



The Building Energy Transition Implementation Task Force Final Report

January 24, 2024

Prepared for:

Governor Wes Moore
Senate President Bill Ferguson
House Speaker Adrienne Jones



Maryland
Department of
the Environment



Maryland
Energy
Administration

Acknowledgments

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- The state staff supporting the Buildings Task Force: Mark Stewart (MDE), Cindy Osorto (MDE), and Ian Ullman (MEA).

Resources and Contacts

Buildings Task Force website:

<https://mde.maryland.gov/programs/air/ClimateChange/Pages/BETITF.aspx>

MDE website: <https://mde.maryland.gov/Pages/index.aspx>

MDE Building Energy Performance Standards (BEPS) website:

<https://mde.maryland.gov/programs/air/ClimateChange/Pages/BEPS.aspx>

MDE BEPS email: BEPS.MDE@maryland.gov

MEA website: <https://energy.maryland.gov/Pages/default.aspx>

MEA Clean Energy Hub website: <https://energy.maryland.gov/Pages/MDCleanBuildingsHub.aspx>

MEA Clean Energy Hub email: building.decarbonization@maryland.gov.

Contents

Message from the Co-Chairs	3
Executive Summary	4
Building Task Force Members	5
Introduction	6
Process	7
Policy Context	8
Guiding Principles	9
Definition of the Building Energy Transition	9
General Themes across Building Types	11
Costs and Funding Overview	12
BEPS Compliance Costs	12
Residential Upgrade Costs	13
Priority Recommendations	14
Secure State Capital for the Building Energy Transition	14
State Funding for Building Sector Transition	14
End Investment in New Fossil Fuel Equipment and Infrastructure	15
Provide Medicaid Funding for Building Improvements	16
Prioritize Multi-Benefit Building Energy Transition Strategies	16
Workforce Development	16
Grow the Clean Energy Transition Hub	18
One Stop Shop to Support Limited Income Housing	18
Provide Capital for the Building Energy Transition	20
Financing Building Energy Transitions	20
Tax Incentives	21
Fund Electrification Projects for Low-and Moderate-Income Households	22
Support BEPS Compliance of Commercial Buildings	23
Additional Ideas for Consideration	24
Appendix A: Building Task Force Subgroups and Building Stock Characteristics	27
Appendix B: Technical Analyses	29

Message from the Co-Chairs

On behalf of the Building Energy Transition Implementation Task Force, we are honored to present to Governor Wes Moore and the Maryland General Assembly this suite of recommendations on programs, policies, and incentives to reduce greenhouse gas emissions from our building sector.

As co-chairs, we are deeply committed to achieving significant and swift emissions reductions and think it is important to revisit the reasons for our work. As the backdrop of where we live, work, play, and worship, buildings are central fixtures in our lives. But some buildings are threatening the integrity of our children's and grandchildren's futures, and inefficient and fossil-fuel powered buildings contribute to high energy bills that may force some residents to choose between food and fuel. These buildings also produce air pollution that contributes to asthma and absenteeism, while perpetuating harmful, sustained inequities in our state.

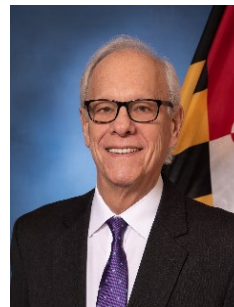
We are motivated by our shared vision of a future where every building is fossil-fuel free. In this vision, residents can spend more of their hard-earned paychecks doing what they love, and businesses can reinvest in their products and services, rather than in energy bills. We are equally motivated by the prospect of this transition being conducted by a local, diverse workforce that is paid good wages and afforded opportunities for career advancement and growth. Cleaner buildings are a down payment on stronger local economies and communities.

The Climate Solutions Now Act of 2022 provides the scaffolding for this generational vision. Now we must work to identify how we get there in a manner that is both cost-effective and comprehensive, as well as flexible and inclusive. The Buildings Task Force, which represents a diverse set of sectors that include real estate development, building trades and construction, utilities, affordable housing, tenant, and public interest advocacy and more, deliberated on these recommendations from June to January 2024. We were humbled to watch members approach discussions with empathy, creativity, and willingness to collaborate.

This blueprint requires combined public and private efforts. Meaningful results necessitate collective action, and we call on stakeholders to identify measures to implement the Buildings Task Force's recommendations for cleaner buildings and stronger communities. We will be your partners every step of the way.



Secretary Serena C. McIlwain,
Maryland Department of the Environment



Director Paul G. Pinsky,
Maryland Energy Administration

Executive Summary

The Climate Solutions Now Act of 2022 (“CSNA”, Senate Bill 528, Chapter 38 of the Laws of 2022) established, among many other provisions, the creation of the Building Energy Transition Implementation Task Force (“Buildings Task Force” or “Task Force”). The Buildings Task Force met throughout 2023 to fulfill its mandate of providing recommendations to support the policies and decarbonization goals for Maryland’s buildings. In recognition of the urgency of the climate crisis and the state’s 2045 climate commitment, the Buildings Task Force is pleased to present this package of recommendations to the Governor and Legislature.

These recommendations reflect the reality that the building energy transition will require significant financial, technical, and practical solutions. The recommendations included here will help raise money, get money out the door, help owners invest their money in their buildings for maximum benefit, guide projects to high quality standards, provide long-term social and environmental benefits, and equitably benefit Maryland residents.

The Buildings Task Force’s Priority Recommendations are:

- **State Funding for Building Sector Transition:** Create new statewide revenue mechanisms to fund these recommendations, including mechanisms to price greenhouse gas emissions from fossil fuel sources.
- **Workforce Development:** Expand pre-apprenticeship and apprenticeship programs to build a strong and equitable decarbonization workforce.
- **Grow the Clean Energy Transition Hub:** Ensure Maryland Energy Administration (MEA) has a well-staffed and funded Hub to provide education, support, and connection for all building owners in the state.
- **One Stop Shop to Support Limited Income Housing:** Fund the Maryland Department of Housing and Community Development (DHCD) to provide a one-stop shop service that would provide tailored support and funding to all types of affordable housing through a whole-home approach.
- **Provide Medicaid Funding for Building Improvements:** Tap into unused federal Medicaid dollars to support housing interventions that target health benefits associated with indoor air pollution.
- **Financing Building Energy Transitions:** Expand and support financing options for building owners through programs such as on-bill repayment, state interest rate buy-downs for Commercial Property Assessed Clean Energy (C-PACE), credit enhancements such as loan loss reserves, and others.
- **End Investment in New Fossil Fuel Equipment and Infrastructure:** Redirect funding and incentives from fossil fuels towards electrification.
- **Tax Incentives:** Create new tax incentives to facilitate projects and project components that are harder to finance.
- **Fund Electrification Projects for Low- and Moderate-Income Residents:** State should cover the full cost of project costs for these residents in recognition of limited ability to pay.
- **Support BEPS Compliance:** Create early-adopter incentives to support compliance with the Building Energy Performance Standards (BEPS)

Building Task Force Members¹

State Agency Principal or Designee

- Serena McIlwain, Secretary, Maryland Department of Environment, Co-Chair
- Paul Pinsky, Director, Maryland Energy Administration, Co-Chair
- Nicola Tran, Deputy Director, Maryland Department of Housing and Community Development
- Tom LeQuire, Director of Operations, Maryland Department of General Services
- Fred Hoover, Chair, Maryland Public Service Commission
- David Lapp, Esq., People's Counsel of Maryland
- Kathy Magruder, Executive Director, Maryland Clean Energy Center
- Stuart Kaplow, Attorney and Principal at Stuart D. Kaplow, PA and Acting Chair, Maryland Green Building Council

General Assembly Appointees

- Marvin Holmes, Representative, Maryland House of Delegates
- Ben Kramer, Senator, Maryland State Senate

Public Service Commission Appointees

- Mark Case, Vice President Regulatory & Strategy, BGE
- Nathan Fridinger, Electric Operations Manager, Hagerstown Light Department

Governor Appointees

- Susan S. Miller, Esq., Senior Attorney of Clean Energy Program, Earthjustice
- Cherise Seals, Senior Account Executive, NORESO
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- Richard Briemann, Vice President, Atlantic Realty Management, Inc.
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- Margaret Ann Evans, Vice President of Healthcare Property Management, Thomas Park Investments
- Tom Ballentine, Vice President for Policy and Government Relations, NAIOP Maryland
- Greg Akerman, Director, Baltimore-DC Metro Building and Construction Trades Council
- Carol Ott, Tenant Advocacy Director, Economic Action Maryland

¹ Note that many more people attended one or more Buildings Task Force and/or subgroup meetings as non-appointed participants, but only Building Task Force members voted on the final recommendations and the report. Also, opinions by comment or vote are the opinions of the individual member and not the view of the respective organization or agency.

Introduction

The CSNA established a set of ambitious goals for climate action: that Maryland will achieve 60% greenhouse gas (GHG) emissions reductions by 2031 and net zero GHG emissions by 2045.



Figure 1: Timeline to achieve CSNA goals. Source: Climate Pathway Report (mde.maryland.gov/GGRA).

The CSNA also included several provisions to help achieve these targets, including the creation of the Buildings Task Force. This report is the culmination of recommendations resulting from Buildings Task Force and subgroup meetings. The CSNA required that the Buildings Task Force:

- I. Study and make recommendations regarding the development of complementary programs, policies, and incentives aimed at reducing greenhouse gas emissions from the building sector in accordance with this subtitle;
- II. Make recommendations on targeting incentives to electrification projects that would not otherwise result in strong returns on investment for building owners; and
- III. Develop a plan for funding the retrofit of covered buildings to comply with building emissions standards.



Figure 2: Building decarbonization includes energy conservation and efficiency and low-carbon solutions.

PROCESS

The Buildings Task Force held 19 meetings between June 2023 and January 2024, with nine hybrid meetings being full Task Force meetings and ten virtual meetings being subgroup meetings. These meetings were jointly chaired by Secretary McIlwain of the Maryland Department of the Environment (MDE) and Director Pinsky of the Maryland Energy Administration (MEA). The CSNA law indicated the membership requirements for the Buildings Task Force, including appointments by the Governor, General Assembly, and the Public Service Commission (PSC), as well as Secretaries or designees of several state government agencies, which collectively included various area of expertise such as architects, engineers, developers, and organized labor. Buildings Task Force meetings were open to the public and included input from non-members throughout the process.

In addition, the Task Force created four subgroups, each with their own chair or co-chairs and open to public participation from non-members. These subgroups tailored recommendations to different building types, which have different barriers and solutions. These subgroups reflected that some buildings would be required to make improvements under the Building Energy Performance Standards (BEPS) regulations created in the CSNA, while other building types would need to be incentivized to make voluntary improvements. Most recommendations in this report were generated first in one or more subgroups before being brought to the overall task force for consideration. Industrial and agricultural buildings were outside the scope of this task force, and they were not covered by any subgroup and are not addressed in this report.

The four subgroups created were:

- **Large Buildings**, focused on commercial and residential buildings over 35,000 square feet. In other words, buildings that are subject to the state BEPS.
- **Limited Income Housing**, as defined by the Buildings Task Force, is focused on residential buildings of any size that serve limited income residents. “Limited income” includes residents earning less than 80% of Area Median Income (AMI); and “limited-income housing” is any single- or multi-family building that offers rent affordable to or is owned by limited-income residents. This category includes Naturally Occurring Affordable Housing (“NOAH”) as well as subsidized Affordable Housing.
- **Market Rate Housing**, which focused only on buildings under 35,000 square feet with residents earning more than 80% of AMI. The discussion focused on single-family homes, though small multifamily and condo buildings were also considered.
- **Small Commercial and Institutional Buildings (SCIB)**, which focused on non-residential and institutional buildings under 35,000 square feet that are not subject to BEPS, as well as institutional buildings such as schools that are exempt from BEPS regardless of size.

Each subgroup met three times to develop proposed recommendations, which were then brought to the full Buildings Task Force for consideration. Additionally, analysis completed by Lawrence Berkeley National Lab (LBNL), Pacific Northwest National Lab (PNNL), Rewiring America, and AECOM was presented to the Buildings Task Force to help quantify the building energy transition and the recommendations where possible. Meeting minutes, presentations, and recordings can be found on the Buildings Task Force website.²

² <https://mde.maryland.gov/programs/air/ClimateChange/Pages/BETITF.aspx>

POLICY CONTEXT

The Buildings Task Force acknowledges that other processes addressing similar related topics are ongoing in Maryland, and will continue to see further development:

- **The rulemaking process for the state’s BEPS.** BEPS will require most large buildings over 35,000 gross square feet to benchmark energy data, meet interim net direct GHG emissions by 2030, meet net zero direct greenhouse gas emissions by 2040, meet interim energy use intensity (EUI) requirements in 2030 and 2035, and meet a final EUI standard in 2040 to be maintained thereafter. The proposed regulation was published on December 15, 2023.³
- **MDE Climate Pollution Reduction Plan⁴.** This report lays out a pathway to achieving the state’s goals of reducing statewide GHG by 60% by 2031 and reaching net-zero emissions by 2045. MDE’s final plan proposes policies that align with this Task Force’s recommendations.
- **Maryland Commission on Climate Change (MCCC)⁵.** This multi-stakeholder Commission meets regularly and annually recommends climate solutions to the state.
- **The Green and Healthy Task Force⁶** of 2023-2026 will make recommendations on how to deliver green and healthy housing for limited-income households throughout the state.
- **The Air Quality Control Advisory Council⁷** provides advice on draft air quality rules and regulations proposed by MDE, including BEPS.
- Governor Moore joined the **U.S. Climate Alliance commitment⁸ to install 20 million heat pumps** across 25 states by 2030.
- The **Maryland Green Building Council⁹** guides Maryland’s High-Performance Building Program, which applies to new and renovated state funded buildings, including state agency facilities as well as public schools and community colleges.
- **Various PSC processes** including the consideration of new proposals from the utilities and DHCD for energy efficiency and demand response programs under the EmPOWER Maryland program¹⁰, a potential new docket on gas transition long-term planning, and an electrification study¹¹.
- **Building and Energy Codes.** The CSNA required that the Maryland Department of Labor’s Building Codes Administration study options for the development of an all-electric building code, and that Maryland adopt the 2018 International Green Construction Code (IGCC)¹². State building codes were updated in May 2023 based on the 2021 International Energy Conservation Code (IECC).¹³ Model energy and building codes may aid in reaching the state’s goals of adopting low or zero carbon construction standards by 2031.

³ Maryland Register: New Subtitle COMAR 26.28 – Building Energy Performance Standards for new Regulations .01 - .04. Published December 15, 2023. <https://dsd.maryland.gov/Pages/MDRegister.aspx>

⁴ <https://mde.maryland.gov/programs/air/ClimateChange/Pages/Maryland's-Climate-Pollution-Reduction-Plan.aspx>

⁵ <https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Pages/index.aspx>

⁶ <https://dhcd.maryland.gov/Pages/GreenHealthyTaskForce.aspx>

⁷ <https://mde.maryland.gov/programs/workwithmde/Pages/AQCACmeetingminutes.aspx>

⁸ <https://usclimatealliance.org/press-releases/decarbonizing-americas-buildings-sep-2023/>

⁹ <https://dgs.maryland.gov/pages/greenbuilding/index.aspx>

¹⁰ https://www.psc.state.md.us/wp-content/uploads/EmPOWER-Recommendations-to-General-Assembly_Final.pdf

¹¹ <https://www.psc.state.md.us/wp-content/uploads/Corrected-MDPSC-Electrification-Study-Report-2.pdf>

¹² CSNA, Senate Bill 528, p. 70 line 12 <https://mgaleg.maryland.gov/2022RS/bills/sb/sb0528E.pdf>

¹³ <https://www.dllr.state.md.us/labor/build/comar091251.pdf>

GUIDING PRINCIPLES

The Task Force agreed on principles that should guide decision making and investments, including the Task Force’s own recommendations and prioritization. The Task Force commends these principles to the Governor and Legislature, including as they move these recommendations into implementation. The top three guiding principles, as voted by the Task Force, are: drive early action, equity and housing security, and cost-effectiveness (both broadly and narrowly defined).

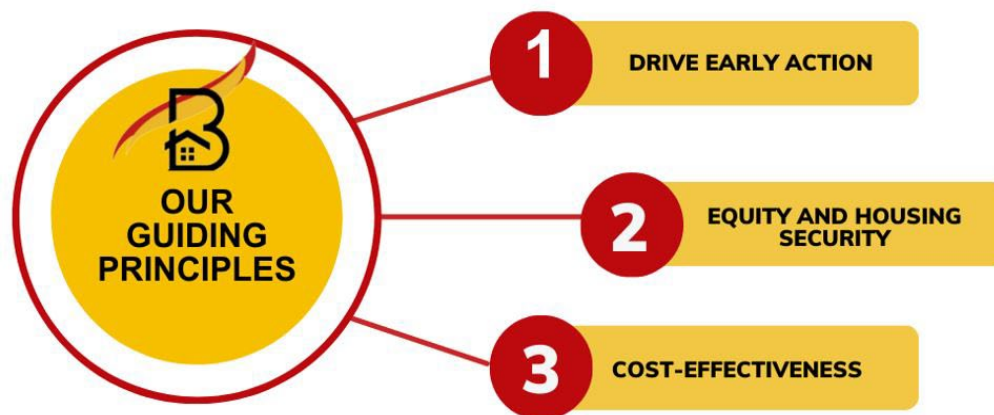


Figure 3: The Building Energy Transition Implementation Task Force’s main guiding principles.

Additional guiding principles that received support from Task Force members included:

- Fairness
- Jobs and economic growth
- Simplicity and accessibility
- Ease of implementation
- Accommodate building lifecycle
- Transparency

DEFINITION OF THE BUILDING ENERGY TRANSITION

The “Building Energy Transition” as used by the Buildings Task Force refers to the transition of energy used in homes and buildings from being a major source of GHG emissions in the state, to being clean, carbon-free, and efficient. To meet the statewide climate goals, a large portion of the statewide building stock will need to be updated. This is part of what is referred to as “decarbonization,” which refers to reducing or removing sources of carbon emissions. Although decarbonization must occur in various sectors, like the power supply and grid, transportation sector, and beyond, this Task Force is focused on decarbonization of the buildings sector.

Decarbonization in a building should typically include energy efficiency, including making changes to generate the same services with less use of electricity, gas, or other energy source and lower GHG emissions; for example, upgrading lighting to LED bulbs, replacing an old heater with a more

efficient model, or adding insulation into an attic or walls or replacing windows to improve the building “envelope”. However, given the scale of Maryland’s GHG reduction goals, efficiency is a necessary but insufficient building decarbonization solution, as buildings will also need to stop burning fossil fuels like gas and oil onsite by switching to electric equipment to meet the same needs. As the electric supply gets cleaner and lowers carbon due to market shifts and policies such as the Renewable Portfolio Standard (RPS) and the Regional Greenhouse Gas Initiative (RGGI), buildings that are using that electricity also become cleaner. Space and water heating equipment (e.g. gas-fired furnaces or fuel oil boilers) are the largest targets for electrification via conversion to heat pumps or other efficient electric options because they use the most energy, but stoves and dryers are also GHG emission sources and can be converted to electric options as well.

To mitigate grid impacts and energy bill increases from new electric equipment, it is important that this equipment be highly efficient. Heat pumps are a proven and ideal technology for this since they move heat instead of directly generating heat, they deliver dramatically more heat energy than the electricity they use, with efficiencies of 250% to 400% depending on type of heat pump and the energy sources and sinks. Efficient heat pumps deliver GHG savings from day one, and these savings will only grow as the grid gets cleaner. Domestic hot water can also be supplied with heat pumps, and induction stoves can replace gas stoves, both changes are generally simpler equipment replacement projects, though electrical wiring may need to be replaced. Some buildings may also require improvements to their insulation to maximize the performance and cost-effectiveness of the efficient heat pump systems while reducing peak loads. While switching to inefficient electric resistance heat (e.g. baseboard systems) is technically “electrifying”, all references to electrification in this report assume a switch to highly efficient options only such as heat pump technology.

Building electrification often requires more than purchasing an equipment unit. As heat pumps may distribute heat differently in the building than the gas-fired system being replaced, switching to efficient electric heating can require a more complex renovation and may be accompanied by a variety of non-equipment costs. These may be additional installation costs such as the need to redo wiring, ductwork, or plumbing, or upgrade the building’s electric service levels. There are often also not insignificant “soft costs” around the planning, scoping, and administration of a project, especially for large buildings - e.g., permits, electric load studies, cost savings analysis, engineering plans, and lifecycle or embodied carbon considerations for construction materials. As with efficiency projects, this could also mean making necessary upgrades to the building to ensure an effective and safe project, such as repairing the roof before installing condenser units or remediating mold and asbestos. This is what is often referred to as the “whole building approach,” considering a building as a system rather than focusing on one component.

Along with saving energy and reducing carbon, electrification may also save money over the life of the project. However, first year savings may look different than lifetime savings. Analysis by LBNL found that for larger buildings complying with BEPS, about half of electrification projects can be cost-effective in the long-term. However, support is needed to help building owners and occupants understand what is needed, evaluate alternative compliance pathways, identify resources, and support the pre-design work needed to get a project to the point where private capital can step in. Many projects may still require additional federal and state resources to make them economic.

It is also important to note that affordable housing faces unique electrification challenges that may relate less to technology than to lack of access to finance, unavailable upfront capital, and deferred maintenance. Subsidized Affordable Housing that was financed using Low Income Housing Tax Credits, for example, can only refinance after 15 years and will have very limited ability for large capital expenditures in the interim. The possibility of displacement resulting from building

upgrades is also a key risk of the coming building energy transition. This risk is particularly prominent for NOAH, as such properties are often affordable precisely *because* the building owners have not been investing in them. This report does not purport to address this issue, as ways to address displacement risk with tenant protections are beyond the scope of this task force. However, the issue deserves attention from policymakers when considering decarbonization solutions.

GENERAL THEMES ACROSS BUILDING TYPES

- **Consolidation and simplification are key.** Well-designed residential and commercial programs could make it easier for people to navigate options, and programs with easy application and reporting processes will reach more buildings than those with cumbersome processes and requirements. Alignment within the state and with federal requirements as much as possible helps address this issue.
- **Timing matters.** Focusing incentives for large buildings early in the building planning cycle (e.g. incentivizing pre-design items such as electric load studies) can maximize cost effectiveness. Incentives and financing should be flexible enough to align with refinancing cycles and equipment replacement schedules.
- **Factor in “non-equipment” costs.** As discussed above, installation of a specific electric technology can add additional construction costs as well as planning and soft costs. When designing new electrification incentives, these costs should be accounted for, to ensure that the incentives are practical and usable.
- **Whole-building approach.** Electrification should be accompanied by energy efficiency, weatherization, and demand management and consider resiliency as well. This will bring down the cost of electrification and provide related benefits such as indoor air quality improvements. This approach influenced the One-Stop Shop and Hub recommendations but applies to some extent to all recommendations.
- **Workforce development is urgent.** The workforce needs are varied: more new workers are needed in the trades such as electricians and installers. In addition, existing workers need more training to recommend, incorporate and execute electrification. To advance equity, newly created jobs should be good jobs that are safe, inclusive, and accessible.
- **Tailored solutions.** No single program or incentive will work for all building or owner types. Financing solutions and tax incentives may work well for offices and market rate apartments, while equipment buy-downs and grants may be more successful in the limited income market. Having both flexibility and a suite of options can help get owners the solutions they need if the options are clear or there is support in navigating them.
- **Prioritize equity and housing security.** To meet this key guiding principle, it is important that the state:
 - Prioritize funding to improve affordable housing and enable it to comply with BEPS to prevent displacement.
 - Ensure that NOAH is included in affordable housing funding and programs.
 - Avoid regressive incentives (e.g. tied to value of property instead of to societal benefits).
 - Prioritize creation of high road jobs, pathways to the middle class, and opportunities for frontline communities.

Costs and Funding Overview

The up-front costs and benefits of decarbonizing the millions of buildings in Maryland are substantial. But those investments would result in significant net benefits due to long-term avoided energy costs—even without considering the many environmental and health benefits.

Two sets of cost analyses were conducted and shared with the Buildings Task Force to consider these costs. LBNL and PNNL considered the costs and benefits of BEPS compliance specifically, which includes all buildings over 35,000 square feet. Rewiring America conducted analysis on the costs of residential upgrades, including for low-income households. AECOM provided additional context and estimates of recommendation costs. The full analyses can be found in the Appendix, and key findings are highlighted here. No cost analysis was done for buildings not subject to the BEPS but considering the necessary levels of abstraction of these studies, the BEPS costs per floor area are likely similar to many smaller buildings. Some assumptions were made about the impact of existing federal and state incentives and programs such as the federal Inflation Reduction Act (IRA) tax credits, but much is currently unknown as the IRA HOMES and High-Efficiency Electric Home Rebate Program (HEEHR) program for Maryland is not finalized, and the EmPOWER utility-funded programs are at the end of a program cycle and awaiting PSC approval on the new plans.



Figure 4: The estimated financial benefits from covered buildings complying with Maryland BEPS.

BEPS COMPLIANCE COSTS

LBNL/PNNL¹⁴ estimated the up-front costs of BEPS compliance alone to be \$1 billion per year, not accounting for any potential efficiency or electrification incentives. Approximately half of these costs are estimated to be financeable, meaning owners could secure funding from traditional private sources, or their own capital reserves and budgets based on expected internal rate of returns (IRR). The determination of a financeable project was based on typical IRR thresholds for various sample property types. The remaining non-financeable costs are what the state may consider supporting through the recommendations provided by this Task Force.

¹⁴ See Appendix B for more detail on the technical and monetary analysis.

This investment comes with significant financial and emissions benefits over the long term. The analysis found that over the 2025-2050 period, there would be an estimated total energy cost savings of \$22.3 billion (or \$22.56 per square foot) and net cost savings of \$4.5 billion (or \$4.48 per square foot). Although this analysis is for BEPS covered buildings, it is indicative of potential economy-wide impacts. Building upgrades also bring substantial additional non-energy benefits, including cleaner indoor and outdoor air, improved public health, decreases in deaths associated with respiratory illnesses, improved occupant productivity, increased job creation, and more. The economic value of these non-energy benefits was not modeled for the Buildings Task Force, but likely far exceeds the value of energy savings.

RESIDENTIAL UPGRADE COSTS

Rewiring America projected that \$1.7 billion will be needed annually for project costs of upgrades for small residential buildings. The analysis found that 98% of homes would have lower costs by upgrading to a heat pump system rather than to a high-efficiency gas furnace and AC - a median of \$465 per year across the equipment lifetime. While not quantified, similar non-energy benefits would be expected in this building stock as were described for the BEPS-compliance buildings. A specific estimate of what portion of these costs could be “financeable” was not provided, but it is likely to be a smaller portion due to additional financing barriers in much of this building sector. Therefore, the state may want to provide support for a higher portion of costs for those buildings.

Combining those two analyses, the estimated annual project costs are around \$2.7 billion. The state may not choose to cover the remaining portion of non-incentivized and non-financeable costs, but some amount of state support for project costs will be required to move the market. In addition, many of the recommendations put forth here by the Task Force also require state spending to ensure the construction projects come to fruition and improve equity in the state along with climate. This funding level is not unprecedented. U.S. states with ambitious goals have significant climate budget allocations. In FY23, New York’s climate budget was \$4.2 billion (equivalent to \$1.4 billion in Maryland at the same per capita level), Minnesota’s FY24 budget for climate will be \$2 billion - slightly higher per capita than New York and equivalent to \$2.2 billion in Maryland at the same per capita rate.

Several of the Task Force recommendations provide a non-exclusive list of ideas for funding some of these costs. These ideas, as articulated in the Priority Recommendations section, are:

- Expanding Cap and Invest beyond RGGI to cover sources of direct emissions.
- Fee Based Revenue regulations.
- Alternative Compliance payments from BEPS starting in 2031.
- Ending investment in fossil fuel equipment and reinvesting that money into electrification.
- Spending unused Maryland Children’s Health Insurance Program Administrative Dollars (Healthy Homes for Healthy Kids program) on healthy home electrification work
- Spend federal IRA Home Electrification and Appliance Rebates Program (HEAR) money until it is exhausted.
- Leverage private capital through on-bill repayment and expanded use of C-PACE, or similar program.

Priority Recommendations

The following recommendations emerged as the most common or highest priority across the subgroups. The order of the recommendations presented here does **not** represent a ranking.

SECURE STATE CAPITAL FOR THE BUILDING ENERGY TRANSITION

State Funding for Building Sector Transition

In addition to the many new funds available from the federal government, and the expected increase in private investment, state government funds can support the implementation of many of these recommendations. The Task Force acknowledges that these funds will need to come from new sources and suggests several ideas here, closely based on recommendations from recent MCCC deliberations.

- The state should investigate the implementation of new revenue-generating measures to provide additional state support for improving energy efficiency and reducing GHG emissions from the building sector.
 - Cap and Invest. The state should investigate an economywide cap and invest program, which the *Maryland's Climate Pathway* report shows to be a critical policy for achieving the state's GHG emissions reduction requirements.
 - Fee-Based. Other policies that require fossil fuel companies to pay for the pollution produced by their business should be explored. Strong consideration should also be given to "feebate" programs that put a fee on specific direct emissions-producing activities to fund rebates for zero-emission alternatives. An example is increasing registration fees for fuel-burning vehicles to fund incentives for zero-emission vehicles and associated charging infrastructure, including charging infrastructure at buildings. Consideration should be given to the impacts of pass-through costs to consumers and/or ratepayers when designing such policies.
 - MDE shall reinvest all funds raised through the BEPS Alternative Compliance Payments in a specific fund to reinvest the money in building energy transitions, for example the Climate Catalytic Capital (C3) Fund, the Strategic Energy Investment Fund (SEIF), or a new fund.
- The state and local governments should investigate dedicating a portion of the incremental increase in commercial real property and recordation tax revenues to fund BEPS compliance.

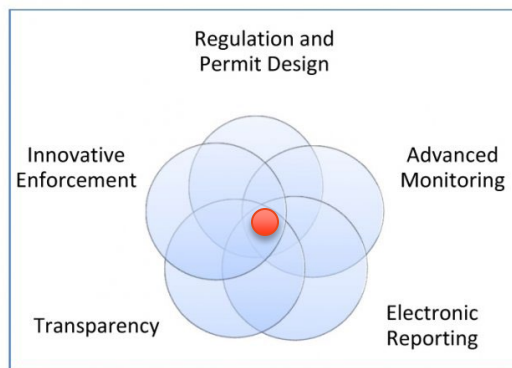


Figure 5: Red dot represents target goal in effectively designed regulations, components from Next Generation Compliance (Source: <https://www.epa.gov/compliance/next-generation-compliance>)

End Investment in New Fossil Fuel Equipment and Infrastructure

Electrification and climate goals reflect the need not just to move towards clean energy, but away from fossil fuels. One path to do this is through taking money currently spent on fossil fuels, whether that is new furnaces or new gas lines, and shifting that money towards actions that align with climate goals. This recommendation is in line with the Task Force principle of Drive Early Action. Investments in new equipment made now will lock that equipment in for 15 to 30 years. This is not a ban on fossil fuels, but rather a reprioritization of where scarce government appropriations is directed. This recommendation impacts PSC proceedings such as EmPOWER, or a potential Future of Gas Planning proceeding. It also includes decisions to “walk the walk” within state-owned buildings.

- Redirect state investments and spending to support decarbonization instead of supporting **new** natural gas equipment or infrastructure.
 - By 2025, MEA should update its 2022 Energy Plan¹⁵ and include a section on strategic disinvestments for new fossil fuel equipment and infrastructure.
 - The General Assembly should end the Strategic Infrastructure Development and Enhancement (STRIDE) program as currently designed and ensure that utilities prioritize their highest-risk infrastructure, such as gas pipes that are leaking and most leak-prone, and consider less costly alternatives to replacement, such as leak detection and repair and electrification¹⁶.
 - The General Assembly or the PSC should change EmPOWER rules to:
 1. Prohibit incentives for gas equipment in all residential market rate programs and commercial and industrial programs with a phase-out period ending in 2026 during which there will be narrow exceptions in cases where there are no viable electrification alternatives; and
 2. Permit funding for fuel switching for beneficial electrification.
 - Update state procurement rules to end or limit state funding of new fossil fuel equipment in state projects (e.g. government buildings, schools, etc.), including considering potential limits or exceptions. Ensure sufficient appropriations to cover additional state costs. Support lead-by-example projects.

Utility	STRIDE (2024-2043)	Non-STRIDE (2024-2043)	Non-STRIDE (2044-2100)	Total (2024-2100)	Changes from 2022 Gas Spending Study	
					(\$)	(%)
BGE	\$2,895	\$9,468	\$26,984	\$39,347	+ \$15,612	↑ 66%
WGL	\$4,023	\$2,140	\$6,099	\$12,262	+ \$3,648	↑ 42%
CMD	\$565	\$237	\$675	\$1,477	+ \$596	↑ 68%
Total	\$7,483	\$11,845	\$33,758	\$53,086	+ \$19,856	↑ 60%

Figure 6: Total Maryland Capital Investment Projections (\$ million) (Source: Maryland Gas Utility Spending Report, <https://opc.maryland.gov/Portals/0/Files/Publications/Reports/GasUtilitySpending%2011-5-23%20FINAL.pdf?ver=QdfdqphWg8P8SSpjtB29YQ%3D%3D>)

¹⁵ <https://energy.maryland.gov/Reports/MEA%20Energy%20Plan%202022.pdf>

¹⁶ Example approach: https://www.energy.gov/lpo/articles/lpo-announces-conditional-commitment-longpath-emissions-technology-support-methane?utm_medium=email&utm_source=govdelivery

Provide Medicaid Funding for Building Improvements

Buildings and health are closely tied. We spend most of our time in buildings, and building issues such as poor ventilation, indoor combustion, or lack of thermal resilience can cause or exacerbate health issues such as asthma. Recognizing that housing interventions are often also health interventions opens new funding opportunities that the state can pursue. This is an example of a holistic “whole home” approach to both GHG emissions and public health.

- The state shall evaluate a state Medicaid waiver/plan amendment to allow Medicaid funds to support housing interventions to reduce the incidence of asthma, remove fossil fuel appliances, and install non-fossil-fuel household appliances, including stoves, heat pumps, and dryers.
 - The Maryland Department of Health (MDH) and Maryland Medicaid Administration should look at the potential issuance of a policy statement based on known evidence that removing fossil fuel appliance in a home is a potential health and social determinants of health (SDOH) measure to lower exposures to carbon emissions and benzene that have been shown to damage respiratory and neurological health.
 - DHCD and the MDH should explore expanding use of unused Maryland Children’s Health Insurance Program Administrative Dollars (Healthy Homes for Healthy Kids program)¹⁷ to allow for fuel switching, Replacement of fossil fuel appliances (including gas stoves) and upgrading whole-house electrical systems.
 - To create more holistically healthy homes, MDH and/or DHCD should fund a study of residential decarbonization and electrification measures with the goal of quantifying their SDOH impacts, including hospitalizations and emergency department visits for asthma and other respiratory diseases. MDH or DHCD should seek philanthropic and federal funds (e.g. U.S. Department of Housing and Urban Development’s healthy homes technical study) to defray the cost of the study.

PRIORITIZE MULTI-BENEFIT BUILDING ENERGY TRANSITION STRATEGIES

Workforce Development

This recommendation aims to address current and future shortages in the decarbonization workforce in Maryland (electricians, HVAC installers, plumbers, energy assessors, and more). The recommendation describes expansions of pathways into the trades and professions, and a priority on reaching new communities in line with Justice40 priorities. Many programs exist in states (e.g. Illinois Climate and Equitable Jobs Act) and federally (e.g. HUD Section 3, U.S. Workforce Innovation and Opportunity Act) that include workforce requirements and could be expanded with deeper investment. State incentives are needed to ensure that trades expand into the decarbonization sector in an urgent and equitable way. The recommendations will also help maximize the impact of newly expanded federal tax credits enacted by the IRA, which offer higher rewards for projects that meet prevailing wage requirements. It is critical that existing workers receive more training to recommend, incorporate, and execute electrification projects.

¹⁷ <https://www.greenandhealthyhomes.org/wp-content/uploads/GHHI-State-Medicaid-Reimbursement-11.10.22.pdf>

- The Maryland Department of Labor should work with the MEA, large and small employers, schools, community colleges, training programs, nonprofits, and labor unions to establish and provide long-term subsidies to pre-apprenticeship pathway programs that have formal relationships or agreements with registered apprenticeship programs:
 1. That are targeted at providing the skills needed to decarbonize buildings, including electric upgrades, installing heat pumps, induction stoves and other highly efficient electric technologies, and
 2. That meets state and federal requirements including the section 179D and 45L tax deductions and other tax incentives in the IRA. Based on AECOM’s technical analysis, these subsidies should start at **\$7.8M per year and ramp up over time.**
- Target building decarbonization workforce development programs at youth, returning citizens, veterans, and former fossil fuel workers.
- Invest in incentivizing contractors to
 1. Serve limited-income housing market and
 2. Create good jobs for people from Maryland’s frontline communities, which includes through employing tax credits, training and hiring support, subsidies, or similar.

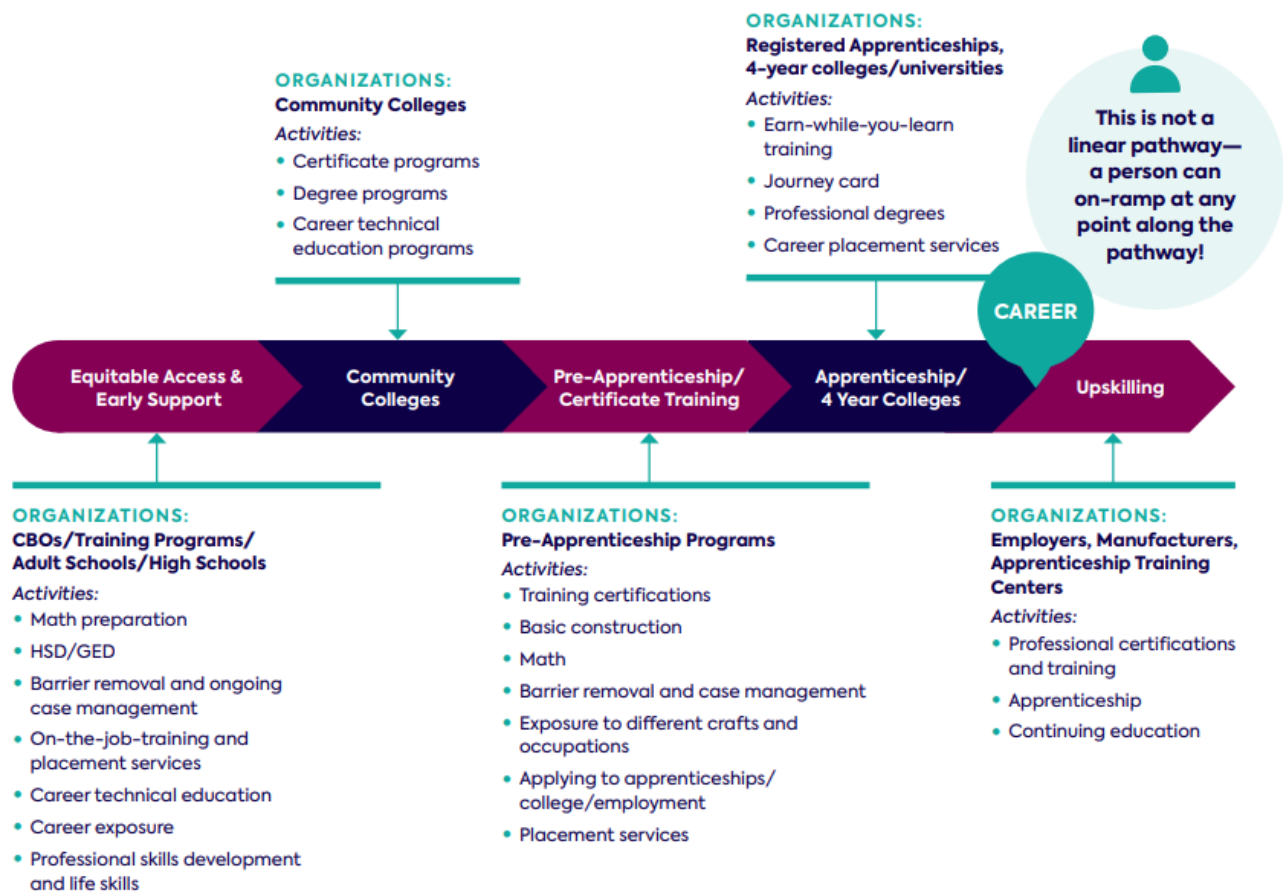


Figure 7: High-Road Clean Energy Workforce Pathway (Source: <https://www.barrfoundation.org/reports/building-new-england-clean-energy-workforce>)

Grow the Clean Energy Transition Hub

This recommendation will connect decarbonization programs and beneficiaries. As programs, incentives, and information proliferate, it will be important to have a well-staffed central location or “clearinghouse” that can serve as a trusted source of information, technical assistance, connections, and support. This speaks directly to the consolidation and simplification theme. MEA has already hired one staff person to facilitate the creation, operation, and maintenance of the Hub. We recommend a budget so that the Hub can hire more staff and/or outsource the provision of additional services. Hubs exist in many jurisdictions such as Washington DC, St. Louis, and New York. Many of these hubs already offer the services below. The Hub would not have to offer all programs to everyone but would be a key entry point to existing programs, including as one way that limited-income residents could relate to the DHCD One Stop Shop described in the next recommendation.

- Appropriate beginning at \$500,000 each year for salaries and/or contract capacity and ramping up as programs develop through 2045 to scale up the MEA Climate Transition and Clean Energy Hub created by the CSNA. The well-staffed Hub could:
 - Collaborate with the community and build trust, engaging in ongoing partnerships with community groups.
 - Provide technical assistance to building owners to support decarbonization strategies across a range of building typologies, like the work done by the Department of Energy’s Better Climate Challenge.
 - Develop market-based and market-savvy programs and resources, including case studies.
 - Catalyze peer learning networks.
 - Help the market to understand 1) legal requirements, including BEPS and building codes, 2) labor standards, and 3) federal, state, utility, and local decarbonization incentives.
 - Assist with workforce development.
 - Maintain a curated list of recommended industrial and professional certifications by project type.
 - Provide support to residential buildings, including single family homes.
 - Serve as a matchmaker among building operators, service providers, and capital markets in coordination with the Maryland Clean Energy Center (MCEC) and other green bank organizations.
 - Serve as a consolidated entry point for current and future programs to reduce market confusion and barriers to entry for building owners serving the Limited Income Housing sector.
 - Coordinate with local governments and code officials.

One Stop Shop to Support Limited Income Housing

Limited Income Housing, from single family owner-occupied to subsidized apartment buildings, has a unique set of needs and often very limited capacity to navigate complicated program applications or long construction processes. A one-stop-shop that provides funding, but also technical and project management assistance is a proven model that helps ensure energy upgrades have wide uptake in this sector. This recommendation greatly expands on Maryland Department of Housing and Community Development’s (DHCD) existing Multifamily Energy Efficiency and Housing Affordability (MEEHA)

program to create a dedicated one-stop-shop (OSS) which can be a resource to building owners as well as residents. This OSS should be well staffed and funded and accessible - meaning alignment with Justice40 principles, providing translations, cultural competence, relationships with trusted community partners, and transparency. It will serve both subsidized affordable housing and unsubsidized or NOAH using a variety of eligibility options that could include geographic or rent-level eligibility as alternatives to individual income verification.

- DHCD should be given at least \$3.5-\$4.2M in annual funding to expand and staff up a one stop shop (OSS) to provide an entry point for all programs serving limited income housing and affordable properties, including NOAH. (DHCD manages most of these programs and integrates/collaborates with all other programs.) Funding should be distinct from EmPOWER funding and free of its constraints. OSS will provide financial and non-financial support. OSS will take a whole-home approach, including rehabilitation to remove health and safety barriers, energy efficiency and comprehensive weatherization, electrification, and resilience upgrades.
- DHCD should look at models including the District of Columbia Sustainable Energy Utility (DCSEU) Affordable Housing Retrofit Accelerator which helps to pay for energy audits and related energy conservation measures.
- The existing Multi-family Energy Efficiency and Housing Affordability (MEEHA) program should have its funding scaled to meet the demand of BEPS compliance and should be the primary program serving the Low-Income Housing sector.
- OSS will:
 - Provide customer-specific information and outreach, which may include:
 - Create and post online a formal petition form that can be downloaded and printed. This petition will allow tenants to collect signatures from their neighbors asking that DHCD contact their landlord to inform the landlord that its tenants are requesting energy upgrades.
 - Proactively contact building owners within the limited income housing sector to connect MEEHA funding to projects needed to comply with the state BEPS.
 - Provide residents and owner educational materials and templates to residents and owners.
 - Provide “navigators” and/or project managers to assist affordable housing with applying for and completing energy projects, including assistance for compliance with the BEPS regulations.
 - Provide and/or facilitate improvements to housing at little or no cost to limited-income residents.
 - Drive wide participation and facilitate easy access to programs, minimizing administrative burdens to participants.
 - Drive participation of rental properties by engaging tenants and landlords.
- OSS will consult with the Green and Healthy Task Force regarding specific implementation design of the One Stop Shop Model and related programs.
- OSS will work with MDH, MEA, Department of Labor and other agencies to measure health impacts/benefits, among other metrics to establish Maryland-based evidence of the benefits of decarbonization in older, occupied housing in low-wealth communities.
- OSS will work with the MEA Hub to help owners understand and comply with BEPS, and match property owners with service providers and capital providers.

PROVIDE CAPITAL FOR THE BUILDING ENERGY TRANSITION

Financing Building Energy Transitions

The energy transition will require investments from the private sector, including but not limited to building owners, as well as the government. The high upfront costs and long payback periods of some building decarbonization projects will make it difficult for those projects to qualify for the typical 10-year commercial loan term. Government- and green-bank-backed financing options will be necessary to help building owners and occupants access capital. Financing and tax incentive programs should be designed to ensure capital availability for improvements that would not otherwise be cost effective.

On-bill financing, in which a recipient pays back a loan as a line item on their utility bill, has shown promise when designed well with high payback rates and a direct connection to the loan purpose. These loans can be from third-party capital sources rather than the utility acting as the lender. MCEC is the state's main green bank (in addition to smaller green banks, such as the Montgomery County Green Bank), and offers an avenue for energy-specific financing products such as loan-loss reserves, revolving loan funds, or others.

- Investigate options to provide Marylanders with new options to finance efficiency and electrification projects, including on-utility-bill repayment to third-party capital providers and off-bill repayment options.
- Expand the capital and funding for state and county green banks through expanded funding for the Climate Catalytic Capital (C3) Fund, to enable the state green bank to provide low-cost loans for implementation of commercial and residential building energy performance improvements, through direct loans or leveraged with federal and private capital. Allow funds to be used for loan loss guarantees, rate subsidies for CPACE or other loans and for other forms of credit enhancement or grants as deemed appropriate by the C3 Fund Investment Oversight Committee.
- The state should further consider supplementing and improving existing financing mechanisms like CPACE and others by offering state-funded grants to buy down the interest rate, streamlining program documentation and work to avoid conflicts between borrowers and primary lenders.
- Conditions:
 - Ensure that all financing programs are accompanied by robust consumer protections and that sufficient time and resources are provided to create such protections.
 - Any new financing should not be made available to support new fossil fuel-based equipment. Controls that reduce the total emissions of fossil fuel equipment not yet at the end of its useful life shall be eligible for incentives.
- Education:
 - The state should educate market actors to socialize innovative financing options (e.g. Energy-As-A-Service, low interest loans, incentives) and address barriers (e.g. lender consent for C-PACE).
- Access:
 - Since Commercial Property Assessed Clean Energy (C-PACE) financing is available through the MDPACE program in most Maryland counties, and no cost program administration is available through MCEC, the state should encourage all counties to enact ordinances to allow private owners across the state access to C-PACE financing.

- The state and local jurisdictions should pursue avenues to leverage private capital to augment resources available from existing programs and support building decarbonization priorities, including:
 - Work with private capital sources to develop mechanisms for providing private capital directly to public and private building owners.
 - Work with private capital sources to ensure that programs they develop meet State standards so that building owners can be confident that taking advantage of these programs will not run into regulatory issues.

Tax Incentives

Tax incentives are a common path to incentivize owners to make a desired action, close capital funding gaps, and improve cash flow. The revenue used to cover expenses for many large commercial buildings and low-income housing comes from rental income. Additional capital and operating expenses beyond those expected by general cost inflation are likely to require additional income beyond typical rental escalation in the form of state tax incentives or grants.

These paths could mimic or align with federal incentives to minimize confusion and paperwork, and they could be targeted at filling the gaps that federal incentives do not cover. There is also the opportunity to adjust existing tax burdens or incentives in response to energy actions, rather than creating new energy-specific incentives.

- The state should put in place long-term tax incentives sufficient to make improvements more cost-effective to encourage owners to decarbonize their buildings with particular emphasis on incentives to electrification projects that would not otherwise result in strong returns on investment for building owners. To maximize policy impacts, state tax incentives should be aligned with consideration for BEPS compliance periods and cost-effective time windows such as when a building is being refinanced, renovated for other reasons including for office-to-residential conversion, or equipment replacement schedules.
- The recommendation would respond to the urgency of the climate crisis and consider simplicity in program design; providing efficiency in paperwork and reporting; performance metrics; consolidation of existing incentives; alignment with federal, state, and local incentives and with federal labor standards; and long-term costs and benefits, including relating to financial, social, and environmental factors.
 - Include options such as elective pay for entities such as governments and nonprofits that do not have a tax liability. Incentives can be performance-based where possible, encourage pre-development considerations, and not be prescriptive of specific technologies. Incentives should help fund investments that are harder to finance, such as at the beginning of planning, decarbonization portfolio planning, energy audits, electric service upgrades, and building envelope improvements.
 - The Comptroller's Office should offer fiscal expertise to help evaluate tax incentive ideas, assist with identifying effective criteria for take-up of tax incentives and determine the financial and operational impacts of any proposed or discussed tax incentives.
- While the Task Force did not thoroughly discuss them, several Task Force members recommended that tax incentives that should be investigated and analyzed include but are not limited to:

- Montgomery County’s Efficient Buildings Property Tax Credit for both existing and new buildings, which offers a scaled property tax exemption for 5 years based on achieving certain efficiency targets and earning LEED O+M certification.
- New York City’s 421a tax credit program is designed to encourage development of multifamily housing.
- Making the existing (and recently expanded) federal 179D tax deduction of \$5 per sq ft usable by more projects by providing state grants per square foot to offset the incremental costs of new federal prevailing wage and apprentice requirements.
- Making the existing federal 179D tax deduction more effective by creating a state tax “credit” matching the federal deduction.
- Making the updated federal 45L tax credit eligible for new or substantially reconstructed homes that meet applicable Energy Star home program or DOE Zero Energy Ready Home program requirements.
- Whether GHG emissions reduction related improvements to buildings should be exempt from impacting the assessed value of buildings for real property tax purposes.
- Whether GHG emissions reduction related improvements to personal property should be exempt from impacting the assessed value of personal property.
- Whether GHG emissions reduction associated equipment should be exempt from sales tax.
- Enacting a state and local government 100% ten-year property tax credit for buildings achieving LEED Zero Energy or LEED Zero Carbon certification (or the like, as regulated by the Maryland Green Building Council) for five years and then phasing down for next five years.
- Exempting from local recordation tax, the recording of debt secured by a building when accompanied by a certification that at least 50% of the new debt will be used for improvements to any building that reduces GHG emissions.
- Assess the land beneath solar panels co-located with a building at the lowest tax rate in the jurisdiction and exempt the solar panel structures from being exempt from tax (e.g., to encourage solar installations covering parking lots, etc.).
- Establish a property tax incentive program that is designed to encourage new multifamily buildings to meet certain energy efficiency and decarbonization criteria.

Fund Electrification Projects for Low-and Moderate-Income Households

This recommendation is in direct alignment with the guiding principle of Equity and Housing Security. In recognition of the fact that many low- and moderate-income households will not be able to afford any upfront cost of electrification, and that state money should be prioritized towards this sector, the Task Force recommends that the state fully subsidize the incremental cost of heat pumps. In addition, federal money will soon be awarded for states to run electrification rebate programs, but that money is limited and expected to be spent quickly. The state should therefore commit to continuing those programs with state money once the federal money is gone, which will provide longer-term certainty to the market. Low Income is defined here as less than 80% AMI and Moderate Income as 80%-150% AMI in line with the federal IRA thresholds. It includes rental and owner-occupied properties and refers to both subsidized and NOAH.

- To support residential electrification, Maryland should cover 100% of the average additional cost of installing heat pumps in all Low-Income households and cover 50% of the average additional cost of installing heat pumps in all Moderate -Income households, from 2025-2044.
- Continue to offer the IRA Home Electrification and Appliance Rebates Program (HEAR) rebate to all remaining qualifying households after federal funds run out.

Support BEPS Compliance of Commercial Buildings

BEPS will require covered building owners to comply with energy and carbon reduction requirements. In the spirit of the Drive Early Action principle, this recommendation supports building owners in meeting their requirements early by providing design support and an early adopter incentive.

- The General Assembly should establish a grant fund to support energy audits and engineering analysis needed for building owners to understand what must be achieved in project development and implementation to comply with BEPS standards, including:
 - Pre-design work is needed to get a project financed.
 - Example is a revolving loan fund with forgivable loans upon work completion.
- An early adopter incentive up to \$5 per sq. ft. should be offered to buildings that reduce energy use and emissions to meet the final 2040 targets by 2030. To enable work to take place, the incentive could be offered as a low-interest loan that is partially forgiven once the work is complete and at least one year of performance data demonstrates early achievement of the targets, with the remaining loan payments equal or less than projected energy cost savings over the life of the loan.
- Greater support should be offered to affordable housing and to equity-priority institutional and commercial buildings such as non-profits, faith-based institutions, community centers, and businesses located in and serving frontline communities. In most cases, assistance to these owners can be provided as grants or low-cost loans.

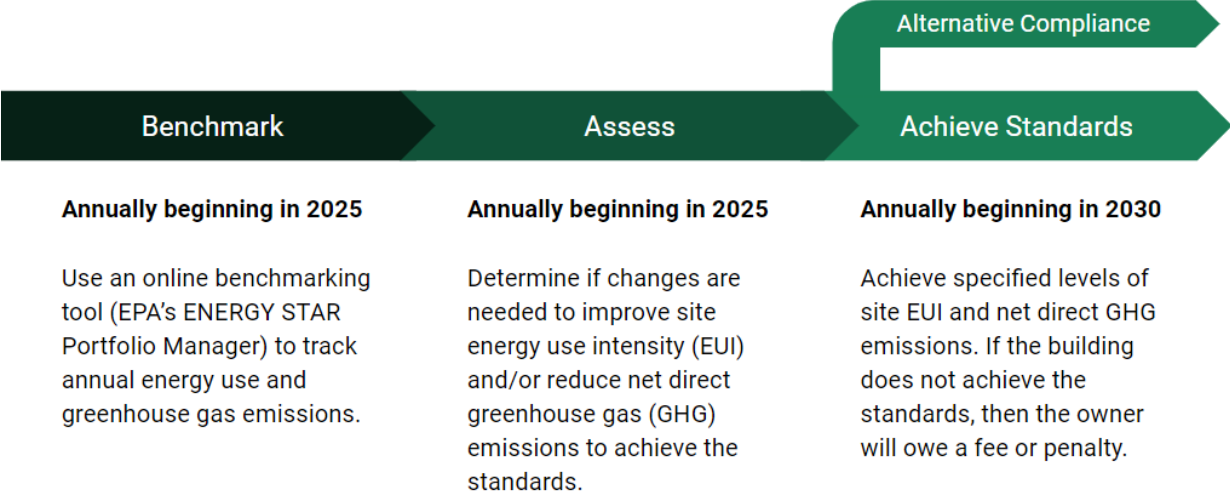


Figure 8: MDE BEPS Regulations Deadlines (2025-2030).

Additional Ideas for Consideration¹⁸

The following supplemental ideas are subgroup recommendations. These ideas were not included in the list of Priority Recommendations because they were specific to certain groups, were focused on a niche issue, or did not have sufficient detail. However, even though they are not listed as priorities or voted on individually by the full Task Force, these recommendations received consensus approval within the subgroup and represent worthwhile ideas that could be pursued.

Decarbonization Contractors List (Large Buildings)

- MEA and the Department of General Services (DGS) should manage a list of decarbonization contractors and service providers (e.g. design professionals, engineers, architects). The Departments would 1) pre-qualify contractors, 2) monitor service quality including by receiving customer complaints, 3) remove contractors from the pre-qualified list if needed, and 4) provide example pricing for residential and commercial decarbonization projects.
 - Participation in this process would be completely optional for both building owners and contractors. The purpose is to help owners find contractors, not to prescribe which contractors are able to work on projects.
 - Coordination and publication could be done with the MEA Hub, intergovernmental contracts, and regional partners.

Utility Data Practices (Large Buildings and SCIB)

- Require utilities include greenhouse gas information in bills and other communications, following GHG accounting rules set by the PSC. (SCIB)
- Provide owners with user-friendly access to aggregated whole building utility data to enable owners to comply with benchmarking and BEPS requirements and to help qualify for federal tax incentives and rebates. PSC should require utilities be responsible for timely, safe, accurate, and automatic data to the BEPS benchmarking platform. (Large Buildings)
- With input from the PSC consider requirements for utilities to use meter data to identify and target customers for fuel switching, weatherization, and efficiency upgrades and prioritize customers that would provide the biggest climate impact. (Market Rate)

Utility Rate Design (Market Rate)

- With input from the PSC, consider requirements for utilities to:
 - Consider decarbonization impacts during electric and gas rate design.
 - Adopt new and/or promote existing rates that support efficient use of electricity in connection with building electrification (e.g. peak load management, demand response, time of use pricing), including consideration of opt-out options.
 - Consider treatment of cost causation to ensure equitable distribution of costs for interconnections and service upgrades supporting electrification.¹⁹

Incentivize electricity demand management (Large Buildings)

¹⁸ For the exact text of these consensus recommendations organized by subgroup rather than theme: <https://mde.maryland.gov/programs/air/ClimateChange/BEPS/Subgroup%20Recommendations%20Full%20List.pdf>

¹⁹ Example includes RM81 proceeding on interconnection: <https://webpsc.psc.state.md.us/DMS/rm/rm81>.

- Incentive programs should be compatible with, and support design-build-operate-and-maintain (DBOM) and Energy-as-a-Service contracts with service level agreements.

Building Stock Analysis (SCIB)

- MDE should conduct more detailed analysis on the makeup of smaller commercial (less than 35k sq. ft) and institutional buildings to better understand the needs of this sector.
- Conduct a gap analysis of decarbonization costs and available incentives specific to the small commercial and institutional sectors.
- Identify underserved, equity-priority institutional and smaller commercial building types (e.g. houses of worship, non-profits, community centers, clinics, etc.) or underserved/overburdened priority areas that need deeper support and funding that can cover the full capital costs of the transition.

Energy Efficiency Program Design Considerations (SCIB)

- Enhance EmPOWER and existing incentive programs to drive decarbonization including a focus on building envelopes, passive strategies, and non-equipment costs (e.g., panel upgrades, heavy-ups, structural improvements needed to enable heat pumps, etc.) This recommendation is reliant on the EmPOWER rule changes listed in the Recommendation “End Fossil Fuel Investment” as well as other rule changes that may be needed.
- Prioritize under-resourced building groups and locations for funding, and increase funding for those groups to cover a higher percentage of project costs (rather than just trying to cover a small incremental cost and relying on long term paybacks)
- Ensure proper systems commissioning and provide support for long term maintenance of efficient equipment.
- Include covering of soft costs and administrative costs (e.g., pre-design costs and engineering studies, administrative requirements for program application, etc.) needed to make projects financeable.
- Consider need for structural processing incentives (e.g., expedited permitting).

Financing (Market Rate, SCIB)

- Scale up the state green bank functions at the Maryland Clean Energy Center by equitably raising and appropriating funding as needed each year through 2045 (Market Rate, SCIB)
- Examine commercial PACE program, expand to all counties, and explore adjustments to make it work better (SCIB)
- Make Energy-as-a-Service, performance contracting, etc. more accessible and flexible for smaller commercial buildings (SCIB)
- Maryland should ensure or incentivize private capital providers to include energy, greenhouse gas emissions, or financial saving guarantees to customers for loans or financing. (Market Rate)
- Provide appropriate consumer protections related to lending products and on-bill financing. (Market Rate)
- Offer statewide residential home energy improvement loan program that is easy to use, coordinated closely with incentive programs for customers and contractors, and includes credit enhancements that expand affordable access to moderate-income and other households without existing access to affordable home improvement capital. (Market Rate)

School Decarbonization (SCIB)

- Provide finance and training for school electrification and energy benchmarking. Consider conversion of existing buildings into school buildings. Financial incentives and training can support maintenance, programming, and operations.

Real Estate Disclosure (Market Rate)

- Implement disclosure of home energy performance (e.g., Home Energy Score/ ENERGY STAR score) and energy audit results in sale and rental residential processes. This could be included in multiple listing service (MLS) real estate listings, CoStar, and other platforms. Early disclosure can impact decision-making.

Proactive Electrification Education (SCIB, Market Rate)

- Disclosure and education at time of equipment maintenance to support planning for equipment replacements.
- Education for service providers and contractors, tied to industry licensing requirements.
- Support for property managers to educate residential tenants on new equipment at time of renovation and upon move-in for new tenants.
- Information on costs, through public information tools and resources, like example bids and cost calculators.

Prioritization and Target-Setting (Limited Income)

- Prioritize funding for affordable housing, including NOAH.
- Prioritize investments in retrofits over new construction.
- Incorporate climate commitments and BEPS considerations into all housing investments.
- New construction investments should prioritize the LI market and be energy efficient, healthy, resilient, and all-electric and build on existing program certification standards.
 - Examples: New York State Energy Research and Development Authority (NYSERDA) Buildings of Excellence²⁰ and Massachusetts Green Bank for Affordable Housing²¹.
- Guard against net cost shifting to limited income residents (for instance residents who pay for their electricity and previously had heat included in rent).
- Define decarbonization broadly to include health and resilience.
- The Green and Healthy Task Force should set a clear and transparent statewide minimum limited income decarbonization target (e.g. xx units decarbonized by xx date) that all departments and stakeholders can work towards. Target to be aligned with the state's climate goals, BEPS, and timeline.
- Ensure that funding is provided to owners of subsidized and naturally occurring buildings serving limited income customers.
 - Provide funding for decarbonization for multifamily owners serving low-income customers at the time of property recapitalization.
 - Incorporate climate commitments and BEPS considerations into housing subsidy awards, such as the DHCD Qualified Allocation Plan (QAP) process.²²

State Programs (Large Buildings, Limited Income)

- Given ongoing and expected increases in state program needs that “leave no one behind” and related decarbonization efforts by a variety of state agencies, the Maryland Department of Budget and Management should add additional staffing and budget needed to meet demands from the General Assembly and the Governor.

²⁰ <https://www.nyserda.ny.gov/All-Programs/Multifamily-Buildings-of-Excellence>

²¹ <https://www.mass.gov/news/governor-healey-announces-creation-of-massachusetts-community-climate-bank-nations-first-green-bank-dedicated-to-affordable-housing>

²² <https://dhcd.maryland.gov/HousingDevelopment/Pages/QAPGuideRevisions.aspx>

Appendix A: Building Task Force Subgroups and Building Stock Characteristics

Four subgroups were created to help ensure that the recommendations took into consideration the varying needs of different building types, and to provide more opportunity for public participation. This section will describe these four building types that informed the recommendations. Note that industrial and agricultural buildings are outside the scope of this task force.

Large Buildings (covered by BEPS)

Subgroup Chair: Thomas LeQuire, Maryland Department of General Services

This subgroup focused on commercial and residential buildings over 35,000 square feet that would be subject to comply with the Maryland Building Energy Performance Standards (BEPS). The BEPS will require over 9,000 buildings covering approximately 990 million square feet to reach net zero direct GHG emissions by 2040. To comply with BEPS, these buildings will need to make efficiency improvements in their buildings as well as electrification upgrades that eliminate on-site fossil fuel combustion. Beneficial electrification of large, complex buildings includes swapping out combustion equipment for efficient equipment and complex renovations of heating and cooling distribution systems, changes to building envelope, and may require electrical capacity upgrades.

The subgroup did not cover residential buildings serving limited-income residents, which although subject to BEPS, are covered in a separate subgroup and therefore were excluded from this subgroup. The subgroup focused on the financial, programmatic, and structural support needed to help buildings comply with BEPS. The subgroup discussed existing state programs, expanded state programs, financing, and tax incentives. There was also interest in support for efforts that are not strictly about energy usage but are beneficial to a project overall, such as expedited permitting. Members noted that many projects may be cost-effective and financeable, but support is needed to help building owners understand what is needed, connect them to resources, and support the pre-design work needed to get a project to the point where private capital can support this end.

Small Commercial and Institutional (SCIB, not covered by BEPS)

Subgroup Chair: Cherise Seals, NORESO

This category refers to non-residential and institutional buildings under 35,000 square feet that are not subject to BEPS, as well as buildings such as schools that are exempt from BEPS regardless of size. There was limited data available on these building types for the Task Force to draw from, as these buildings have not been analyzed for BEPS compliance, nor were they covered in state and federal datasets on residential housing. Further research in this area would be helpful for quantification of the scale of the challenge, and of the financial and programmatic support needed.

Subgroup participants made clear that many small businesses and other buildings of this type face issues of staff capacity in addition to cost constraints. Recommendations included ease of access, supporting a strong energy workforce, targeted training opportunities, proactive outreach, and consumer education.

Market Rate Housing (not covered by BEPS)

Subgroup Chair: Kevin Walton, Chair of the Montgomery County Building Performance Improvement Board

Residential buildings smaller than 35,000 square feet but serving residents that are not low-income (making over 80% of Area Median Income) fell into this group. Most of the focus was on single family homes, but small multifamily and condo buildings were also discussed. This group ranges widely, but some common themes were around the need for a strong workforce to balance a lack of technical capacity on the part of residents and homeowners, and a general need for external support. Similarly, to the small commercial and institutional group, proactive and targeted outreach and education will be vital to reaching this sector.

Limited Income Housing (covered and not covered by BEPS)

Subgroup Co-Chairs: Nicola Tran, Maryland Department of Housing and Community Development, and Susan Stevens Miller, Earthjustice

Residential buildings of any size that serve limited income residents fall into this group. “Low income” was defined by this group as residents earning less than 80% of Area Median Income²³; and “low-income housing” is any single- or multi-family building that houses them, whether that building receives housing subsidies. In other words, this category is inclusive of what is often called “naturally occurring affordable housing” (NOAH) as well as subsidized Affordable Housing. This category therefore ranges from single family homes to 100+ unit apartment buildings. According to Rewiring America, this category encompasses approximately 530,025 households in the state. This designation is agnostic to metering configuration, system type, or utility customer class. Limited Income buildings subject to BEPS were included here rather than in the Large Buildings subgroup because this sector faces unique challenges, and in some cases unique regulations and programs that intersect closely with BEPS.

This subgroup differs from the others in its much more limited ability to leverage debt. Both traditional financing and rebate programs that require the resident to pay for work upfront and then be reimbursed later will be less effective for this sector. Some subsidized affordable housing is more likely to use financing, but only if those products can be aligned with the property lifecycle. For example, buildings that were financed using Low Income Housing Tax Credits will refinance after 15 years and will have limited ability for large capital expenditures in the interim. Another key to success with this sector will be partnerships with existing community organizations that have pre-existing connections and trust with residents and/or owners. Finally, while the need for programs and incentives to be comprehensive and go beyond just the cost of a heat pump came up in all subgroups, this group emphasized that a lack of funding for “electrification ready” type work will be a major barrier if not addressed.

²³ This definition is common among housing programs and is referenced in the Climate Catalytic Fund section of the CSNA (Economic Development Article 10-854). Other definitions exist, including federal definitions of 200% of the Federal Poverty Level, or some definitions that consider 80%-120% AMI “moderate” income.

Appendix B: Technical Analyses

Lawrence Berkeley National Lab (LBNL) and Pacific Northwest National Lab (PNNL)

The U.S. Department of Energy's Building Technologies Office is providing technical assistance to jurisdictions interested in exploring building performance standards (BPS). LBNL and PNNL provided MDE with BPS technical assistance in the following areas: building stock analyses including energy and emission impacts, performance target-setting and trajectories, and cost-effectiveness analyses. In support of Maryland's building energy performance standards (BEPS), LBNL and PNNL leveraged a growing body of research and modeling for jurisdictions including Aspen, Berkeley, New York City, San Francisco, Seattle, Washington DC, and the State of Washington, as well as from the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). The Buildings Task Force highlighted findings from these analyses in the meeting held on July 27, 2023. The full methods and results will be published as part of the Technical Support Document for the Maryland Building Energy Performance Standards Regulation.

- More information can be found on the MDE BEPS website:
<https://mde.maryland.gov/programs/air/ClimateChange/Pages/BEPS.aspx>
- BEPS Technical Support Document (December 15, 2023):
<https://mde.maryland.gov/programs/regulations/air/Documents/BEPS/BEPS%20TSD%20PACKAGE%20FINAL%20%2812-5-2023%29.pdf>
- LBNL Presentation to the Buildings Task Force on July 27, 2023:
<https://mde.maryland.gov/programs/air/ClimateChange/BETITF%20Meeting%20Materials/Building%20Performance%20Standards%20Cost%20Benefit%20Analysis%20USDOE.pdf>

AECOM

AECOM worked with MDE and Maryland Environmental Service to provide technical assistance to the Buildings Task Force, focused on aggregating and analyzing state-wide building data and calculating the financial impact of potential Task Force program recommendations. Technical support was provided in the following areas: developing statewide building stock data, developing cost of building decarbonization data for BEPS covered buildings and residential buildings, summarizing technical data sets from Rewiring America and PNNL/LBNL, policy analysis, program research and funding analysis. AECOM shared findings in presentations to the Buildings Task Force on August 24, October 12, and October 26, 2023. The data sets, analyses, results, and presentation slides are on the Task Force website.

- Buildings Task Force website:
<https://mde.maryland.gov/programs/air/ClimateChange/Pages/BETITF.aspx>
- Maryland Cost of Building Decarbonization Memo -
<https://mde.maryland.gov/programs/air/ClimateChange/Documents/MD%20Cost%20of%20Building%20Decarbonization%20Memo%20Final.pdf>
- Maryland Cost of Building Decarbonization Data Summary (spreadsheet)
- Maryland Building Stock Data Summary (spreadsheet)
- Building Energy Transition Implementation Task Force Recommendations Analysis -
<https://mde.maryland.gov/programs/air/ClimateChange/Documents/Building%20Energy%20Task%20Force%20Recommendations%20Analysis.pdf>

Rewiring America

The Rewiring America analysis quantifies the operational cost savings and upfront costs required for electrifying Maryland's residential housing stock. It calculates the cost gap, defined as the difference in cost (includes upfront capital costs and operating costs) between a household electrifying and making similar upgrades to efficient fossil fuel appliances.

The building stock used in the analysis is from NREL's ResStock, electrification operating costs are derived from ResStock's End Use Saving Shapes, electrification upfront costs are derived from Tech Clean CA and MassSaves. Energy prices for natural gas and electricity come from the E3 Building Decarbonization Study for Maryland (MWG High Electrification Scenario). Prices for propane and fuel oil are from the Energy Information Administration, and emissions factors are from Cambium. Upfront cost estimates for fossil fuel appliances were supplied by Rocky Mountain Institute and indexed to Maryland using RSMMeans. Each ResStock building model's income was used to determine which rebates or incentives it would be eligible for, and those incentives were then used to reduce that model's upfront costs. Payback periods, net upfront costs, and median savings for different categories of homes were then calculated.

- Maryland Building Decarbonization Study by Energy + Environmental Economics, https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Documents/MWG_Buildings%20Ad%20Hoc%20Group/E3%20Maryland%20Building%20Decarbonization%20Study%20-%20Final%20Report.pdf
- Rewiring America Presentation to the Buildings Task Force on July 27, 2023 https://mde.maryland.gov/programs/air/ClimateChange/BETITF%20Meeting%20Materials/Understanding%20Residential%20Electrification%20Costs%20and%20Benefits_ReWire%20presentation%207.27.23.pdf
- Rewiring America Methodology, <https://mde.maryland.gov/programs/air/ClimateChange/BETITF%20Meeting%20Materials/Maryland%20Electrification%20Costs%20and%20Savings%20Methodology%207.27.23.pdf>
- Rewiring America Supplemental Data, <https://mde.maryland.gov/programs/air/ClimateChange/BETITF%20Meeting%20Materials/Maryland%20Supplemental%20Data%207.27.23.pdf>



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