, Wicomico, and Worcester Counties.

Columbia and Chesapeake Utilities continue to be committed to reducing the greenhouse gas emissions of our operations and pursuing opportunities to reduce customer emissions. The natural gas industry in general (and Columbia and Chesapeake Utilities in particular) have been a part of the largest reduction in greenhouse gas emissions in this country and will continue to drive the practical solutions needed to move forward.

As the companies have stated previously, diversity ensures the strength and resilience of any system – commercial, economic, ecological, social or political. That's why it is essential for Maryland's residents to leverage a diverse array of energy sources to ensure an equitable energy future for all. Unfortunately, the July 10, 2024, proposed draft BEPS regulations do not ensure an equitable energy future for owners and operators of Maryland buildings that are 35,000 square feet or larger.

On behalf of both ourselves and our customers who will be adversely affected by these new regulations, Columbia and Chesapeake Utilities provide the following comments on the most recent proposed BEPS:

The Financial Impact to Our Customers Who Own or Operate Buildings That Are 35,000 Square Feet or Larger Is Staggering – The companies have discussed the proposed regulations with a number of customers and stakeholders. That dialogue has identified significant concerns that the proposed BEPS will cause owners and tenants of covered buildings to incur substantial costs.

The interim and final compliance standards proposed in the draft regulations would effectively prohibit the use of natural gas appliances and force covered building owners to incur major costs to replace such appliances with electric alternatives. Electrification retrofits are expected to cost covered Maryland building owners billions of dollars.

We once again point out, these significant costs will ultimately be paid for by all Marylanders, like residential rental tenants, small business owners who rent space, college students and parents, medical patients at hospitals and offices, parents with children enrolled in pre-school or daycare facilities, senior citizens in a senior living community or care facility, owners of condominium units and Marylanders who buy groceries – just to name some of those impacted by the billions of dollars in new costs that will be incurred due to the BEPS.

Penalties On Building Owners – The administrative and civil penalties, or “alternative compliance fees”, will be additional costs adversely affecting covered building owners. The companies urge the Maryland Department of the Environment (MDE) to, at a minimum, reduce the proposed compliance fees and penalties on covered building owners.

Increased Costs on All Maryland Utility Customers – Electric and gas utility companies will incur new costs to implement the requirements of the proposed regulations, which will ultimately be paid for by utility customers in Maryland. Under the proposed regulations, utilities must track, maintain and provide to building owners whole building energy consumption data for all covered buildings in an electronic format capable of being uploaded to the Environmental Protection Agency’s ENERGY STAR Portfolio Manager benchmarking tool. However, data is not currently maintained or managed in the manner contemplated by the proposed rule by all companies, nor are all electric and gas companies currently in possession of information that would be necessary to maintain or report data to building owners in the format prescribed by the proposed rule. It is expensive to implement new regulatory programs and compliance mandates and the proposed BEPS will inherently increase the cost of utility service for Marylanders.

Energy Use Intensity (EUI) – While the July 10, 2024, draft regulations remove several EUI references and the site EUI Standards pursuant to the legislative amendment in Maryland’s 2024 budget, we continue to point out the Climate Solutions Now Act (CSNA) does not mandate EUI standards/provisions to be included in proposed regulations.

Customer Compliance Pathways – On September 11, 2023, the Maryland Air Quality Control Advisory Council (AQCAC) met to review and discuss the previously proposed BEPS. During that meeting, the AQCAC passed a motion by a vote of seven in favor and one abstention to include an option in the BEPS for a compliance pathway for building owners who were having trouble meeting the targets. The companies’ understanding of the motion was that in lieu of immediate penalties for non-compliance, a covered owner could contact MDE and ask for help in creating a plan for compliance and submit that plan within three months of reporting the non-compliance. During that meeting, MDE opposed the motion, stating they did not have enough staff to help building owners who asked for assistance.

The companies note with great disappointment the MDE refused to include the AQCAC suggestion/motion in the draft BEPS regulations. It is stunning to the companies the MDE would prefer to issue mandates, fines and penalties on building owners needing and requesting assistance instead of offering compliance assistance.

The companies continue to strongly urge MDE to include that idea and a reasonable process in any final BEPS regulation.

Innovative Pathways for Compliance – The companies, once again, urge the MDE to not limit a gas utility’s ability to be innovative to help customers reduce greenhouse gas emissions. Marylanders continue to choose natural gas for their personal and business energy needs. The use of promising new technologies such as Renewable Natural Gas (RNG) and hydrogen, emerging highly efficient gas-fueled technologies like heat pumps and fuel cells, as well as emissions offsets to reduce greenhouse gas emissions, should be allowed as compliance pathways in the regulations.

The goal of the CSNA is to achieve net zero greenhouse gas emissions by 2045, and the Act does not prohibit the use of RNG, hydrogen, and emissions offsets to achieve this goal. In fact, the law states that “in developing and implementing the plans required by § 2–1205 of this subtitle, the Department shall [...] [p]rovide for the use of offset credits generated by alternative compliance mechanisms executed within the State, including carbon sequestration projects, to achieve compliance with the greenhouse gas emissions reductions required by this subtitle [and] encourage new employment opportunities in the State related to energy conservation, alternative energy supply, and greenhouse gas emission reduction technologies”. Therefore, MDE should specify clear methodologies for compliance in the Department’s TM 24-01, “Technical Guidance and Calculation Methodologies to Comply with Building Energy Performance Standards” for RNG (i.e., biogenic emissions), hydrogen, and emissions offsets.

Additionally, MDE should follow the statute and include the provisions outlined in 2-1602 (C)(2)(II). We believe these special provisions are necessary for affordability, reliability and achievability. Note, also, that the U.S. Department of Energy includes renewable natural gas in its definition of biofuels.

New Exemption Procedure – The companies observed a new section added to 26.28.02 in the July 10 draft BEPS creating a new exemption procedure which was not included in prior versions of the BEPS. Section 26.28.02.02 (3) states that “A building owner shall follow the exemption procedures under the TM 24-01 ‘Technical Guidance and Calculation Methodologies to Comply with BEPS’.” TM 24-01 Section A. 1.2.2 states that “[...] a building owner must submit an exemption request form to the Department along with supporting documentation.” The companies are concerned that if the Department does not have enough staff to create a compliance pathway for possibly hundreds of building owners who are having trouble complying with the new standards, the Department will not have enough staff to process, review, approve or deny possibly thousands of exemption requests.

Change In The Definition of Manufacturing Building – The companies highlight a change in the definition of “Manufacturing building” in the new draft regulations. We strongly encourage MDE to define “manufacturing” using the federal standard. At a minimum, we recommend incorporating the entirety of Maryland Environment Article 2-1202 to maintain consistency. To prevent confusion and align with the statutory exemption, MDE should clarify the definition of a

"manufacturing building" to encompass the entire manufacturing sector and all its buildings. The regulations must exclude all buildings used by a manufacturing business, including research and development.

Conflict with Federal Law – The federal Energy Policy and Conservation Act (EPCA) preempts state regulations that effectively ban EPCA-regulated products from accessing necessary energy sources. See, e.g., 42 U.S.C. § 6297(c). The BEPS is expressly intended to reduce greenhouse gas emissions by compelling the replacement of major appliances with – in practical effect – electric alternatives. In most buildings, appliances like furnaces are “covered products” under EPCA and EPCA preempts efforts by States to establish “energy conservation standards” relevant to these products, particularly where the state standards functionally ban the use of the products. Accordingly, the BEPS is preempted by the federal EPCA.

Concerns with Electric and Gas Company Data Management and Report Requirements –

- **Concern #1:** The regulatory text, as written, would require the companies to know which buildings are considered “covered buildings” under the rule, both retrospectively and prospectively, immediately upon the effective date of the rule. The companies do not have this information, nor does it appear that MDE has this information. Therefore, **MDE must re-write this section of the rule to make clear that the requirement to “maintain whole-building energy consumption data for all buildings, for at least the most recent 5 years in an electronic format capable of being uploaded to the benchmarking tool” only applies to whole-building energy consumption data generated after the rule is finalized, and only after our companies are made aware of which buildings are covered under the rule.** This will help ensure that utility companies are not unfairly placed in positions of noncompliance simply because MDE did not fully consider the compliance challenges resulting from the regulatory text in question.
- **Concern #2:** The companies think it is inappropriate to require the conversion of the most recent 5 years of customer data to an electronic format capable of being uploaded to the benchmarking tool. **This would require utilities to retroactively convert customer data to a format that was not contemplated prior to the proposed rule being considered. Utility companies in Maryland could face immediate noncompliance circumstances on the effective date of the final rule due to this requirement.** It is unfair and inappropriate to place our companies in the position of facing compliance penalties immediately upon the final rule becoming effective, especially when the rule applies certain compliance obligations retroactively.
- **Concern #3:** The proposed rule requires that “[w]hole building energy consumption data shall be provided to the requestor in monthly intervals.” If the MDE is not already aware, utilities maintain customer energy usage based on billing cycles, not monthly intervals. **Billing cycles do not typically begin on the first day of the month and end on the last day of the month. MDE must re-write this requirement to reflect the reality of how customer energy usage and billing data is maintained.**

Technical Corrections Requested – The companies request section 26.28.04A.(1) be reviewed and corrected by MDE. The section states that “Electric and gas companies delivering energy to a covered building shall maintain whole-building energy consumption data for all buildings, for at least the most recent 5 years in an electronic format capable of being uploaded to the benchmarking tool.” The companies believe the word “covered” needs to be inserted after the word “all” (i.e., “shall maintain whole-building energy consumption data for all covered buildings”) to remove any potential confusion that electric and gas companies are to maintain consumption data for every building in their service territory.

While the companies understand Maryland’s ambitious goals to reduce greenhouse gas emissions and the requirement of the CSNA, the July 10 draft BEPS regulations would represent major changes to the state’s building and energy standards while adversely affecting many Marylanders with additional financial burdens.

The companies continue to believe the BEPS regulations significantly exceed what is required by the CSNA and are not justified, feasible or economically realistic. The companies request MDE draft more realistic and lawful BEPS regulations that can reduce greenhouse gas emissions using an “all-of-the-above” energy approach, use of new and emerging technologies and limit the financial costs to Marylanders.

Thank you for your consideration of our comments.

Sincerely,



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Columbia Gas of Maryland
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July 25, 2024

VIA EMAIL

Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, Maryland 21230

Re: Stakeholder Comments from MBIA on July 2024 Draft BEPS

These comments on the July 2024 Draft are submitted on behalf of the Maryland Building Industry Association (“MBIA”).

These comments also serve to incorporate MBIA’s June 2023 comments to the previous BEPS regulations. As indicated in the previous June 2023 comments, while MBIA continues to support appropriate efforts to responsibly reduce greenhouse gas emissions, we strongly object to the proposed July 2024 Draft BEPS regulations for the following reasons:

I. The Alternative Compliance Fee Remains Too High.

The Climate Solutions Now Act (the “CSNA” or the “Act”) provides some guidance to the Maryland Department of the Environment (the “Department”) in setting the alternative compliance fee. Specifically, the Act provides that the fee may not be “less than the social cost of greenhouse gases” as adopted by EPA. The draft regulations, of course, propose fees that are multiple times the current EPA published number. Compared to EPA’s current published number of \$51 a ton, or even the \$190 a ton still expected by many commentors, the draft imposes fees that climb from \$230 to \$270 – and then adjusts those fees upwards for inflation. This completely ignores the requirement in the statute that the Department provide “maximum flexibility” to building owners. Instead, it attempts to bludgeon owners with the highest possible fees.

II. County Enforcement Remains Ambiguous

As the Department has seen, Montgomery County has created its own BEPS regulations, and will be considering them in September 2024. Montgomery County has established Final Performance Standards through Energy Use Intensity (“EUI”) Measures, which is now inconsistent with the Department’s 2024 Draft BEPS regulations. Not only is this inconsistent with the State’s draft regulations, but the 2024 Draft BEPS regulations provide no guidance or clarity as to how inconsistent or contradictory provisions will be resolved between county regulations and the State’s.

III. Owners vs. Tenants

As indicated in the regulations “the purpose of this chapter is to establish reporting requirements for building owners, tenants, electric and gas companies, and district energy providers.” The compliance fees are the responsibility of the building owner, whereas the regulations barely mention tenants. There is soft language requiring that a tenant shall, within 30 days of a request by the building owner, provide all required benchmarking information that cannot otherwise be acquired by the building owner from other sources.

As the Department knows, several C&I leases provide that the tenant is responsible for utilities, including energy use. As a result of these regulations, not only is the building owner going to be penalized for their tenant’s energy use, but it is impractical to assume that tenants will be willing to hand over this data to the building owners. The regulations should specifically excuse owners if the tenants, despite the reasonable and good faith efforts of the owners, refuse to provide necessary information. The Department should also note that it is required by the budget language to take into account the “needs of owners of covered buildings who are not responsible for and do not have access to or control over building energy systems” before the Department adopts or establishes energy use intensity standards.

IV. Energy Use Intensity Targets Should be Significantly Amended Based on Updated Benchmarking.

MBIA continues to believe that EUI should not be a part of the BEPS regulations. However, the Department is taking a step in the right direction in reevaluating what these EUI targets should be. MBIA renews our earlier comments on the draft EUI standards.

MBIA also object the Department’s apparent decision to ignore the advice of the Air Quality Control Advisory Council (AQAC). By statute, MDE is required to consider the advice of AQAC, including advice to modify proposed regulations. Md Env. Art §2-206(b). AQAC advised the Department to modify the EUI requirements to allow building owners to submit plans for compliance rather than being penalized for failing to meet EUI targets. This could easily be

achieved by simply changing the regulations. Instead, MDE has made no changes consistent with that advice.

As the Department indicated, it plans to establish new EUI standards in 2027. In order to be consistent with the intent of the CSNA, the Department should include EUI targets that owners of buildings would use to **voluntarily** access the efficiency of their buildings compared to similar buildings and propose plans for improving efficiency. If, instead, the Department chooses to implement these EUI standards as a requirement, it must take into account the actual benchmarking data over the next few years to reflect reasonable targets. The EUI standards as originally proposed in 2023 provided unreasonable and unattainable targets.

Additionally, the Department must take into account the cumulative impact of other goals and updates occurring in the State. This includes, but is not limited to, the Clean Heat Standards, the items reflected in Governor Moore's Executive Order, the closure of the Brandon Shores Power Plant, and the creation of data centers in the states. All of these items will have a direct impact on Maryland's climate goals and should be considered when the Department publishes the new EUI targets in 2027. The cost to building owners was already estimated to be over \$15 billion. The cumulative impacts of all of these requirements will surely increase electricity rates and updated estimates of those costs should be included in all economic studies.

The study should also take into account the impact on multi-family housing in the midst of a housing crisis - a crisis which has already been recognized by the Moore Administration. In addition, the impact of central Baltimore and similar urban areas should be separately accessed. The work from home revolution has led to many "zombie buildings" (buildings with vacancies over 50%) in those areas. The capital costs to upgrade or convert many of those buildings could be ruinous.

From a fee perspective, at no point did the legislature suggest that the Department should subject building owners to potential fines of up to \$25,000 per day for failing to meet an EUI "target." In the event EUI targets are required, the Department should amend the provisions to create and clarify an alternative and reasonable compliance fee. As the EUI targets were previously outlined in the June 2023 regulations, building owners who fail to meet those targets would be violating an air quality regulation and therefore subject to potential civil penalties of \$25,000 a day under Env 2-610 or administrative penalties of \$2,500 a day under Env 2-610.1. Hopefully the Department would not assess such large penalties, but no building owner wants to voluntarily violate an environmental regulation and every building owner would be aware of the size of the potential penalties.

V. Manufacturing

The draft regulations incorporate a new definition of "manufacturing" which appears to incorporate part, but not all, of the definition of the term in MD. Env. Art §2-1202(h)(1). In particular, the definition fails to recognize that "manufacturing" includes "research and

development activities” performed by manufacturers. The definition of “manufacturing” should be amended to specifically include the entirety of the statutory definition.

For example, the draft regulations should be amended to specifically recognize that buildings engaged in research and development for companies in the manufacturing sector are exempt from the requirements. That is true whether or not the manufacturing activity, itself, occurs within the building.

VI. Exemptions

The Climate Solutions Now Act provided that certain buildings – such as historical structures and agricultural buildings - are exempt from the building performance standards. The technical guidance that is incorporated into the regulations seem to require that building owners must apply for an exemption. No application for exemption or waiver should be required and it should be clear that the Department has no discretion to deny a waiver for buildings that meet one of the statutory criteria.

VI. Conformance with Budget Language

The language inserted in the budget includes provisions stating that MDE will not be provided with funding for “adopting [or] establishing ...site energy use intensity standards” until after specific actions are taken. These actions include:

- (1) calculating benchmarks based upon data reported by building owners,
- (2) the promulgations of special exceptions based on building age, regional differences, unique needs and the use of biofuels,
- (3) consideration of the needs of owners who are not responsible for or have control over building energy systems of tenants.

None of these items have been accomplished. MDE cannot, of course, calculate benchmarks until the data is reported by the owners and that has not occurred. Nothing in the draft regulations account for regional differences, unique needs or the use of biofuels. Except for a very limited provision for buildings on an historic registry, no provision is related to building age. As noted above, no provision is made for owners who have no control over tenant energy use.

Furthermore, the Department cannot adopt or establish standards “*until*” a report is submitted to the budget committee that assesses the cost of the requirements and makes recommendation for alternative fees for energy use intensity compliance.

Most importantly, the budget language requires that an economic feasibility study must be submitted to the budget committee before the energy use intensity standards are established that includes a consideration of “building age, technological limitations, and limits of building resources” as well as recommendations for addressing situations where buildings would be in noncompliance.

The proposed regulations go to far in establishing an energy use intensity program and adopting portions of such a program before those prerequisites have been adopted.

Sincerely,

/s/ Michael C. Powell

Michael C. Powell

MCP/dms



Maryland Farm Bureau

3358 Davidsonville Road | Davidsonville, MD 21035
410-922-3426 | www.mdfarmbureau.com

24 July 2024

Maryland Department of the Environment
1800 Washington Blvd.
Baltimore, MD 21230

RE: BEPS Draft Proposed 2024 Regulations

Maryland Department of the Environment:

I am submitting this public comment on the 2024 Draft Proposal of the Building Energy Performance Standards (BEPS) on behalf of the nearly 9,500 member families of the Maryland Farm Bureau (MDFB).

MDFB appreciates the inclusion of livestock in the definition of "Agricultural Buildings." It is crucial to encompass all facets of Maryland's diverse and evolving agricultural industry. This addition to the definition will assist Maryland's agriculture sector in ensuring compliance with the regulations.

However, MDFB would like to raise concerns regarding the language included in the Revised Regulations and Technical Guidance documents for reconsideration. On page four of the BEPS Draft Proposed 2024 Regulations, language was added under .02 A. (3), stating, "A building owner shall follow the exemption procedures under the TM 24-01, 'Technical Guidance and Calculation Methodologies to Comply with Building Energy Performance Standards.'" In the Technical Guidance Document, on page eight under A. 1.2.2 Exemptions – Which buildings do not need to comply?, it specifies that exempted buildings must apply for exemption status by submitting an exemption request form with supporting documentation. MDFB is concerned that this modification to the exemption procedure could pose challenges for our members and farmers in the state. We believe it would be preferable for the exemption procedure to remain as is, continuing to automatically exempt buildings that meet the "Agricultural Building" definition.

Please feel free to contact Tyler Hough, Director of Government Relations at the Maryland Farm Bureau, at though@marylandfb.org with any questions.

Sincerely,

James K. Raley Jr.
President, Maryland Farm Bureau, Inc.



July 24, 2024

Mr. Mark Stewart, Program Manager
Climate Change Program
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, Maryland 21230

Re: Comments from MCIES on draft Maryland Building Energy Performance Standards Regulations

Dear Mr. Stewart:

The Maryland Coalition for Inclusive Energy Solutions (MCIES) provides the following comments regarding the Maryland Department of the Environment's (MDE) proposed Building Energy Performance Standards (BEPS) regulations. MCIES is a coalition of diverse stakeholders, including representatives from organized labor, manufacturing, energy production, transportation, and public utilities, advocating for the inclusivity of all energy types, including natural gas, renewable natural gas, hydrogen, propane, and nuclear power.

It is essential for Maryland's residents to leverage a diverse array of energy sources to ensure an equitable energy future for all. The proposed regulations, however, do not consider this.

Financial Cost- Prohibiting the use of natural gas appliances forces covered building owners to incur major costs for electric alternatives. Electrification retrofits are expected to cost covered Maryland building owners billions of dollars. This cost will be paid by Marylanders.

Increased Costs on All Maryland Utility Rate Payers- Electric and gas utility companies will incur new costs to implement the requirements of the proposed regulations which will ultimately be paid for by utility rate payers in Maryland.

Penalties On Building Owners- The administrative and civil penalties, or non-compliance fees will be additional costs adversely affecting covered building owners. We urge the Maryland Department of the Environment (MDE) to, at a minimum, reduce the proposed compliance fees and penalties on covered building owners.

Energy Use Intensity (EUI)- The Climate Solutions Now Act (CSNA) does not mandate EUI standards/provisions to be included in proposed regulations. Therefore, EUI should not be

included. We look forward to MDE’s forthcoming report(s), as required in the budget, which evaluates mechanisms other than EUI for meeting greenhouse gas emission targets, along with a recommendation for an alternative compliance fee for buildings that do not meet EUI standards.

Manufacturing Definition and Exemption Clarification- Rather than explicitly exempting the manufacturing sector in alignment with the law, the specific inclusions remaining under section (h) are omitted, including:

(2) “Manufacturing”, when performed by companies primarily engaged in the activities described in paragraph (1) of this subsection, includes:

- (i) The operation of saw mills, grain mills, or feed mills;
- (ii) The operation of machinery and equipment used to extract and process minerals, metals, or earthen materials or by-products that result from the extracting or processing; and
- (iii) Research and development activities.

We are concerned that the piecemeal definition does not encompass the entire manufacturing sector. The regulations must exclude all buildings used by a manufacturing business, including research and development.

Compliance Pathway- Building owners will be left without any guidance or assistance navigating these complex measures. They need support.

Exemptions- New section, 26.28.02 in the July 10 draft BEPS, creates a new exemption procedure. Section 26.28.02.02 (3) states “A building owner shall follow the exemption procedures under the TM 24-01 “Technical Guidance and Calculation Methodologies to Comply with BEPS.” TM 24-01 Section A. 1.2.2 states “...a building owner must submit an exemption request form to the Department along with supporting documentation.” We have concerns about how this will be implemented. For example, with this new exemption procedure, how long will it take to receive a determination from MDE on an exemption request? We respectfully request that MDE grant exemptions directly through clear regulatory language.

Conflict with Federal Law- The federal Energy Policy and Conservation Act (EPCA) preempts state regulations that effectively ban EPCA-regulated products from accessing necessary energy sources. *See, e.g.*, 42 U.S.C. § 6297(c). The BEPS is expressly intended to reduce greenhouse gas emissions and improve overall energy efficiency by compelling the replacement of major appliances with – in practical effect – electric alternatives to meet GHG emissions. In most buildings, appliances like furnaces are “covered products” under EPCA and EPCA preempts efforts by States to establish “energy conservation standards” relevant to these products, particularly where the state standards functionally ban the use of the products. Accordingly, the BEPS is preempted.

Innovative Pathways for Compliance- Marylanders continue to choose natural gas for their personal and business energy needs. The use of promising new technologies such as Renewable Natural Gas (RNG) and hydrogen, emerging highly efficient gas fueled technologies like heat

pumps and fuel cells, as well as emissions offsets to reduce greenhouse gas emissions, should be allowed as compliance pathways in the regulations.

The goal of the Climate Solutions Now Act is to achieve net zero greenhouse gas emissions by 2045. The Act does not prohibit the use of RNG, hydrogen, and emissions offsets to achieve this goal. MCIES respectfully requests MDE to draft BEPS regulations that can reduce greenhouse gas emissions using an “all-of-the-above” energy approach, allowing for the use of new and emerging technologies while limiting the financial burden to Marylanders. We urge MDE to follow the statute and include the provisions outlined in 2-1602 (C)(2)(II). These provisions are necessary for affordability, reliability and achievability.

Lastly, we urge the Department to consider the cumulative impacts of additional upcoming regulations, which include a clean heat standard and a zero-emission heating equipment standard, in the cost review study as required by the 2024 budget amendment. These changes will increase the overall cost to building owners substantially.

Thank you for considering our comments.

Sincerely,



George K. Anas

President

Maryland Coalition for Inclusive Energy Solutions



The Expense of Rapid Electrification in Maryland

In January 2024, The Sage Policy Group completed an assessment of costs and economic impacts associated with accelerated electrification of Maryland’s energy infrastructure. **Their analysis estimates the total cost of reaching the state’s goal of 100% renewable energy systems will approach \$61 billion.**

Estimated Costs of Electrification in Maryland	Total cost (billions)
Promoting Offshore Wind Energy Resources (POWER) Act	\$49.9
Energy Storage - Targets and Maryland Energy Storage Program	\$3.8
Energy Efficiency and Conservation Plans and Green and Healthy Task Force bill (Not enacted)	\$0.2
Public Utilities - Energy Efficiency and Greenhouse Gas Emissions Reductions - Alterations and Requirements (Not enacted)	\$2.6
Additional Transmission Capacity	\$4.5
Total Cost	\$61.0
Cost per year over 20 years	\$3.1

Source: Consumer Energy Alliance, U.S. Department of Energy, Department of Legislative Services, U.S. Census Bureau

Economic Growth

Forcing a transition away from natural gas will further slow economic growth in Maryland at a time when the state faces a \$761 million shortfall due in part to limited economic expansion of only 1.6% since 2016 compared to the national average of 13.9%. This sole source approach to emissions reduction will create unavoidable hardship for small businesses and the families they support; threaten the state’s ability to fund priorities like education reform and transportation infrastructure; and diminish its national reputation as a business-friendly state.

A natural gas ban would also dramatically limit Maryland’s ability to participate in the reshoring of manufacturing to the U.S., including at Cove Point. As Maryland’s single largest source of export expansion, LNG export activity from Cove Point currently represents 16% of the value of all exports from the state and is responsible for the creation of 900 jobs - or \$74 million in annual labor income.

TOTAL COST OF REACHING THE STATE’S GOAL OF 100% RENEWABLE ENERGY SYSTEMS WILL APPROACH **APPROXIMATELY \$61 BILLION**





Costs to Families and Businesses

The significant – and for many households, unsustainable – costs of rapid electrification will be borne by the state’s ratepayers and taxpayers. **Only households earning in the 90th percentile of income appear to have enough discretionary income to easily absorb the initial costs of electrification and ongoing increases in the cost of electricity.**

When discretionary spending power across income levels is diverted toward electrification, reduced spending for essential items, supplies and leisure activities, which translates to less job creation, diminished income growth, less support for small businesses, and suppressed expansion of real estate values.

Impacts on Lower- and Middle-Income Families

Reducing or eliminating the availability of natural gas will have the greatest impact on lower income households. The cost of replacing existing appliances to comply with a natural gas ban is equal to nearly half the median income of Baltimore City households and is close to the federal poverty income level for a family of four. For those in the 10th percentile of income, the cost of electrification would result in discretionary income equal to negative \$9,500. **Even households with median incomes (i.e., the 50th percentile) will need to devote a considerable portion of their discretionary income to home upgrades and ongoing electricity costs.**

Maryland’s Electric Grid

As of October 2023, nearly 50% of Maryland’s electric generation capacity is natural gas-fired, while less than 5% is solar-powered. The rapid acceleration of end-use electrification, coupled with restrictions on traditional, stable electric power generation fuels like natural gas will threaten the reliability of the state’s electric grid and significantly increase electricity generation costs.

It is estimated that electrification could increase peak system demand by as much as 50% in the near term (and up to 300% by 2050) and would require the immediate replacement of over 10,000 megawatts of traditional fuel generating capacity. Accomplishing this with power from wind, for example, which currently fuels approximately 5% of end-use electricity in the state, would **require an area seven times the size of Annapolis** to accommodate wind turbines alone.



Conclusion

The Sage analysis reinforces warnings that the aggressive pursuit of electrification as a sole source emissions reduction strategy will come at a great cost to Maryland and its residents, threatening the state’s economic growth, the reliability of our electric grid and our ability to pursue generational policies like education reform.

An Analysis of Accelerated Electrification in Maryland

PREPARED BY SAGE POLICY GROUP, INC.

ON BEHALF OF THE MARYLAND COALITION FOR INCLUSIVE ENERGY SOLUTIONS

January 2024

Executive Summary

TRANSITIONING TO A LOW-CARBON ECONOMY

Transition toward a low-carbon economy is neatly underway in Maryland. As renewable energy gradually makes strides toward financial viability, natural gas allows existing infrastructure to be simultaneously transformed and augmented while meaningfully reducing carbon emissions and ensuring electric grid reliability and affordability.

While challenging, transition should continue in a way that is:

- Financially feasible for Maryland’s households, enterprises, and the public sector
- Flexible enough to allow Maryland’s various regions to adopt options that comport with local economic, household financial, and environmental circumstances.

Certain stakeholders seek to dramatically accelerate the current pace of low-carbon transition through a combination of legislation and regulation. Some have suggested dramatically diminishing consumer choice by eliminating specified sources of energy and electric power generation fuels, even those that have heretofore generated massive environmental and economic benefits.

Accordingly, this report seeks to assess the extent to which efforts to accelerate the transition and restrict consumer choice could negatively impact energy affordability and reliability in a state in which approximately one in ten households lives in poverty. Special emphasis is placed upon the role of natural gas since it has emerged as a focal point among both federal and state policymakers and special interest organizations. Perspectives vary greatly regarding its role as a short- and long-term solution to reduce carbon emissions.

PRINCIPAL ANALYTICAL FINDINGS

ECONOMIC & FINANCIAL CONSIDERATIONS FOR MARYLAND’S HOUSEHOLDS

- If a household were required to replace existing natural gas appliances to comply with a natural gas ban, new appliances could collectively cost up to \$26,884. This cost equals nearly half the median income of Baltimore City households (\$54,124) and is close to the federal poverty income level for a family of four (\$30,000).
- It costs an estimated \$2,038 more per year for a household using electricity rather than natural gas, an amount equivalent to more than 4 percent of Maryland’s per capita annual income.
- Maryland’s households associated with the lowest 10 percent of incomes already lack discretionary spending power. By eliminating or reducing energy choice and aggressively pushing household electrification, decision makers would be placing these households in meaningfully deeper financial holes during the multi-decade period of implementation.
- For households at the 20th percentile, discretionary spending power would turn from positive to negative.
- Even the 50th percentile household would be dramatically affected, with their discretionary spending power cut in approximately half during an accelerated move toward electrification.

ECONOMIC & FISCAL CONSIDERATIONS FOR MARYLAND'S ECONOMY

- A natural gas ban in Maryland would dramatically limit its ability to participate in the reshoring of manufacturing to the U.S., compromising living standards in the Free State.
- By 2022, only five years after Cove Point began exporting liquified natural gas (LNG), the value of LNG exports accounted for 16 percent of the value of all exports from the state. A ban on natural gas would potentially impact Maryland's single largest source of export expansion.
- Aggressive pursuit of electrification as a sole source emissions reduction strategy would cost the State billions of dollars in subsidies, including to lower income households. For the roughly 1.3 million households that would be priorities for this electrification effort, estimated total costs would be more than \$38 billion in Maryland. State of Maryland rebates to households could total \$2.6 billion. The State already faces a \$761 million shortfall for FY2025 and fiscal shortfalls climb thereafter.

ENVIRONMENTAL CONSIDERATIONS

- When natural gas is used in combined cycle power plants, greenhouse gas (GHG) emissions are reduced by more than 50 percent relative to coal.
- From 2014 to 2022, the volume of natural gas used annually to generate electricity in Maryland increased 313 percent, from 24.3 billion cubic feet to 100.5 billion cubic feet. During that period, annual GHG emissions declined 74 percent from more than 44,000 tons to fewer than 12,000 tons.
- Aggressive innovation and deployment of existing and emerging low-carbon energy solutions like renewable natural gas (RNG), hydrogen production, carbon capture and storage, and combined heat and power, can enable Maryland to attain its climate goals while retaining the integrity of existing energy systems.
- Electrification could more than double demand for electricity. Without the benefit of efficient, affordable, and reliable natural gas, energy costs would increase for households and businesses.
- Meeting demand for electricity would require massive new infrastructure buildout, generating costs (estimated at approximately \$61 billion) that would eventually pass to the consumer. Additional land—as much as 51 square miles, according to a 2022 report from the Maryland Department of Natural Resources' Greenhouse Gas Mitigation Working Group—would also be needed to accommodate new energy production facilities, including wind turbines, solar arrays, sub-stations, and electric transmission towers and lines.

IN SUMMATION

At a time of significant fiscal constraint and given the State's desire to invest in educational reforms, mass transit, and a variety of other services, Maryland needs a balanced approach to continue upon a sustainable energy transition path that is economically, environmentally, and socially viable. To strike that balance, decision makers must continue to invest in renewable energy while also leveraging the existing capacities and advantages of traditional energy sources for which support infrastructure already exists, including natural gas.

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Introduction

NATURE OF THE ENDEAVOR

This Sage Policy Group, Inc. (Sage) report focuses on the economic and environmental impacts that the State of Maryland will face if proposed rapid acceleration of electrification is coupled with the elimination (banning) or substantial restrictions on natural gas' use as a foundational fuel source. Such actions pose far-reaching implications on Maryland's households and its overall state economic and environmental profile, far beyond the narrow focus of seeking to further reduce GHG emissions.

Reducing GHG emissions encompasses a broad range of activities that present various opportunities for implementation rather than a single pathway. Acting Federal Energy Regulatory Commission (FERC) Chair Willie Phillips, a President Biden appointee, recently indicated after a voting session that "I was ready to vote for every [gas] item, every project needed for reliability that was on the agenda today, just like I was ready in June, in May, in April and every month between the time I was named Chairman and today."¹

According to the Lawrence Berkeley National Laboratory (Berkeley Lab), there are more than 2,000 gigawatts of proposed U.S. solar, wind and battery storage projects presently seeking connection to the grid through what is referred to as the interconnection process. The sheer volume of proposed projects has already overwhelmed the longstanding grid connection process. According to Berkeley Lab, it required an average of five years for new electricity projects that were constructed during a recent year to be studied and approved for connection compared to fewer than two years in 2008.² Accordingly, there are a range of opportunities, costs, and benefits associated with energy transition. Many of the key impacts and implications are identified, analyzed, and quantified herein.

METHODOLOGY

The production, generation, distribution, and consumption of energy is the subject of considerable analysis. This report relies on broadly cited literature to supply basic information regarding the natural gas and electricity industry in Maryland and builds upon a 2016 RESI (Towson University) report entitled "Economic and Fiscal Impacts of Expanding the Natural Gas Infrastructure in Maryland", which supplies basic information regarding the status of the state's natural gas industry. Among cited sources are the Energy Information Administration (EIA) and Census Bureau.

¹ Miranda Wilson, "FERC approves 'historic' rule to address renewables backlog," E&E News by Politico, July 28, 2023. <https://www.eenews.net/articles/ferc-approves-historic-rule-to-address-renewables-backlog/>

² Id.

Maryland’s legislature has already enacted legislation directly impacting electrification and other aspects of the energy industry. Additional legislation is under consideration. Legislation is routinely analyzed by the Department of Legislative Services (DLS), which issues fiscal and policy notes. Implications of GHG emissions reductions have also been assessed by the Maryland Department of the Environment as well as other organizations. These assessments supply useful information and perspectives on the likely impacts of accelerating energy transition.

Overview of Maryland’s Natural Gas Industry

Several years ago, RESI estimated the impacts of expanding the natural gas infrastructure in Maryland. To provide context for prospective expansion, the report included basic information regarding the use of natural gas and other types of energy by households and commercial/industrial users in Maryland. The report also assesses benefits of natural gas use and the degree with which those benefits would expand with enhanced infrastructure.

As of 2015, there were a bit more than 1.1 million residential natural gas customers accounting for more than 44 percent of all Maryland households. As an example of natural gas’ prominence in Maryland, Exhibit 1 reflects the fact that natural gas was the most common source of heating fuel in the state at the time of the RESI report.³ Circumstances have changed only slightly in recent years. In 2021, approximately 43 percent of all Maryland households used natural gas for home heating fuel. Electricity provided home heating fuel for roughly 11,100 more households than natural gas, rounding to 43 percent as well.⁴ Exhibit 1 supplies statistical detail for principal home heating fuel sources in Maryland.

Exhibit 1: Home Heating Fuel Use in Maryland, 2021

Type of heating fuel	2015		2021	
	# of Households	% of Total	# of Households	% of Total
Electricity	883,862	40.6%	1,022,596	43.4%
Utility gas	968,764	44.5%	1,011,486	42.9%
Fuel oil, kerosene, etc.	197,050	9.0%	175,709	7.5%
Bottled, tank, or LP gas	72,692	3.3%	86,483	3.7%
Wood	29,110	1.3%	19,674	0.8%
Other fuel	12,005	0.6%	13,195	0.6%
Solar energy	1,791	0.1%	7,185	0.3%
Coal or coke	1,719	0.1%	1,527	0.1%
No fuel used	10,941	0.5%	17,797	0.8%
Total	2,177,934	100.0%	2,355,652	100.0%

Source: U.S. Census Bureau, American Community Survey

³ RESI, “Economic and Fiscal Impacts of Expanding the Natural Gas Infrastructure in Maryland,” January 8, 2016

⁴ U.S. Census Bureau, American Community Survey, “B25040 House Heating Fuel: 2015 and 2021 ACS 1-Year Estimates Detailed Tables” <https://data.census.gov/table?q=B25040:+HOUSE+HEATING+FUEL&t=Housing&g=040XX00US24&tid=ACSDT1Y2021.B25040>

The EIA supplies data regarding prices for fuels as well as the Btu (British thermal units) content of energy units, which allows for price comparisons on an equivalent energy content basis.⁵ A major finding of the RESI report was that natural gas was a significantly less expensive fuel when compared to other fuels on a price per million Btu basis.

Exhibit 2 presents energy cost data for natural gas and electricity for residential and commercial customers in 2015 and 2021, which is the most recent data available from EIA.⁶ To allow for direct comparison, these prices have been expressed in terms of costs per million Btus of energy value.

As indicated, electricity prices per million Btu are considerably higher than natural gas prices per million Btu. The increase in natural gas prices is attributable to several factors including increases in demand between 2019 and 2021. More extreme weather can increase demand either by consumers needing more heat or electricity generators responding to the need for more air conditioning. Economic growth can also contribute to increased demands by industry for fuel or feedstocks for products.⁷

Exhibit 2: Prices for Natural Gas and Electricity, 2015 and 2021 (Prices per Million Btu)

	Price (\$/Btu)	2015	2021
Residential Customers	Natural gas	\$10.88	\$14.19
	Electricity	\$37.40	\$38.45
Commercial Customers	Natural gas	\$10.15	\$11.55
	Electricity	\$28.18	\$30.07

Sources: RESI, Energy Information Administration, Sage

The RESI report lacks estimates related to the capacities of natural gas pipelines. The EIA, however, supplies data regarding the flow of natural gas into and out of all states.⁸ Exhibit 3 summarizes these flows for Maryland in 2014 and 2022, respectively. As indicated, inflow capacity increased 48 percent from 2014 to 2022, while outflow capacity increased 38 percent, reflecting the industry’s rapid growth in Maryland over the past several years as supply has responded to rapidly expanding demand.

⁵ For example, one cubic foot of natural gas contains 1,036 Btu while one kilowatt-hour of electricity contains 3,412 Btu. Energy Information Administration, “Units and calculators explained” <https://www.eia.gov/energyexplained/units-and-calculators/>

⁶ Energy Information Administration, “Maryland Price of Natural Gas Delivered to Residential Consumers (Dollars per Thousand Cubic Feet)” <https://www.eia.gov/dnav/ng/hist/n3010md3a.htm>; “Maryland Price of Natural Gas Sold to Commercial Consumers (Dollars per Thousand Cubic Feet)” <https://www.eia.gov/dnav/ng/hist/n3020md3a.htm>; “Electricity sales annual by state and type of customer” <https://www.eia.gov/electricity/data.php#sales>

⁷ Energy Information Administration, “Natural gas explained: Factors affecting natural gas prices” <https://www.eia.gov/energyexplained/natural-gas/factors-affecting-natural-gas-prices.php>

⁸ Energy Information Administration, “U.S. State-to State capacity”: “State Inflow Capacity” and “State Outflow Capacity,” January 31, 2023 <https://www.eia.gov/naturalgas/data.php#pipelines>

Exhibit 3: Natural Gas Flow Capacity in and out of Maryland, 2014 and 2022 (Capacity in MMcf/d)

State	2014	2022	Change 2014 - 2022
<i>Flow into Maryland from:</i>			
Delaware	22	36	64%
Pennsylvania	1,691	4,230	150%
Virginia	5,163	5,902	14%
West Virginia	4	4	0%
Total	6,880	10,172	48%
<i>Flow from Maryland to:</i>			
Delaware	145	206	42%
District of Columbia	80	80	0%
Pennsylvania	3,306	3,306	0%
Virginia	2,272	4,408	94%
West Virginia	5	5	0%
Total	5,808	8,005	38%

Source: Energy Information Administration. Notes: MMcf/d: Million cubic feet per day

Natural gas has been an expanding source of electricity generation in Maryland as indicated in Exhibit 5. The RESI study also notes that when used to generate electricity, natural gas reduces carbon emissions by up to 60 percent compared to electricity generated by coal. Reductions in GHG emissions are also linked to better health outcomes, including outcomes related to asthma, bronchitis, lung cancer, and heart disease, as noted in the RESI study.⁹

One measure of the relative GHG emissions of different fuels is the volume of emissions per amount of energy generated in combustion. Importantly, natural gas is an outperformer relative to other fossil fuels. For instance, natural gas reduces nearly 44 percent of the emissions volume from the average type of coal used to generate electricity in the U.S. Compared to petroleum-fired generation (such as by residual oil), natural gas GHG reduces emissions by roughly 29 percent.¹⁰

Natural gas produces GHG emissions during combustion for energy generation purposes, which represents part of its greenhouse gas impact. The extraction, processing, and transportation of natural gas can also produce GHG emissions. When these other potential sources of GHG emissions are considered, the entire life cycle of GHG emissions can be estimated. Another factor in this life cycle of GHG emissions is the type of technology used in electricity generation. These life-cycle factors' impacts on emissions also apply to the use of coal and other fossil fuels used to generate electricity.

Exhibit 4 compares life cycle GHG emissions of coal and natural gas used to generate electricity using common power plant technologies. The average existing coal-fired steam generator produces 2,246 pounds of GHG emissions per megawatt-hour of generated electricity. While a different coal plant

⁹ Op. cit., RESI

¹⁰ Lattanzio, Richard K., "Life-Cycle Greenhouse Gas Assessment of Coal and Natural Gas in the Power Sector," Congressional Research Service, June 26, 2015

technology can reduce the volume of GHG emissions by almost 25 percent, using natural gas rather than coal produces even greater reductions in life cycle GHG emissions. When natural gas is used in combined cycle power plants, GHG emissions are reduced by more than 50 percent relative to coal. These combined cycle plants account for 84 percent of the electricity generated by all power plants using natural gas in the U.S.¹¹

Exhibit 4: Life-Cycle GHG Emissions Estimates for Selected Power Plants

Type of fuel and plant technology	CO2 emissions (lbs/MWh)	Reduction in GHG compared to coal-fired steam generator
Coal: Steam Generator (average, existing)	2,246	-
Coal: Combined Cycle (case study: Shell)	1,694	24.6%
Natural Gas: Gas Turbine (average, existing)	1,560	30.5%
Natural Gas: Combined Cycle (average, existing)	1,054	53.1%
Natural Gas: Combined Cycle (case study: Advanced F class)	944	58.0%

Source: Congressional Research Service

When used for electricity generation, natural gas’ impact on GHG emissions in Maryland can be observed in data characterizing 2014 to 2021. Exhibit 5 charts trends in natural gas and coal use for power generation purposes as measured in millions of cubic feet and millions of short tons, respectively.

Since 2014, the annual volume of natural gas used to generate electricity increased 313 percent from 24.3 billion cubic feet to 100.5 billion cubic feet. Over that span, coal use declined 70 percent from 7.5 million short tons to 2.3 million short tons.¹²

The shift from coal to natural gas is associated with immensely positive environmental outcomes. Air emissions (pollutants) and GHG emissions have both decreased significantly. The Environmental Protection Agency (EPA) tracks pollutants linked to electricity generation. From 2014 to 2021, the following EPA pollutants collectively declined 74 percent: carbon monoxide, black and organic carbon, nitrogen oxides, sulfur dioxide, ammonia, and volatile organic compounds.¹³

From 2014 to 2021, GHG emissions from electricity generation fell 42 percent according to the EIA.¹⁴ These substantial reductions in emissions are consistent with the greenhouse gas inventory for electricity use maintained by the Maryland Department of the Environment (MDE). The inventory

¹¹ Ibid.

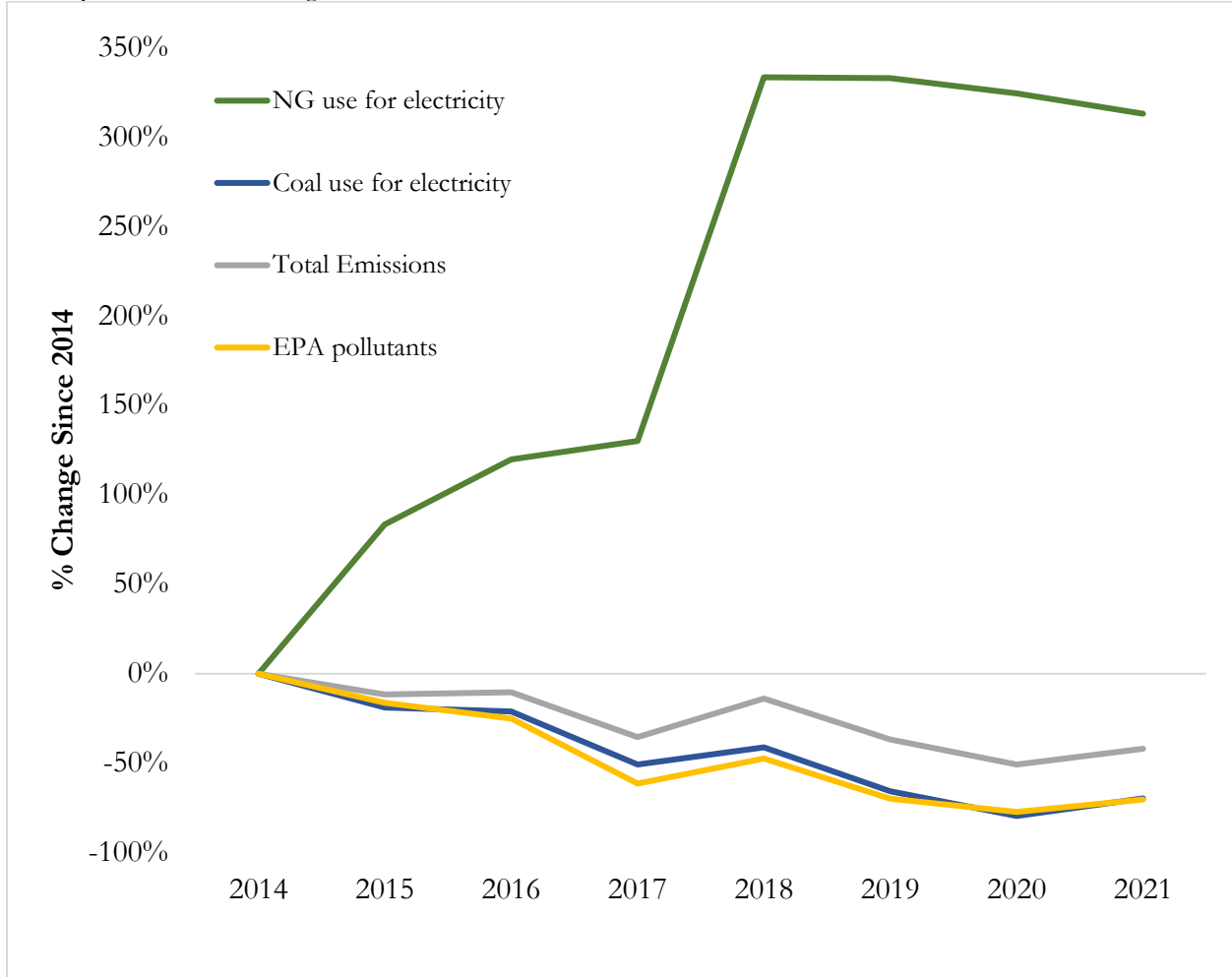
¹² Energy Information Administration, “Fossil Fuel Consumption for Electricity Generation by Year, Industry Type and State” <https://www.eia.gov/electricity/data/state/>

¹³ U.S. Environmental Protection Agency, “Air Pollutant Emissions Trends Data: State Tier 1 CAPS Trends” <https://www.epa.gov/air-emissions-inventories/air-pollutant-emissions-trends-data>

¹⁴ Energy Information Administration, “U.S. Electric Power Industry Estimated Emissions by State” <https://www.eia.gov/electricity/data/state/>

reports GHG emissions on a three-year cycle. During a period associated with movement away from coal and toward natural gas (2014 to 2020), these emissions were associated with a 46 percent decline.¹⁵

Exhibit 5: Trends in Use of Natural Gas and Coal for Electricity Generation, GHG Emissions, and Pollutants in Maryland, Percent Change since 2014



Sources: Energy Information Administration, Environmental Protection Agency.

In addition to reduced emissions, diminished use of coal and increased use of natural gas for electricity generation also reduces the cost of electricity generation. An International Energy Agency study examined the levelized cost of electricity (LCOE), which estimates plant-level costs of generating electricity over the useful life of power plants. In the U.S for 2020, the LCOE for coal plants was \$110/megawatt hour while the LCOE for natural gas plants was \$45/megawatt hour.

¹⁵ Maryland Dept of the Environment, "Greenhouse Gas Inventory"
<https://mde.maryland.gov/programs/air/climatechange/pages/greenhousegasinventory.aspx>

THE RANGE OF ECONOMIC IMPACTS OF NATURAL GAS

The oil and gas industry (including natural gas) contributes nearly \$16 billion to Maryland’s economy according to a 2023 PwC economic impact study.¹⁶ The report provides details regarding each U.S. state, plus the District of Columbia, and disaggregated economic contributions by congressional district. In Maryland, natural gas and the larger industry helped create 107,000 jobs associated with \$8 billion in labor income.

Exhibit 6: Economic Impact of the Oil and Natural Gas Industry in Maryland, 2021

State/ Congressional District	Employment (Jobs)			Labor Income (\$ Millions)		
	Direct	Total	Total as % of State/District	Direct	Total	Total as % of State/District
Maryland	18,030	106,630	2.9%	\$1,153	\$8,074	2.9%
MD-1	3,240	14,760	3.2%	\$145	\$810	3.1%
MD-2	2,280	13,250	3.0%	\$118	\$1,001	2.9%
MD-3	1,850	12,790	2.8%	\$118	\$1,086	2.9%
MD-4	1,870	12,430	2.7%	\$128	\$879	2.7%
MD-5	1,950	12,520	2.5%	\$111	\$833	2.5%
MD-6	3,360	14,900	3.2%	\$217	\$1,175	3.2%
MD-7	2,510	12,750	3.1%	\$254	\$1,072	3.4%
MD-8	970	13,230	2.5%	\$63	\$1,217	2.8%

Source: PwC, “Impacts of the Oil and Natural Gas Industry on the US Economy in 2021,” Prepared for the American Petroleum Institute, April 2023

The value of natural gas for future economic development is observable in the economic development strategy for Maryland’s Lower Eastern Shore. That strategy notes that the lack of access to the natural gas infrastructure in parts of the three-county area contributes to the lack of economic development in those areas. Extension of that infrastructure into these areas is viewed as encouraging economic development while reducing energy costs for households, including lower-income families. It also contributes to greater economic diversification.¹⁷

One of the three counties, Somerset, recently began receiving piped natural gas for the first time. This has resulted in substantial enthusiasm among economic development professionals, with the County’s Economic Development Commission Executive Director Daniel Thompson indicating that “This could have such a tremendous impact on attracting industries, businesses, and . . . people in general.”¹⁸ By several measures, Somerset County is Maryland’s most impoverished county. Relatedly, the Prince

¹⁶ PwC, “Impacts of the Oil and Natural Gas Industry on the US Economy in 2021,” Prepared for the American Petroleum Institute, April 2023. <https://www.api.org/-/media/files/policy/american-energy/pwc/2023/api-pwc-economic-impact-report-2023>

¹⁷ “Comprehensive Economic Development Strategy for the Lower Eastern Shore of Maryland,” Tri-County Council for the Lower Eastern Shore of Maryland, 2022-23. https://lesmd.net/wp-content/uploads/2022/04/2022-2023CEDS_FullDocument_Complete_Reduced.pdf

¹⁸ Taylor Lumpkin, “Natural gas expansions to bring jobs, opportunity to Somerset County.” WMDT, November 6, 2020. <https://www.wmdt.com/2020/11/natural-gas-expansion-to-bring-jobs-opportunity-to-somerset-county/>

Anne Industrial Park has already begun to observe greater activity due to the availability of natural gas.¹⁹

Another lens through which the economic impacts of natural gas can be considered takes the form of natural gas infrastructure being extended from Maryland into the Delmarva Peninsula (Accomack County) in Virginia, which is currently not served by a natural gas utility. The county is currently considered to be at a competitive disadvantage with other communities both inside and outside of Virginia due to its lack of access to piped natural gas.

In 2022, Mangum Economics prepared an economic impact report on natural gas pipeline extension to Accomack County for the Virginia Economic Development Partnership.²⁰ Interestingly, the report speaks of the economic growth realized by Somerset County, Maryland, that occurred due to the availability of natural gas in the county. At least one-third of the major industrial development projects that were considering the Commonwealth as a location required natural gas to be available at evaluated sites, according to the report. Natural gas availability was also seen as supporting expanded commercial activity linked to the NASA Wallops Flight Facility, including a rocket program that uses liquefied natural gas (LNG) as propellant.

The extension of natural gas infrastructure was also viewed as having a positive impact on efforts to recruit new food processors, other manufacturers, warehousing and distribution facilities, controlled-environment agriculture, and to support the development of new housing. Overall, the report found that should natural gas become available and facilitate the recruitment of additional industries, it could help support more than \$68 million in annual economic output.²¹

Additional economic impacts and benefits from natural gas are generated by the exportation of LNG from Cove Point, Maryland. As discussed below, the transition from importing to exporting LNG has significantly increased the total value of Maryland’s exports. It has also increased employment at Cove Point in Calvert County.

¹⁹ “Princess Anne Industrial Park Sees Increase in Activity,” SVN Commercial Real Estate, January 29, 2021. <https://svnmiller.com/princess-anne-industrial-park-sees-increase-in-activity/>

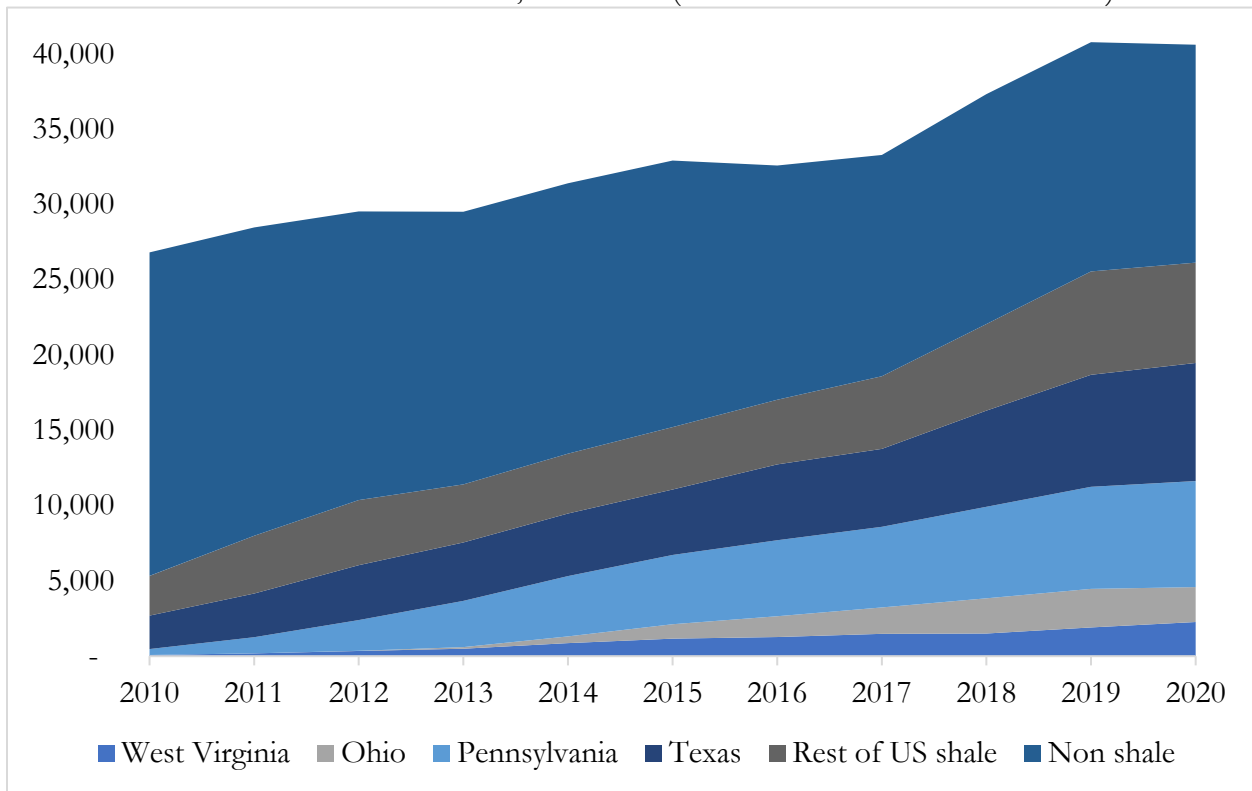
²⁰ Mangum Economics, “Natural Gas Pipeline Extension: Impact on Accomack County, Virginia,” December 2022, Virginia Economic Development Partnership <https://rga.lis.virginia.gov/Published/2022/HD17/PDF>

²¹ Id

ROLE OF NATURAL GAS IN MARYLAND EXPORTS

Maryland has been home to a terminal for LNG importation since 1978. Cove Point’s history of importing and exporting LNG has reflected changes in U.S. consumption and production of natural gas. In 2014, the Federal Energy Regulatory Commission (FERC) authorized development of the project that created Cove Point’s capacity to become an LNG export facility. While the capacity of the Cove Point Terminal to import LNG had expanded substantially over time, the need to use that capacity eroded, particularly during the mid-2010s. This reduction in imports was mostly a reflection of the sea-change in domestic natural gas production. A significant element of this is attributable to the nation’s Mid-Atlantic region. In 2010, Pennsylvania, West Virginia, and Ohio collectively accounted for 2 percent of U.S. natural gas production using contemporary methods. By 2020, that figure had surged to 29 percent.²² At the same time, LNG demand has been steadily expanding in other nations as they seek cleaner, reliable energy to replace coal-powered plants and nuclear facilities that have fallen out of favor.²³

Exhibit 7: Trends in Natural Gas Production, 2010 - 2020 (Billions of Cubic Feet of Natural Gas)



Source: Energy Information Administration

²² Energy Information Administration, "U.S. Shale Production" https://www.eia.gov/dnav/ng/hist/res_epg0_r5302_svw_bcfa.htm and "Natural Gas Gross Withdrawals and Production" https://www.eia.gov/dnav/ng/ng_prod_sum_a_EPG0_FGW_mmcf_a.htm

²³ The International Energy Agency found that from 1990 to 2018, the contribution of nuclear energy to global electricity generation declined from 17 percent to 10 percent.

By late-2017, initial operations at Cove Point’s export facilities began. Cove Point quickly established itself as a major LNG exporter. In 2018, the facility exported more than \$1.1 billion of LNG. By 2022, the value of LNG exports increased to more than \$2.8 billion.

These exports have made significant contributions to the value of total exports from Maryland. Historically, the most valuable export commodity from Maryland has been transportation equipment, such as civilian aircraft, engines, and parts. By 2022, only five years after Cove Point began exporting LNG, the value of LNG exports accounted for 16 percent of the value of all exports from the state, nearly as much as all transportation equipment.²⁴ Exhibit 8 supplies pertinent statistical detail.

Exhibit 8: Total U.S. Exports from Maryland (Values in Millions of 2020 Dollars)

Type of Export	2018	2019	2020	2021	2022
Total Maryland Exports	\$12,104.6	\$13,051.0	\$12,674.5	\$16,416.2	\$17,826.8
Natural Gas, Liquefied	\$1,162.6	\$1,510.9	\$1,289.8	\$1,952.0	\$2,861.7
% of Total MD Exports	9.6%	11.6%	10.2%	11.9%	16.1%
Transportation Equipment	\$2,372.3	\$2,729.8	\$2,709.2	\$3,670.7	\$3,022.4
% of Total MD Exports	19.6%	20.9%	21.4%	22.4%	17.0%

Source: USA Trade Online

Economic impacts of this export activity on employment, labor income, and business sales are substantial. Exhibit 9 compares estimated total economic impacts of Cove Point operations in 2012, well before export operations began, and 2021, four years after exporting commenced. The updated employment impact is more than 900 jobs, a 597 percent increase from 2012. Annual labor income associated with this updated employment impact is \$74 million, a 640 percent increase. Annual business sales supported by the ongoing operations of Cove Point is \$130 million, a 103 percent increase from 2012. Maryland has benefited significantly from exporting LNG despite banning shale-related natural gas production since 2017.

Exhibit 9: Comparison of Cove Point Annual Operating Economic Impacts, 2012 and 2021 Estimates

Type of impact	2012 estimate	2021 estimate	Increase in estimated impacts
Employment (full- and part-time job years)	130	906	597%
Labor Income (millions)	\$10	\$74	640%
Business Sales (millions)	\$64	\$130	103%

Sources: Cove Point, IMPLAN, Sage

²⁴ USA Trade Online, “State Exports by NAICS Commodities” <https://usatrade.census.gov/data/Perspective60/View/dispsview.aspx>

Potential Impacts of Banning Natural Gas

As originally proposed, Maryland’s Climate Solutions Now Act of 2022 included provisions for a natural gas ban. While these provisions were ultimately removed from the bill, the legislation has been viewed as part of a broader and emerging movement to quickly transition away from natural gas. Two of the bill’s sponsors had hoped to make Maryland the first state to ban natural gas use to heat and cool newly constructed buildings.²⁵

On a local level, Montgomery County passed legislation in late-2022 requiring new residential and commercial buildings to be all-electric beginning in 2027. Certain building types are exempt from these requirements, including hospitals, wastewater treatment plants, high-energy industrial or commercial cooking facilities, and facilities requiring backup energy systems. Other exemptions include major renovations or new additions to existing buildings.²⁶

Unlike Maryland, many states have enacted laws prohibiting localities from banning natural gas. A compilation of such laws in August 2021 found that 19 states had enacted prohibitions or restrictions on municipalities banning natural gas. Four other states had considered such legislation by that time. Nonetheless, restrictions on the use of natural gas have been implemented at local levels across the U.S. By 2021, 76 cities had enacted restrictions on natural gas use.²⁷ Legal challenges associated with some restrictions are ongoing.

Potential effects of a natural gas ban in Maryland as formulated in the Greenhouse Gas Reduction Act (GGRA) Plan have been assessed. The Consumer Energy Alliance stated that the presumption is that such a ban would require homeowners to replace appliances and force businesses to stop using natural gas. A Baltimore household that needed to replace existing gas appliances could spend up to \$26,884 to comply with a natural gas ban. Replacement of appliances and piping before the end of their useful lives also creates unnecessary waste.

Economic damage would occur because natural gas is plentiful, highly efficient, and a cost saver. To date, use of natural gas has been a significant benefit to Maryland households and businesses, which have reportedly saved more than \$4.6 billion over a decade due to the increased availability of affordable natural gas. Meanwhile, as noted earlier, expanded use of natural gas has coincided with lower GHG emissions in the Free State.²⁸

²⁵ Cox, Erin, “Md. pursues one of the most ambitious climate change plans in the U.S.,” March 31, 2022, Washington Post <https://www.washingtonpost.com/dc-md-va/2022/03/31/maryland-climate-change-law/>

²⁶ Azhar, Aman, “Maryland’s Largest County Just Banned Gas Appliances in Most New Buildings—But Not Without Some Concessions,” December 2, 2022, Inside Climate News <https://insideclimatenews.org/news/02122022/montgomery-county-maryland-gas-building-ban/>

²⁷ Institute for Energy Research, “An Overview of Natural Gas Bans in the U.S.” August 2021 https://www.instituteforenergyresearch.org/wp-content/uploads/2021/08/Natural-Gas-Ban-Report_Updated.pdf

²⁸ Consumer Energy Alliance, “The Hidden Costs of a Maryland Natural Gas Ban” [consumerenergyalliance.org > cms > wp-content](https://consumerenergyalliance.org/cms/wp-content)

Bans on natural gas could also create a barrier to the creation and use of renewable natural gas (RNG), a renewable energy source associated with low or negative carbon intensity that is interchangeable with natural gas. Maryland’s first use of RNG in a utility’s distribution system was approved in 2021. Baltimore Gas and Electric’s RNG is derived from food waste and is expected to generate volumes sufficient to provide enough gas to meet the annual power needs of nearly 5,000 homes.²⁹ Since RNG is interchangeable with natural gas, it can be utilized within the existing natural gas distribution network, providing both economic and environmental benefits.

Restrictions on natural gas would lead to major increases in the use of electricity, a partial substitute. The EIA projected that during the winter of 2021-22, households using natural gas would spend \$746 for heating while households using electricity would spend \$1,268. Increased electricity use would also expand the need for electricity generation and systems charged with distributing that electricity. That translates into higher investment costs for utilities, higher energy charges for ratepayers, and potentially less reliability. These considerations are discussed in detail below.³⁰

Impacts of Maryland Legislation

Maryland’s General Assembly has considered and enacted a range of laws that have already had or will likely have significant impacts on the state’s energy infrastructure, use and expenditures. This section of the report reviews legislation enacted or considered during the legislative sessions of 2022 and 2023.

RECENTLY ENACTED LEGISLATION

The Climate Solutions Now Act of 2022 focuses on GHG emissions and climate change.³¹ The bill increased required reductions of statewide emissions to 60 percent from 2006 levels by 2031. At the time the bill was enacted, current law required a reduction of 40 percent from 2006 levels by 2031. Additionally, the bill requires Maryland to achieve net-zero statewide GHG emissions by 2045. The bill also requires the Maryland Department of the Environment (MDE) to submit a series of plans that articulate how these goals will be met. These plans will address zero carbon emission electric generators, mass transit, and how each of the plans’ adopted measures will reduce emissions. Plans may also include carbon capture, electric distribution and transmission infrastructure improvements, and storage technology. The first of these plans, Maryland’s Climate Pathway, was issued in June 2023 and is discussed at length later in this report.

²⁹ “BGE Gains Regulatory Approval to Allow Use of Renewable Natural Gas on System,” October 21, 2021 <https://www.bge.com/News/Pages/Press%20Releases/BGE-Gains-Regulatory-Approval-to-Allow-Use-of-Renewable-Natural-Gas-on-System.aspx>

³⁰ Consumer Energy Alliance, “The Hidden Costs of a Maryland Natural Gas Ban” [consumerenergyalliance.org > cms > wp-content](https://consumerenergyalliance.org/cms/wp-content)

³¹ Maryland General Assembly, “Climate Solutions Now Act of 2022” <https://mgaleg.maryland.gov/mgawebsite/Legislation/Details/sb0528?ys=2022RS>

The bill addresses a wide range of activities. Requirements for zero-emission vehicles include electric school buses as well as passenger cars and other light-duty vehicles in the State vehicle fleet. Requirements for GHG emission reductions apply to many existing commercial and multifamily residential buildings.

Grants for renewable energy generating stations in buildings that house low-to-moderate income households are also authorized by the bill. The Public Service Commission (PSC) requires electric utilities to provide customers with programs and services, achieving a gross energy savings of 2 percent annually from 2022 to 2024, 2.25 percent annually from 2025 to 2026, and 2.5 percent annually in 2027 and thereafter. The PSC is also required to submit annual reports regarding plans for the electric distribution system that addresses progress towards GHG emission reduction goals and other concerns. The PSC and the Maryland Energy Administration are also directed to help electric companies obtain federal and other funds to meet policy goals for the distribution system.

Additional bill provisions encourage community solar energy generating projects that benefit low-to-moderate income households. There is also discussion of a Climate Catalytic Capital Fund that helps fund technology development and diffusion. The bill also authorizes funding for a range of programs administered by state agencies.

The Department of Legislative Services (DLS) notes that the bill would likely increase electricity costs in the short term. This would have an impact on state and local governments as well as other electricity customers. DLS indicates that reliable estimates of impacts on small businesses could not be produced, but that these impacts would be consequential. They include increased costs of constructing new buildings to comply with energy performance requirements. DLS' assessment of the bill notes that while the bill results in significant costs, the bill's long-term impacts may be energy savings for State and local governments and small businesses. As with the bill's cost impacts, these savings could not be estimated.³²

During its 2023 session, the General Assembly passed the Promoting Offshore Wind Energy Resources (POWER) Act.³³ The bill calls for an analysis of options for expanding offshore wind transmission systems. The Department of General Services is required to issue a procurement solicitation and may have a long-term agreement to purchase up to 5 million megawatt-hours annually of offshore wind energy. Offshore wind developers are also given the opportunity to be exempt from

³² Department of Legislative Services, "Fiscal and Policy Note: SB 528, Climate Solutions Now Act of 2022"

<https://mgaleg.maryland.gov/mgawebsite/Legislation/Details/SB0528?ys=2022rs>

³³ Maryland General Assembly, "Offshore Wind Energy - State Goals and Procurement (Promoting Offshore Wind Energy Resources Act)"

<https://mgaleg.maryland.gov/mgawebsite/Legislation/Details/sb0781?ys=2023RS>

the requirement to pass federal benefits along to ratepayers. This would presumably raise electricity prices to ratepayers.

The bill declares a state goal of attaining 8,500 megawatts of offshore wind energy capacity by 2031 and of upgrading the transmission system to accommodate the expansion of offshore wind energy projects. Another part of the bill’s goal is to reduce the adverse environmental and health impacts of traditional fossil fuel energy sources. The bill also encourages the development of these projects in a manner that maximizes opportunities for obtaining federal funds.

Development of these projects is done in collaboration with PJM Interconnection, the regional agency that coordinates the movement of wholesale electricity in 13 states and the District of Columbia. Proposals to develop transmission systems must demonstrate net benefits to Maryland ratepayers compared to a scenario under which the 8,500 megawatts of offshore wind capacity are connected to the electrical grid without the proposed project. Evaluation of proposals must also compare the social cost of GHG emissions from offshore wind projects with the social cost of GHG emissions from nonrenewable power purchased through PJM’s wholesale electricity markets. DLS notes that the bill considers a range of transmission projects that will have significant, but unknown costs and benefits.³⁴

A perspective regarding development costs for offshore wind projects emerges from Dominion Energy’s Coastal Virginia Offshore Wind project, which supplies the first U.S. data for this type of project according to the U.S. Department of Energy. Exhibit 10 summarizes construction and development costs of the project on a per kilowatt basis. The project will develop 2,587 megawatts of capacity with 176 wind turbines. Based on that capacity and the costs listed in Exhibit 10, the project will cost an estimated \$15.2 billion (\$5,874/kW multiplied by 2,587MW).³⁵

Exhibit 10: Publicly Reported Costs for the Dominion Offshore Wind Energy Project

Component	Value (\$/kW)
Capital expenditures	\$3,788
Transmission	\$299
Substation	\$145
Contingency and hedging	\$193
Balance of plant	\$425
Onshore facilities	\$444
Offshore work	\$580
Total	\$5,874

Source: U.S. Department of Energy

³⁴ Department of Legislative Services, “Fiscal and Policy Note: SB 781: Offshore Wind Energy – State Goals and Procurement” https://mgaleg.maryland.gov/2023RS/fnotes/bil_0001/sb0781.pdf

³⁵ U.S. Department of Energy, “Offshore Wind Market Report: 2022 Edition” <https://www.energy.gov/eere/wind/articles/offshore-wind-market-report-2022-edition>

These costs are comparable to those of European projects, which have heretofore been the primary sources of data. If it is assumed these costs are representative of those that would apply to offshore wind projects in Maryland, costs to create the 8,500-megawatts of additional capacity can be estimated. As indicated in Exhibit 11, the estimated total cost to create 8,500 megawatts of capacity is almost \$50 billion, including expenses such as wind turbines, transmission components, and other components.

Exhibit 11: Estimated Costs to Create 8,500-Megawatts of Offshore Wind Energy

Component	Value (\$ Millions)
Capital expenditures	\$32,198
Transmission	\$2,542
Substation	\$1,233
Contingency and hedging	\$1,641
Balance of plant	\$3,613
Onshore facilities	\$3,774
Offshore work	\$4,930
Total	\$49,929

Source: U.S. Department of Energy, Sage

Another bill that passed during the 2023 session was Energy Storage – Targets and Maryland Energy Storage Program – Establishment.³⁶ This legislation requires the Public Service Commission (PSC) to create the Maryland Energy Storage Program, which will develop as much as 3,000 megawatts of storage capacity in the state by 2033. Interim goals are to develop 750 megawatts of storage capacity by 2027 and 1,500 megawatts of storage capacity by 2030.

The bill indicates that these targets must be met cost-effectively. If that is not possible, target capacities can be reduced to the maximum cost-effective amount. It will be the responsibility of the PSC to determine what constitutes cost-effectiveness as storage capacity projects are introduced. This development will augment an Energy Storage Pilot Program established by State legislation in 2019. That program has approved eight projects with a total of approximately 9 megawatts of storage capacity. DLS notes that the costs to government and small businesses through electricity prices to achieve these energy storage goals are unknown, but probably significant. Capital cost estimates for this storage capacity are \$2,600/kilowatt for residential storage and \$1,100/kilowatt for utility scale storage. The total cost to construct 3,000 megawatts of storage was estimated at \$3.8 billion assuming that 90 percent of the storage was utility scale, which may turn out to be overly optimistic.³⁷ It is therefore conceivable that energy storage capacity will cost even more to develop.

³⁶ Maryland General Assembly, “Energy Storage - Targets and Maryland Energy Storage Program – Establishment” <https://mgaleg.maryland.gov/mgawebsite/Legislation/Details/HB0910?ys=2023RS>

³⁷ Department of Legislative Services, “Fiscal and Policy Note: HB 910” https://mgaleg.maryland.gov/2023RS/fnotes/bil_0000/hb0910.pdf

PROSPECTIVE IMPACTS OF FUTURE LEGISLATION

There has been substantial interest in energy-related and GHG emissions-related legislation. Legislators introduced several bills during the 2023 session that were not enacted. These bills, particularly those that are directly linked to the EmPOWER Maryland Energy Efficiency Program, may hint at what future legislation will seek to accomplish in the contexts of GHG emissions, electrification, and the natural gas industry.

Maryland policymakers established the EmPOWER Program through legislation in 2008. The legislation established targets for reducing per capita electricity consumption and peak demands by 15 percent by 2015 from a 2007 baseline. Subsequent legislation in 2017 extended the life of the EmPOWER Program through 2023 and established annual electricity savings goals of 2 percent annually based on 2016 sales. As noted above, this annual electricity savings goal was increased to 2.25 percent annually in 2025 and 2026 and 2.5 percent annually thereafter by the Climate Solutions Now Act of 2022, which also addressed GHG reductions, net customer benefits, and outreach to underserved customers.³⁸ It is worth noting that Maryland already uses less electricity per capita than approximately four-fifths of U.S. states.³⁹

Among bills introduced, but not enacted, was the Energy Efficiency and Conservation Plans and Green and Healthy Task Force bill.⁴⁰ The bill proposed several alterations to the EmPOWER Program, including requiring electric companies and the Department of Housing and Community Development (DHCD) to adopt energy efficiency, conservation, demand response, and beneficial electrification measures that would help reduce GHG emissions. The bill also proposed new GHG reduction targets for electric and gas companies as well as DHCD. These targets were defined as annual reductions of at least 1.8 percent of the baseline GHG emissions as determined in 2020. The bill also proposed that the EmPOWER Program be expanded to include gas companies.

Under the bill, DHCD would be required to take direct action to implement GHG emission reduction plans. While costs of implementing these were unknown, costs of a similar effort proposed by other legislation were expected to run as much as \$214 million annually in fiscal year 2027 and 2028 or about \$90 per Maryland household. Costs generated by this legislation would be covered by the EmPOWER surcharge, which is imposed on all utility customers.⁴¹

³⁸ Department of Legislative Services, “Fiscal and Policy Note: HB 1035” https://mgaleg.maryland.gov/2023RS/fnotes/bil_0005/hb1035.pdf

³⁹ Maryland State Profile and Energy Estimates, U.S. Energy Information Administration. <https://www.eia.gov/state/analysis.php?sid=MD>

⁴⁰ Maryland General Assembly, “Energy Efficiency and Conservation Plans and Green and Healthy Task Force”

<https://mgaleg.maryland.gov/mgawebsite/Legislation/Details/hb1035?ys=2023RS>

⁴¹ Ibid.

Another bill that was introduced, but not enacted, was the Public Utilities – Energy Efficiency and Greenhouse Gas Emissions Reductions – Alterations and Requirements.⁴² This bill also proposed alterations to the EmPOWER Program. The bill proposed that the basis for the EmPOWER Program be annual GHG emissions reductions, rather than energy use reductions, starting in 2024. These GHG emissions reduction goals would be applied to each electric or gas company.

Beginning in 2024, these reductions would have required electric and gas customers to reduce GHG emissions by 2 percent annually to achieve cumulative reduction of 14 percent by 2031. Electric companies would be required to promote fuel switching from gas to electricity. The bill also proposed that in the context of its EmPOWER Program activities DHCD also promote fuel switching from gas to electricity, establish rebates for residential electrification upgrades, and facilitate whole-home retrofits.

The bill also proposed that EmPOWER Program incentives for gas, propane, oil, and other GHG-emitting appliances be eliminated, and that EmPOWER Program home energy audits and checkups include evaluations of a home’s readiness for electrification. The bill was considered a potential benefit to small businesses involved in EmPOWER programs. While small businesses engaged in electrification projects would benefit, small businesses engaged in natural gas and propane installation projects would be negatively affected.⁴³ Under the bill, DHCD would contract with navigators to facilitate whole-home retrofits including electrification and would create a program of rebates of up to \$2,000/residence for breaker panel, wiring repairs, and other work to support home electrification.⁴⁴

Ongoing introduction of these types of bills suggests that Maryland’s General Assembly will continue to consider alterations to the EmPOWER Program as well as other initiatives endeavoring to reduce GHG emissions. The direction of these proposed bills suggests that future legislation will tend to promote and likely accelerate the process of electrification while eliminating or diminishing natural gas, including through outright bans.

⁴² Maryland General Assembly, “Public Utilities - Energy Efficiency and Greenhouse Gas Emissions Reductions - Alterations and Requirements (Energy Savings Act)” <https://mgaleg.maryland.gov/mgawebbsite/Legislation/Details/HB0904?ys=2023RS>

⁴³ Department of Legislative Services, “Fiscal and Policy Note: SB 689” https://mgaleg.maryland.gov/2023RS/fnotes/bil_0009/sb0689.pdf

⁴⁴ Department of Legislative Services, “Fiscal and Policy Note: SB 689” https://mgaleg.maryland.gov/2023RS/fnotes/bil_0009/sb0689.pdf

Potential Impacts of Diminishing Consumer Energy Choice

Reducing GHG emissions encompasses a broad range of activities that present various opportunities for implementation rather than a single pathway. Accelerating end-use electrification will require increased electricity generation as well as increased capacity in the electric grid to distribute that increased electricity. The state already uses about 60 percent more electricity than it generates, yet as noted uses less electricity per capita than most states.⁴⁵ Aggressive end-use electrification timetables would engender enormous cost, much of which would be borne by Maryland’s residents, including families struggling financially.

In addition to increased electricity costs, customers will incur additional costs to switch from natural gas to electricity. Utilities recover operating and infrastructure costs through rate increases, therefore the presence of fewer natural gas customers signifies higher charges per customer.

According to the EIA, natural gas consumption in Maryland increased 2 percent from 2020 to 2021. Maryland’s natural gas utilities are presently forecast to continue to grow, which means costs will be able to be spread across a larger base if current trajectories play out. However, should the state pass legislation that would eliminate or reduce natural gas as a consumer energy choice, the combination of fewer natural gas customers and elevated investment required to meet current and near-term needs will necessitate higher gas prices, significantly impacting energy affordability for Maryland’s households and industries.

EFFECTIVELY MEETING MARYLAND’S GHG EMISSIONS TARGETS

To assess possible pathways to attain Maryland’s GHG emission goals, an analysis conducted on behalf of Baltimore Gas and Electric (Maryland’s largest gas and electric utility) evaluated three scenarios.⁴⁶ These scenarios focused on decarbonizing the building sector. The “limited gas” scenario emphasized electrification and movement away from the use of natural gas and other fuels in the buildings sector. The “hybrid” scenario also emphasized electrification in the building sector but assumes the use of the gas system and renewable gases during cold conditions.

The “diverse” scenario also emphasized high levels of electrification but uses a mix of strategies to decarbonize the building heating sector. This mix includes gas powered heat pumps and networked geothermal systems. Networked geothermal systems connect ground-source heat pumps through a network of underground pipes that can heat and cool multiple buildings.

⁴⁵ Maryland Profile (eia.gov) <https://www.eia.gov/state/print.php?sid=MD>

⁴⁶ Tory Clark, Dan Aas, Bill Wheatle, Liz Wilson. “BGE Integrated Decarbonization Strategy.” Energy + Environmental Economics. October 2022. https://www.ethree.com/wp-content/uploads/2022/10/BGE-Integrated-Decarbonization-White-Paper_2022-11-04.pdf

While all scenarios relied on electrification for the bulk of decarbonization, scenarios that made greater use of gas infrastructure were associated with benefits in the form of diminished consumer costs. The hybrid and diverse scenarios also tend to mitigate the burden of decarbonization on lower-income customers and to facilitate a more equitable transition to net-zero GHG emissions. Greater flexibility associated with these scenarios also reduces challenges associated with large-scale electric infrastructure expansions and retrofits of customers’ buildings while achieving the state’s GHG reduction goals in all sectors.

While all scenarios relied on electrification for the bulk of decarbonization, the scenarios that made greater use of gas infrastructure were associated with benefits in the form of diminished consumer costs.

Regarding electric power generation, EIA reports that since 2015 nearly all the state’s new generating capacity has been natural gas-fired or solar-powered.⁴⁷ As of October 2023, nearly 50 percent of Maryland’s electric generation capacity is natural gas-fired, while less than 5 percent is solar-powered.⁴⁸

As noted earlier, the availability and greater use of natural gas has been associated with improving environmental outcomes. The array of confirming statistics is abundant. For instance, from 2015 to 2022, metric tons of carbon dioxide emissions from Maryland’s electric power industry fell nearly 40 percent. When comparing 2005, which is often used as a base comparable year, to 2022, the decline in CO₂ emissions is nearly 67 percent.⁴⁹

This reflects the significant contribution natural gas has made in GHG reduction efforts. That contribution will continue as initiatives specific to reducing fugitive GHG emissions across the natural gas value chain are actively underway, thereby already contributing to Maryland’s GHG emission reduction goals. Such initiatives include infrastructure modernization, improved construction practices, and facility retrofits.

⁴⁷ Maryland State Energy Profile, U.S. Energy Information Administration. <https://www.eia.gov/state/print.php?sid=MD#107>

⁴⁸ Preliminary Monthly Electric Generator Inventory (based on Form EIA-860M as a supplement to Form EIA-860) - U.S. Energy Information Administration. <https://www.eia.gov/electricity/data/eia860M/>

⁴⁹ Maryland Electricity Profile 2022, U.S. Energy Information Administration, Full data tables. 7.Emissions. <https://www.eia.gov/electricity/state/maryland/>

POWER GRID IMPACTS

The power grid, associated maintenance, and requirements for additional investment are impacted by several phenomena including legislation and shifting consumption patterns. It is the power grid that transmits electricity from sources of generation to users. Rapid acceleration toward end-use electrification occurring simultaneously with restrictions on traditional, stable electric power generation fuels such as natural gas stands to not only disrupt the reliability of the grid, but also greatly increase electricity generation costs. These impacts can be observed most clearly in cases where major new sources of electricity are proposed.

For example, The Offshore Wind Energy – State Goals and Procurement (Promoting Offshore Wind Energy Resources Act or POWER Act) specifically called for an analysis of options for expanding the transmission systems required by increasing offshore electricity generation capacity to the goal of 8,500 megawatts.⁵⁰ While analysis required by that legislation has not yet been completed, the experience of developing offshore wind energy in Virginia provides an indication of what pertinent expansions of the power grid might cost. Based on the unit cost of transmission, substation, and onshore facilities, the total cost of these elements for a project creating 8,500 megawatts of generating capacity would be approximately \$7.5 billion as reflected in Exhibit 12.⁵¹ These estimated costs represent 15 percent of the total estimated cost of the hypothetical 8,500-megawatt offshore wind energy project as shown in Exhibit 11 earlier in the report.

Exhibit 12: Estimated Costs of Expanding the Transmission System to Accommodate an 8,500-Megawatt Offshore Wind Energy Project

Component	Value (\$ Millions)
Transmission	\$2,542
Substation	\$1,233
Onshore facilities	\$3,774
Total	\$7,548

Source: U.S. Department of Energy, Sage Note. Total may not add due to rounding.

Another necessary investment in the power grid to accommodate renewable energy is energy storage capacity. This capacity is required to mitigate potential reliability problems when renewable energy generating sources are not functioning due to lack of sunshine and/or wind. The Energy Storage – Targets and Maryland Energy Storage Program – Establishment legislation enacted during the 2023 session required the development of up to 3,000 megawatts of storage capacity by 2033. Assuming that almost all this capacity is developed as utility scale storage as opposed to residential scale storage, the cost of construction is estimated at \$3.8 billion. It should be noted that the target for completion

⁵⁰ Op. cit., Department of Legislative Services, “Fiscal and Policy Note: SB 781: Offshore Wind Energy – State Goals and Procurement”
⁵¹ Op. cit., U.S. Department of Energy, “Offshore Wind Market Report: 2022 Edition”

of the storage capacity is 2033, while the offshore wind target is 2031. This misalignment of timing could potentially generate large-scale grid reliability issues.

Investments in transmission infrastructure and storage capacity represent only part of the costs that will be realized by implementation of recent legislation. Much of the costs will presumably be paid by the state's ratepayers and taxpayers given that the State of Maryland already faces large fiscal shortfalls and therefore will not be well-positioned to subsidize electricity users.

SUMMARY OF ELECTRIFICATION COSTS

The transition to a state of end-use electrification and elimination or reduction of the use of natural gas for electric power generation will entail substantial costs. Though legislation has been passed and/or considered to do both of those things, some costs have been estimated while others are simply unknown at this time. The following summarizes estimated costs and provides estimates regarding how those costs will affect Maryland households.

Exhibit 13 summarizes costs of replacing gas household appliances with electric appliances as well as weatherizing homes to improve energy efficiency. Exhibit 1 earlier in the report supplies data regarding the number of households using different fuels for home heating. Data for 2021 indicate that nearly 1.3 million households relied on fossil fuels to heat their homes, including more than 1 million natural gas-fueled households, which would be the priority population for the process of electrification. Not included in this priority population are more than 37,000 households that rely on wood for heat or that did not use fuel for home heating.

As noted previously and detailed in Exhibit 13, costs of replacing gas appliances with all electric appliances coupled with household weatherization are estimated at more than \$31,500. Proposed legislation would provide rebates of up to \$2,000 per household to support electrification. When these rebates are applied to the costs of switching households from natural gas and other fossil fuels to electricity, the estimated net cost per household is nearly \$30,000. For the roughly 1.3 million Maryland households that would be priorities for this electrification effort, estimated total costs would be more than \$38 billion. This estimate does not include potential costs related to bolstering the electric distribution grid to provide the additional electric service that will be required nor the anticipated ongoing increase in heating costs as electricity comes at a higher cost per comparable unit to natural gas (as shown in Exhibit 2).

Exhibit 13: Estimated Costs Related to Electrifying Approximately 1.3 Million Maryland Households from Natural Gas and Other Fossil Fuels

Cost factor	Cost per household	Total cost (millions)
Replacing gas appliances	\$26,884	\$34,637
Weatherization	\$4,695	\$6,049
Rebate	\$2,000	\$2,577
Replacement & weatherization: net cost per household	\$29,579	\$38,110

Source: Consumer Energy Alliance, U.S. Department of Energy, Department of Legislative Services, U.S. Census Bureau

Costs associated with Maryland policies and legislation requiring the introduction of major new sources for electricity generation are also substantial. Exhibit 14 lists those costs for which there are current estimates, two of which — developing 8,500 megawatts of offshore wind energy and related transmission system improvements and developing 3,000 megawatts of storage capacity — are related to enacted legislation. Two other costs — actions by DHCD to reduce GHG emissions and rebates to households to support electrification — are related to proposed, but not yet enacted legislation. These costs range widely from \$214 million for the DHCD actions to about \$50 billion for the 8,500 megawatts of offshore wind energy and related improvements to the transmission system.

Another estimate of future costs is based on a Princeton University study that indicated that Maryland would need to replace 10,000 megawatts of electricity generated from traditional fuels at a cost of \$30 billion to reach net-zero GHG emissions by 2050.⁵² While the 8,500 megawatts of offshore wind power proposed by the POWER Act would address most of this, creating an additional 1,500 megawatts of electricity generation would clearly require significant additional costs. These costs are estimated at 15 percent of the \$30 billion total cost estimated in the Princeton University study. Total costs are estimated at \$61.0 billion.

In estimating impacts of these costs on Maryland residents, it is assumed that whether these costs are covered by state government or electric utilities, they will be borne by all Maryland households. According to the U.S. Census Bureau, there are nearly 2.4 million Maryland households.⁵³ The total estimated cost of these actions per Maryland household is estimated at nearly \$26,000. Since Maryland legislation proposes that the state achieve net-zero GHG emissions by 2045, it is assumed that these costs per household could be spread across approximately 20 years. As noted in Exhibit 14, the annual cost per household if spread across 20 years would be \$1,297.

⁵² Princeton University, “Net-Zero America: Potential Pathways, Infrastructure, and Impacts,” October 29, 2021. <https://netzeroamerica.princeton.edu>

⁵³ U.S. Census Bureau, Quick Facts, Maryland. <https://www.census.gov/quickfacts/fact/table/MD/PST045222>

Exhibit 14: Currently Estimated Costs Related to Electrification in Maryland

Cost factor	Cost per household	Total cost (billions)
Promoting Offshore Wind Energy Resources (POWER) Act. Goal of attaining 8,500 megawatts of offshore wind energy capacity and of upgrading the related transmission system	\$21,220	\$49.9
Energy Storage – Targets and Maryland Energy Storage Program. Develop 3,000 megawatts of storage capacity in the state by 2033	\$1,615	\$3.8
Energy Efficiency and Conservation Plans and Green and Healthy Task Force bill. (Not enacted) DHCD would be required to take direct action to implement GHG emission reduction plans	\$91	\$0.2
Public Utilities – Energy Efficiency and Greenhouse Gas Emissions Reductions – Alterations and Requirements. (Not enacted) Rebates of \$2,000 per residence to support home electrification	\$1,095	\$2.6
Additional Transmission Capacity	\$1,913 ⁵⁴	\$4.5
Total cost	\$25,934	\$61.0
Cost per year over 20 years	\$1,297	\$3.1

Source: Consumer Energy Alliance, U.S. Department of Energy, Department of Legislative Services, U.S. Census Bureau

While these estimated costs for moving Maryland toward net-zero GHG emissions are substantial, there are additional costs that have not been estimated. The Climate Solutions Act of 2022 created grants for renewable energy generating stations in buildings that house low-to-moderate income households and community solar energy generating projects that benefit low-to-moderate income households. The Act also created requirements for electric school buses and state fleet electric passenger cars and light-duty vehicles and charging stations to support the state fleet. No estimates were produced for the total costs of these requirements.

As noted, there is also no guarantee that offshore wind-generated power will come online in timely fashion. The 2023 POWER Act calls for offshore wind development of 8,500 MW by 2031. Since the time the bill was enacted, the Bureau of Ocean Energy Management (BOEM) dropped one of the proposed offshore lease sites (B-1) from its mid-2024 lease sale. An alternative site is being evaluated. The earliest it could become available is for mid-2025 lease sale. Perhaps in a sign of more difficulties to come, Orsted, the global wind energy developer, has now canceled its two large offshore wind power projects off the coast of New Jersey.⁵⁵

⁵⁴ Based on Princeton University, “Net-Zero America: Potential Pathways, Infrastructure, and Impacts,” October 29, 2021. <https://netzeroamerica.princeton.edu>

⁵⁵ Wayne Parry, “Orsted scraps 2 offshore wind power projects in New Jersey, citing supply chain issues,” AP News, October 31, 2023. <https://apnews.com/article/offshore-wind-orsted-new-jersey-cancelled-b30049502ac14ca6b46e2d3386a350fd>

DISPROPORTIONATE IMPACT ON LOWER-INCOME HOUSEHOLDS

Actions leading to the reduction or elimination of the availability of natural gas are likely to have significant impacts on all households. These impacts will have relatively greater effect on lower income households, particularly with respect to utility bills and the cost of remaining in their current homes.

As noted above, if a Baltimore household was required to replace natural gas appliances to comply with a natural gas ban, new appliances could cost up to \$26,884.⁵⁶ Electrification would likely comprise the replacement of major gas appliances such as furnaces, water heaters, and ovens. This is nearly half of the median income of Baltimore City households (\$54,124).⁵⁷ Put in other terms, the cost is almost equal to the federal poverty guideline for a family of four (\$30,000).⁵⁸

The conversion to electricity would also increase utility costs for households. Recently, the EIA estimated that for the winter of 2021-22, households using natural gas would spend \$746 for heating, while those using electricity would spend \$1,268, an increase of 70 percent.⁵⁹ This finding is consistent with the finding that the price of electricity on a cost per million Btu basis is substantially higher than the price of natural gas as noted in Exhibit 2.

End-use electrification is often accompanied by weatherization, at least in many models. Weatherization entails improvements to the energy efficiency and energy conservation of housing, such as adding insulation and sealing air leaks, installing programmable thermostats, repairing or replacing windows and doors, installing efficient light sources, installing low-flow showerheads, and replacing inefficient refrigerators. The U.S. Department of Energy reported an average cost of weatherization per unit of \$4,695 for the roughly 35,000 homes that were included in the Weatherization Assistance Program in 2021.⁶⁰ Absent weatherization, electrification is more expensive since there would be greater need for electricity generation, including from sources far more expensive than natural gas.

⁵⁶ Op. cit., Consumer Energy Alliance

⁵⁷ U.S. Census, “Quick Facts, Baltimore City, Maryland”
<https://www.census.gov/quickfacts/fact/table/baltimorecitymaryland/INC110221#INC110221>

⁵⁸ ASPE, “HHS Poverty Guidelines for 2023” <https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines>

⁵⁹ Op. cit., Consumer Energy Alliance

⁶⁰ U.S. Department of Energy, “Weatherization Assistance Program: WAP - fact sheet 2021”
www.energy.gov/sites/default/files/2021/01/f82/WAP-fact-sheet_2021_0.pdf

There is little question that accelerated electrification will cost families. Updated costs for natural gas and electricity reflected in Exhibit 2 allow for updating the annual costs per household for residential customers. The 2015 data on unit prices for natural gas and electricity and the average annual costs per household are shown in Exhibit 15 along with the updated unit costs and average annual costs per household. As indicated, while the spread between electricity and natural gas prices has declined somewhat, it still costs an estimated \$2,038 more per year for a household using electricity rather than natural gas.

Exhibit 15: Average Energy Costs/Prices for Natural Gas and Electricity, 2015 and 2021

Fuel Source	2015		2021	
	\$/Million Btu	Avg. Annual Energy Cost/Household	\$/Million Btu	Avg. Annual Energy Cost/Household
Natural gas	\$10.88	\$914	\$14.19	\$1,192
Electricity	\$37.40	\$3,142	\$38.45	\$3,230

Sources: RESI, Energy Information Administration, Sage

Cost impacts on households of appliance replacement and weatherization and the ongoing impacts of switching from natural gas to electricity are summarized in Exhibit 16 several pages below. To demonstrate how these impacts will vary considerably relative to household income, impacts are listed for low-income, middle-income, and upper-income households. Low-income households shown in Exhibit 16 include those at the 10th percentile and 20th percentile of all Maryland households, who were associated with 2022 incomes of \$24,982 and \$43,470, respectively. Middle-income households are represented by those in the 50th percentile (i.e., median income) with 2022 incomes of \$97,184. Upper-income households are represented by those at the 90th percentile with 2022 incomes of \$273,044.⁶¹

To provide a clearer picture of the cost impact of electrification, the gross income of each of these groups is adjusted to associated discretionary income. Discretionary income is defined as the income available to households after essential bills such as mortgage or rent, groceries, utilities, and other necessities are paid. A standard method for calculating discretionary income is to reduce gross income by 150 percent of the federal poverty level.⁶²

The federal poverty level is a measure of the cost of necessities for households of different sizes and can help to calculate whether the income of a given household provides discretionary income above

⁶¹ Flood, Sarah et al, “United States Income Percentile by State in 2022,” Integrated Public Use Microdata. <https://dqydi.com/income-percentile-by-state-calculator/>

⁶² Jackson, Sean, “Discretionary income: Definition, how to calculate it and how it impacts your budget,” May 24, 2021. Bankrate. <https://www.bankrate.com/personal-finance/what-is-discretionary-income/>

and beyond necessities. For 2022, the poverty level for a household of three was \$23,030.⁶³ The Sage study team used this level to calculate average Maryland discretionary household income because the average household size in Maryland was 2.62 from 2017 to 2021.⁶⁴ Increasing the poverty level to 150 percent increases its value to \$34,545. This is then used to calculate discretionary income for the four categories of households. As indicated, discretionary income of the low-income households is either negative (for the 10th percentile) or less than \$9,000 for the 20th percentile. For the 50th percentile, discretionary income is more than \$62,000 while it exceeds \$238,000 for the 90th percentile.

For those at the 50th percentile of household income, electrification costs do not exceed discretionary income but constitute a bit more than half of the total.

The cost of electrification to individual households is estimated at \$31,539. Most of the cost is incurred in replacing appliances. As noted, that cost has been estimated at as much as \$26,844.⁶⁵ Weatherization adds \$4,695 to that cost. Weatherization may not be necessary if a housing unit is highly energy efficient. However, if that is not the case, weatherization would help to reduce energy use. Moreover, the notion of weatherization is built into many economic models and pending legislation.

The cost of electrification as a share of discretionary income varies widely from low-income households to upper-income households. For the 10th percentile households, the cost of electrification would be computed as negative 330 percent because discretionary income for the 10th percentile is less than negative \$9,500. In other words, these households would be driven deeper into a financial hole. They already have negative discretionary spending power.

⁶³ U.S. Department of Health and Human Services, “2022 Poverty Guidelines: 48 Contiguous States (all state except AK and HI) <https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/frequently-asked-questions-related-poverty-guidelines-poverty> The 2022 poverty guidelines for households up to 10 persons are shown below:

Household/Family Size	100% of guideline	150% of guideline
1	\$13,590	\$20,385
2	\$18,310	\$27,465
3	\$23,030	\$34,545
4	\$27,750	\$41,625
5	\$32,470	\$48,705
6	\$37,190	\$55,785
7	\$41,910	\$62,865
8	\$46,630	\$69,945
9	\$51,350	\$77,025
10	\$56,070	\$84,105

⁶⁴ U.S. Census Bureau, “Quick Facts, Maryland” <https://www.census.gov/quickfacts/fact/table/MD/PST045222>

⁶⁵ Op. cit., Consumer Energy Alliance

For the 20th percentile, the cost of electrification is 353 percent of those households’ discretionary income of almost \$9,000. For those at the 50th percentile of household income, electrification costs do not exceed discretionary income but constitute a bit more than half the total. Costs of electrification are seemingly manageable only for the 90th percentile households for whom the costs represent 13 percent of discretionary income. Once electrification is complete, the cost of power for each of these households is estimated to increase by \$2,038 as they switch from natural gas to electricity. This ongoing added fuel cost constitutes a significant share of discretionary income for low-income households — negative 21 percent for 10th percentile households (meaning that there is negative spending power) and 23 percent for 20th percentile households. For more affluent households, this increased cost of power accounts for much less of their discretionary income—3 percent for 50th percentile households and less than 1 percent for 90th percentile households.

Accordingly, prospective costs of electrification and their impacts are a major issue for Maryland’s low-income households. Even households with median incomes (i.e. the 50th percentile) will have to devote considerable shares of discretionary income to pay for electrification. Only the 90th percentile households appear to have sufficient discretionary income to absorb initial costs of electrification relatively easily and to deal with the added ongoing cost of power once electrification is complete.

Legislators and other stakeholders should also consider impacts on the economy. To the extent that household resources are diverted toward electrification, there is less money for school supplies, clothing, food, holiday gifts, travel, restaurants, and other economic activities. Diminished economic activity translates into less job creation, diminished income growth, less support for small businesses, and suppressed expansion of real estate values. That will negatively impact both State and local government finances.

Exhibit 16: Cost Impacts for Electrification for Low-, Middle-, and Upper-Income Maryland Households

	10th percentile	20th percentile	50th percentile	90th percentile
Household Income	\$24,982	\$43,470	\$97,184	\$273,044
150% of Poverty Level	\$34,545	\$34,545	\$34,545	\$34,545
Discretionary Income	-\$9,563	\$8,925	\$62,639	\$238,499
Cost of Appliances	\$26,844	\$26,844	\$26,844	\$26,844
Cost of Weatherization	\$4,695	\$4,695	\$4,695	\$4,695
Total Cost of Electrification	\$31,539	\$31,539	\$31,539	\$31,539
Electrification’s Costs (Share of Discretionary Income)	-330%	353%	50%	13%
Added Annual Cost Versus Gas	\$2,038	\$2,038	\$2,038	\$2,038
Share of Discretionary Income	-21%	23%	3%	1%

Sources: RESI, Energy Information Administration, Sage

Conclusion

The push for accelerated electrification comes at a challenging time for Maryland. A recent report from the Maryland Office of the Comptroller indicates that the state's economy barely expanded from 2016 to 2023 (1.6%) while the nation expanded far more briskly (13.9%).⁶⁶ Not coincidentally, budget analysts conclude that the State of Maryland faces a \$761 million shortfall for FY2026. Meanwhile, many Maryland households continue to struggle after a bout of enduring inflation that has diminished household savings levels.

The good news is that the Maryland is already making progress on reducing greenhouse emissions, with abundant and cleaner natural gas supplying both economic and environmental benefits. This analysis concludes that the current pace of transition to electrification will be associated with steadily improving environmental outcomes while contributing to greater economic and financial stability for households, businesses, State and local governments.

This report also finds if that electrification is pushed too aggressively, several negative outcomes become likely. Among these are:

- Massive increases in both energy consumption and production, leading to large-scale impacts on electricity rates;
- Requirements for billions of dollars in electric grid, energy storage, and other investments;
- A loss of substantial discretionary spending power across the income spectrum, with households at the 20th percentile experiencing a shift from positive to negative discretionary spending power as energy costs increase and as many appliances are prematurely retired; and
- Potential for compromised electric grid reliability.

⁶⁶ Office of the Comptroller: Maryland 2023 – State of the Economy. Page 4. <https://www.marylandtaxes.gov/reports/static-files/SOTE.pdf>

About Sage Policy Group

Sage Policy Group is an economic and policy consulting firm headquartered in Baltimore, MD. Dr. Anirban Basu, Sage’s chairman and CEO, founded the firm in 2004. Over a period spanning nearly two decades, Sage has managed to create a client base that encompasses more than forty states and eight countries. Sage’s client base includes Fortune 500 companies, NFL teams, aquariums and zoos, state and local governments, insurance companies, banks, brokerage houses, major medical systems, trade organizations, and law firms, among others.

The company is especially well known for its analytical capabilities in economic impact estimation, school enrollment forecasting, economic development, economic forecasting, fiscal impact analyses, legislative analyses, litigation support, and industry outlooks, and has significant experience in the subject areas of construction, environmental economics, healthcare, energy, real estate, manufacturing, professional sports, lotteries, agriculture, tourism, entrepreneurship, government contracting, secondary and post-secondary education, and the economics of retirement. The firm is also known for its superior communications and messaging skills.

In addition to leading Sage, Dr. Basu has emerged as one of the nation’s most recognizable economists. He serves as the chief economist to Associated Builders and Contractors and the International Food Distributors Association and as the chief economic adviser to the Construction Financial Management Association. He chaired the Maryland Economic Development Commission from 2014 to 2021 and currently chairs the Baltimore County Economic Advisory Committee. He has been interviewed by CNBC, CNN, Fox Business, Axios, the New York Times, and many others.

Dr. Basu’s lectures in economics are delivered to audiences across the U.S. and abroad. In recent years, he has focused upon health economics, the economics of education, and economic development. He has lectured at Johns Hopkins University in micro-, macro-, urban, and international economics, and most recently, global strategy. He is now the Distinguished Economist in Residence at Goucher College, where he teaches History of Economic Thought.