1919 M St NW, Ste 300
Washington, DC 20036
Tel: 202-525-3926
Fax: 202-525-3941
info@ppionline.org

MARYLAND'S CLIMATE GOALS FACING A NEW REALITY

By Neel Brown and John Kemp
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Maryland has established some of the most aggressive and ambitious climate goals of any state in the US. Under its 2022 Climate Solutions Now Act, it aims to cut greenhouse gas emissions by 60% below 2006 levels by 2031 and reach net-zero by 2045.

In addition to these ambitions, policymakers must now contend with spiking electricity demand and some of the country's highest energy prices. Ratepayers have seen increases at an average annual rate of 2.4% between 2019 and 2024, two-and-a-half times the average national rate of 0.9% after adjusting for inflation. This dramatically complicates the prospect of quickly achieving net-zero while keeping electricity reliable and affordable for Marylanders.

STATE ENERGY PROFILE

Maryland's energy-related emissions per person (8 tons) are the lowest for any state and just 55% of the nationwide average (14 tons). Electricity generation is dominated by zero-emission nuclear and lower-emission gas-fired power plants, which have largely replaced coal. Fossil fuels now account for less than half of generation in the state. Energy prices are high, but because of the state's energy efficiency, total bills have been among the lowest in the country. Like other states in the PJM Interconnection, however, Maryland is being hit by rapid increases in wholesale generation and transmission costs stemming from the rapid growth in data centers in Northern Virginia.

Fossil fuels still dominate the state energy system, but their share has been declining gradually. Fossil fuels supplied about 79% of primary energy consumption in 2024, down from 86% in 2005. Oil is the leading source of primary energy (44%), followed by gas (31%), nuclear (16%), and coal (4%). Renewables such as wind and solar make only a minor contribution to overall energy consumption. Maryland consumes more than five times as much energy as it produces, so it depends heavily on imports of petroleum products, gas, and electricity from neighboring states.

Since 2005, emissions have fallen much faster than across the country as a whole, as Maryland has aggressively phased down coal generation. Total emissions have declined more than twice as fast (2.9% per year) as nationally (1.2%). Fossil fuels accounted for less than half (47%) of

electricity generation in 2024, down from two-thirds in 2005. Coal was formerly dominant but has been largely phased out and replaced by gas and imported electricity. Nuclear is the single-largest source of generation, closely followed by gas. The state's only nuclear power plant (the two reactors at Calvert Cliffs) generates almost two-fifths of in-state power. Gas-fired generation has increased sevenfold since 2005 and now generates nearly as much as nuclear. But Maryland generates only just over half of the electricity it consumes (57%) and relies on the regional grid to meet the rest of its demand.

POLICY HEADWINDS

The sheer scope of Maryland's undertaking fosters doubts about its feasibility even before considering the timeframe in which it must be achieved and the budget constraints under which it must be funded. Many of these goals are worthy of implementation on their own. However, this list appears to have evaded any assessment of priority or practicality.

The scale of Maryland's decarbonization effort was captured in a recent article by Inside Climate News, which explored the challenges the state faces in achieving its climate goals. The piece named 21 different initiatives covering:

- commercial solar grants
- community solar
- community electric vehicle supply equipment equity
- solar energy equity
- the expansion of EV charging networks
- investment in transit projects like the Red Line in Baltimore City and the Purple Line in Montgomery and Prince George's counties
- advancing climate resilience through the Transportation Resilience Improvement Plan
- enrolling 100,000 acres in its program for encouraging conservation practices
- scaling up agroforestry
- implementing climate-smart farming methods like cover crops and nutrient management
- reducing methane emissions through enhanced manure management and anaerobic digestion
- aiming to plant 5 million trees by 2031
- advancing climate-smart forestry
- enhancing forest productivity
- exploring "blue carbon" strategies to capture carbon in coastal ecosystems
- Installing solar panels on approximately 220 acres of parking areas
- exploring innovative strategies like agrivoltaics — using the same land for solar and agriculture — and integrating pollinator habitats under solar arrays
- tighten emission caps on all power plants run on fossil fuels across the participating jurisdictions, expanding regulatory oversight on transportation and industrial sectors
- more stringent energy performance standard for buildings

- reducing transportation-related emissions under its Advanced Clean Fleets program, which requires owners of covered truck and bus fleets to invest more in purchasing zero-emission vehicles
- lay groundwork for implementing the Advanced Clean Cars II program, the Advanced Clean Trucks Act of 2023 and the Zero-Emission School Bus Initiative, each targeting a specific class of vehicle to accelerate the shift to zero-emission vehicles

Attempting to achieve all of these lofty goals is expected to be overwhelmingly expensive, with an anticipated price tag of $1 billion per year. Exacerbating the problem, the Trump administration has cut much of the federal funding that Maryland policymakers were counting on to support these projects, leaving the fiscal viability in deep question. According to a January 2026 report from the University of Maryland's Center for Global Sustainability, the state is projected to reduce emissions by only 42% by 2031, far short of the 60% goal. Under current federal and state policy realities, the ambitious goals will not be met, leaving voters with a massive bill and a long list of broken promises.

POLITICAL RISKS AND COSTS

Elected leaders face the threat of voter revolt against policies that they perceive as inflationary for their energy bills. Polling has shown broad support for expansion of natural gas and nuclear generation that will increase energy production in this time of explosive demand and skyrocketing prices. Voters understand that Maryland, having picked the low-hanging fruit of emissions reductions through switching from coal to natural gas, is now facing growing costs to achieve aggressive net-zero timelines.

Additionally, movements like the one in Montgomery County to ban natural gas appliances face overwhelming public opposition. These symbolic bans delight the uncompromising environmental advocacy groups while enraging working Americans who don't want to sacrifice their cooking and heating fuel choices for marginal emissions reductions. Forcing homeowners' and tenants' appliances onto an already overburdened electric grid during a period of skyrocketing electricity prices is a recipe for voter revolt. On top of this, home cooks take their love of gas stoves very seriously. There is an enormous political risk for negligible global climate results.

As we have seen nationally, when voters don't buy into the mandate-driven, high-cost decarbonization pathways and overreaching solutions, the political pendulum can swing so far to the right that we lose important and real policy solutions that reduce greenhouse gas emissions. In a Gallup poll taken in October of 2024, climate change ranked 21st in a list of 22 "very important" issues for voters, just below "trade with other countries" and just above "transgender rights." The economy was number one. The gap between voters' priorities and the far-left's agenda resulted in a Trump victory and the gutting of too many consequential initiatives that were moving the US in the right direction on emissions reductions.

The Trump administration's hostility toward renewable generation is having disastrous effects on the climate through reduced deployment and investments in renewable energy and technologies. When policymakers are driven by far-left climate warriors to ignore cost and voters' sentiment, the ratepayers and climate pay the price. We can forge a pragmatic path that reduces carbon emissions while affordably meeting the real-world demand for energy by focusing on permitting reform, grid reliability investments, and renewable technologies over symbolic and unpopular mandates like gas stove bans.

PRAGMATIC PILLARS

Reevaluate and Prioritize Programming

Maryland's position as one of the lowest-emitting states per capita and rapid reduction in emissions has coincided with a sharp increase in cost and demand. High efficiency and density are the continuing advantages of the state in reducing emissions further after the switch from coal to gas generation.

The overambitious scope of Maryland's climate plan is evident in its wide-ranging list of programs, which highlights the challenge of reducing emissions at an affordable cost. One billion dollars per year is a tremendous price tag for taxpayers on top of the increased cost of energy at the pump and utility bills.

Policymakers should reassess both the scope and feasibility of each program in the climate plan. The grab bag of green projects lacks the focus needed to address the climate problem. Focusing on the most efficient and cost-effective way to reduce greenhouse gas emissions should be the mandate in reevaluating this effort. A more focused approach, rather than the "whole-government" approach, will result in fewer emissions rather than risking alienating voters with minimal emissions reductions.

Investments in Grid Reliability

Maryland faces a looming supply-demand collision that threatens the stability of its regional grid. Currently, the state produces only about 57% of the electricity it consumes, relying heavily on the PJM Interconnection regional grid to import the rest. This import dependency makes Maryland exceptionally vulnerable to external shocks. PJM is currently experiencing an acute capacity shortage at peak times, driven by the explosive growth of data centers in Northern Virginia — which hosts the largest concentration of data facilities in the nation.

To avert a grid reliability crisis, Maryland has already had to make major policy compromises. For example, the state's last major coal-fired power plant (Brandon Shores) was scheduled to retire in 2025, but has been forced to remain operational until mid-2029 under a "reliability-must-run" agreement. Furthermore, while state models did not originally assume new fossil fuel generation, the only projects approved for fast-tracked permitting under the state's Next

Generation Energy Act are two natural gas-fired units in Harford County. Moving forward, Maryland's "whole-of-government" climate plan must abandon the premature retirement of firm, baseload gas generation and actively prioritize grid reliability investments alongside intermittent renewable deployment.

Focus on Affordability

Maryland's transition to a clean economy cannot succeed if it is built on the backs of struggling ratepayers. Even before accounting for the state's projected $1 billion annual public investment price tag to implement its climate plan, Marylanders are already paying some of the highest energy prices in the country. Residential electricity prices in Maryland have been climbing at an average annual rate of 2.4% (adjusted for inflation) — nearly two-and-a-half times the national average rate of 0.9%. This pressure is worsening, with PJM's wholesale electricity prices surging 47% in 2025 and projected to increase another 26% in 2026, which is directly filtering down into double-digit tariff increases for residential customers.

Because Maryland is already highly energy-efficient, total household utility spending has historically remained manageable. However, forcing rapid building electrification (such as natural gas appliance bans) will shift heating loads entirely to an increasingly expensive power grid, disproportionately harming middle- and low-income families. A pragmatic policy must prioritize affordability over ideology. Instead of sweeping mandates, the state should deploy targeted, cost-effective incentives — such as covering up to 100% of home electrification costs specifically for low-to-moderate-income households — and focus on the lowest-cost emission reduction pathways.

CONCLUSION: A NECESSARY PIVOT TO POLICY REALISM

Maryland’s statutory goal of achieving a 60% greenhouse gas reduction by 2031 was established during a highly optimistic federal policy window. Today, a combination of federal regulatory rollbacks, rising regional power prices, and a stark capacity shortfall has brought the state to a critical policy crossroads. Recent modeling revealing that Maryland will achieve only a 42% reduction by 2031 under current policies is not a failure of intent, but a physical reality check. It is now mathematically clear that the state cannot simply mandate its way to net-zero without risking severe economic repercussions and a subsequent political backlash.

To maintain its status as a climate leader without jeopardizing economic competitiveness, Maryland must pivot away from rigid technology mandates. Policymakers must protect consumers from volatile energy prices, safeguard the grid with strategic natural gas and nuclear baseloads, and reevaluate the sprawling, unfunded list of state programs. Only by anchoring its climate strategy in reality can Maryland build a sustainable, resilient, and politically durable clean energy economy.

APPENDIX: MARYLAND STATE ENERGY CONSUMPTION AND EMISSIONS

Maryland's energy-related emissions per person are the lowest for any state, according to data from the U.S. Energy Information Administration.[1] Electricity generation is dominated by zero-emission nuclear and lower-emission gas-fired power plants, which have largely replaced coal. Fossil fuels now account for less than half of generation in the state. Energy prices are high, but because of the state's energy efficiency, total bills have been among the lowest in the country. Like other states in the PJM Interconnection, however, Maryland is being hit by rapid increases in wholesale generation and transmission costs stemming from the rapid growth in data centers in northern Virginia.

Maryland has a temperate climate but with significant variations between the coastal plain and more mountainous areas inland.[2] Winters are slightly colder than average across the country. Between 2015 and 2024, the state experienced an average of 4,262 heating degree days each winter, about 7% above the national average (4,001). Most homes are heated with gas (49%) or electricity (41%), with only a small proportion using kerosene (7%). Summers are fairly mild but humid near the coast. The average number of cooling degree days (1,262) was almost one-fifth lower than the national average (1,522). Most homes have some form of air conditioning (91%), usually a central system (80%) rather than individual units.

Maryland is among the most densely populated states. Population density (636 inhabitants per square mile) is the fifth-highest for any state and nearly seven times the average (94). The state is somewhat more urbanized and less rural than most. At the time of the last Census in 2020, more than 85% of the population lived in areas classified as urban compared with 80% across the country as a whole. Just over half of dwellings (53%) are single-family homes, the third-lowest share in the country after Massachusetts (51%) and New York (40%) and far below the national average (62%).

Nonetheless, on average, Maryland homes are larger (2,056 square feet) than in the country as a whole (1,845 square feet). Larger homes tend to use more energy for power, lighting, heating, and especially cooling. The typical home in Maryland heats nearly one-fifth more space (1,874 square feet) than the national average (1,596 square feet). More significantly, the average Maryland home cools about one-quarter more space (1,737 square feet) than nationwide (1,361 square feet).[3]

High population density and moderate urbanization have enabled the state to develop a fairly energy-efficient transport system. The proportion of commuters using public transport (5%) is slightly higher than average (4%). The proportion working from home (16%) is also above average (13%).[4] The state had the country's twelfth-highest transit ridership (just under 1 billion passenger-miles) in 2019. Car use is slightly below average. The volume of driving per resident (9,226 vehicle-miles) is in the bottom third of states and about 4% below the countrywide average (9,640).

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[1] Unless stated otherwise, all the data and rankings in this profile are taken from the most recent online edition of the State Energy Data System (SEDS) published by the U.S. Energy Information Administration and cover energy consumption and emissions through 2024. Emissions are restricted to carbon dioxide (CO_2) from combustion of fossil fuels, excluding fugitive methane, other greenhouse gases, and emissions from land use, land-use change and forestry.

[2] *Maryland at a Glance – Weather* (Maryland State Archive, 2026).

[3] *Residential Energy Consumption Survey* (U.S. Energy Information Administration, 2026).

[4] *Maryland State Profile* (U.S. Census Bureau, 2026).

Maryland residents have some of the highest incomes in the country. The workforce is highly educated, with nearly 45% of residents having at least a bachelor's degree compared with less than 37% nationwide. The largest source of employment is in education, healthcare and social assistance (25%), followed by professional, scientific and management (17%), public administration (11%) and retail (9%). The proportion of jobs in public administration is more than double the country as a whole (5%). Conversely, the proportion of jobs in manufacturing (5%) is only half the nationwide share (10%). Wages and salaries are high. Median household income ($103,000 per year) is 26% above the national average ($82,000).[5]

The state's economic output is more moderate. Most of its principal industries are labor-intensive. High-value-added sectors such as finance and manufacturing are relatively small. Many residents actually work in the neighboring District of Columbia. As a result, the state's gross domestic product per person ($69,400) was less than 1% above the national average ($68,700) in 2024.

Energy consumption

Maryland's major economic activities are not energy-intensive. The state relies much less heavily on manufacturing (5% of state gross domestic product) than the country as a whole (9%).[6] Energy consumption per person (192 million British thermal units per year) is the eighth lowest among the states and more than 30% below average (278 million). Consumption per $1 million of state output (2.77 billion BTU) was the sixth-lowest among the states and nearly 32% below the average (4.05 billion). Consumption per unit of output has fallen faster (2.9% per year) than in the rest of the country (2.2%) since 2005. The state's energy efficiency advantage has therefore been growing.

Fossil fuels still dominate the state energy system, but their share has been declining gradually. Fossil fuels supplied about 79% of primary energy consumption in 2024, down from 86% in 2005. Oil is the leading source of primary energy (44%), followed by gas (31%), nuclear (16%), and coal (4%). Renewables such as wind and solar make only a minor contribution to overall energy consumption. Maryland consumes more than five times as much energy as it produces, so it depends heavily on imports of petroleum products, gas, and electricity from neighboring states.

There have been more profound changes in the electricity system. Fossil fuels accounted for less than half (47%) of electricity generation in 2024, down from two-thirds in 2005. Coal was formerly dominant but has been largely phased out and replaced by gas and imported electricity. Maryland's last coal-fired power plant has two generating units with a combined capacity of 1,273 megawatts. It was previously scheduled to be retired in 2025 but is now continuing to operate under a reliability-must-run agreement until mid-2029.[7] Nuclear is the single-largest source of generation, closely followed by gas. The state's only nuclear power plant (the two reactors at Calvert Cliffs) generates almost two-fifths of in-state power. Gas-fired generation has increased sevenfold since 2005 and now generates nearly as much as nuclear. But Maryland generates only just over half of the electricity it consumes (57%) and relies on the regional grid to meet the rest of its demand.

Energy-related emissions

[5] *Maryland State Profile* (U.S. Census Bureau, 2026).

[6] *State Gross Domestic Product* (U.S. Bureau of Economic Analysis, 2026).

[7] *State Energy Data System – Maryland Profile* (U.S. Energy Information Administration, 2026).

Maryland emitted 49 million metric tons of carbon dioxide in 2024. More than half of emissions came from transport (27 million tons), which has proved the most difficult sector to decarbonize. There were much more modest contributions from electricity generation (9 million tons), homes (5 million), commercial buildings (5 million) and industry (2 million). Nearly three-fifths of energy-related emissions come from oil (29 million tons), with most of the rest from gas (16 million) and only a small residual from coal (4 million).

Emissions per person (8 tons) were the lowest of any state and just 55% of the nationwide average (14 tons). Emissions were also modest in relation to the state's economic output. Emissions per $1 million (113 tons) were the fifth lowest among the states and just 55% of the average (205 tons).

Since 2005, emissions have fallen much faster than across the country as a whole, as Maryland has aggressively phased down coal generation. Total emissions have declined more than twice as fast (2.9% per year) as nationally (1.2%). Emissions per person (3.5% per year) and per unit of GDP (4.3%) have fallen much faster than nationwide (1.9% and 3.1%, respectively).

Prices and expenditure

Energy prices are among the highest in the country. Maryland residents pay an average of more than $28 per million British thermal units for electricity, gas, and liquid fuels. Prices are one-quarter higher than the national average ($23). But because the state is so energy-efficient, total spending is well below average, especially relative to the state's GDP and high incomes. Combined spending on electricity, gas, and fuels per person ($3,694) was almost 17% below average ($4,440) in 2024. Only the residents of Colorado, New York, and Florida spent less. Energy spending accounts for a relatively small share of GDP (4.3%), the sixth lowest among the states, and almost a percentage point lower than the national average (5.2%).

In 2024, residential electricity prices (17.9 cents per kilowatt-hour) were in line with neighboring Pennsylvania and slightly above the national average (16.5 cents per kWh). Maryland residents used about the same amount of electricity (4,376 kWh per person) as the country as a whole (4,361 kWh), and total spending was therefore slightly higher than average.

Gas consumption across all sectors grew to 48 million BTU per person in 2024, up from 38 million in 2005. Gas consumption has increased as coal-fired generation has been phased out. Nonetheless, gas consumption per person is the fourth lowest among the states and less than half the national average (101 million BTU). Residential gas prices have always been a couple of dollars per thousand cubic feet above the national average. Residential prices were just over $16 per thousand cubic feet compared with a nationwide average of under $15 in 2024. Maryland's gas prices put the state in the middle of the distribution (20th highest among the states), and prices have been broadly stable after adjusting for inflation for a decade.

Recent developments in electricity prices (2019-2026)

In recent years, Maryland has experienced some of the fastest increases in electricity prices even as electricity consumption has fallen. Between 2019 and 2024, residential prices increased at an average annual rate of 2.4%, nearly three times faster than the nationwide average increase of 0.9% after adjusting for inflation. Prices climbed even as statewide consumption by all sectors declined by 0.6 percent per year compared with growth of 0.9% per year nationally. Residential prices have climbed faster than in any state other than New York and California.

Maryland is part of the Pennsylvania-New Jersey-Maryland (PJM) Interconnection, responsible for coordinating transmission and electric reliability for 67 million customers across all or part of 13 states in the Mid-Atlantic and Midwest as well as the District of Columbia. PJM hosts the largest concentration of data centers in the country just across the state line in northern Virginia. Data center loads have been growing faster than PJM has added generation and transmission, causing an increasingly acute shortage of capacity on the transmission network at peak times.

PJM's wholesale electricity prices have been surging as the region struggles with capacity shortages. Wholesale electricity prices increased by 47% in 2025 and are forecast to increase by another 26% in 2026.[8] Rising wholesale rates are filtering through into escalating tariffs for residential customers. Residential prices climbed by 12% in 2025 and have already climbed by another 14% in the first five months of 2026 compared with a year earlier.

ABOUT THE AUTHORS

Neel Brown
Neel is Managing Director at PPI where he helped build the Energy and Climate Solutions Initiative, which is widely respected and relied on by Members of Congress, Senators, and their staff for pragmatic proposals and solutions.

Neel is deeply engaged in PPI's international efforts, frequently engaging with policymakers and think tanks in Europe on energy issues and other policy and political topics.

Before joining PPI, Neel was the President of Legis Media, an advocacy communications firm that he founded in 2004. He has extensive experience in advocacy advertising, grassroots organization, and coalition building. He spent over seven years working on Capitol Hill and political campaigns.

John Kemp
Founder and Director of JKempEnergy.com, John is an internationally recognized expert on energy markets and systems, including technology, industry structure and risk management.

He curates a daily digest of "Best in Energy" news and research from all sources sent via email to more than 15,000 energy market professionals with readership over 13,000 per week.

He also publishes a newsletter three times a week analyzing major developments across most sources (oil, gas, coal, renewables and electricity) and regions (North America, Europe, China, India, Southeast Asia and Latin America).

[8] *Short-Term Energy Outlook* (U.S. Energy Information Administration, 7 July 2026).