



Maryland

Department of the Environment

Maryland's Participation with the U.S. Climate Alliance 2022

Prepared for:

The Maryland General Assembly

December 2022

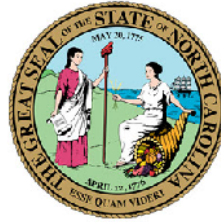
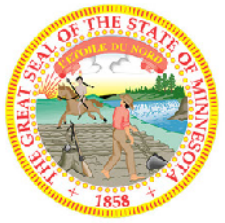
MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard | Baltimore, MD 21230 | mde.maryland.gov

410-537-3442 | 800-633-6101 x3442 | TTY Users: 7-1-1

Larry Hogan, Governor | Boyd K. Rutherford, Lt. Governor | Horacio Tablada, Secretary | Suzanne E. Dorsey, Deputy Secretary

The U.S. Climate Alliance Members



California

Colorado

Connecticut

Delaware

Hawai'i

Illinois

Louisiana

Maine

Maryland

Massachusetts

Michigan

Minnesota

Nevada

New Jersey

New Mexico

New York

North Carolina

Oregon

Pennsylvania

Puerto Rico

Rhode Island

Vermont

Washington

Wisconsin

Table of Contents

| | |
|---|-----------|
| The U.S. Climate Alliance Members | 2 |
| Executive Summary | 1 |
| The U.S. Climate Alliance | 1 |
| Major U.S. Climate Alliance Progress | 1 |
| Maryland’s Role | 6 |
| 1 – The U.S. Climate Alliance | 1 |
| 1.1 - Principles and Commitments | 1 |
| 2 – U.S. Climate Alliance Progress | 2 |
| 2.1 – Climate Governance and Economy-Wide Solutions | 3 |
| 2.2 – Power | 3 |
| 2.3 – Buildings | 4 |
| 2.4 – Industry | 5 |
| 2.5 – Transportation | 6 |
| 2.6 – Just Transition and Equity | 7 |
| 2.7 – Resilience | 8 |
| 2.8 – Natural and Working Lands | 9 |
| 2.9 – Social Cost of Greenhouse Gases | 10 |
| 3 - Maryland’s Role | 12 |
| 3.1 – Maryland’s GGRA Plans | 12 |
| 3.2 – 25% by 2020: Achieved | 12 |
| 3.3 – 60% by 2031 on the path to Net Zero by 2045 | 13 |
| 3.4 – Climate Solutions Now Act (CSNA) | 14 |
| 3.6 – Maryland Commission on Climate Change (MCCC) | 15 |
| 3.7 – The Regional Greenhouse Gas Initiative (RGGI) | 16 |
| 3.8 – Opportunities and Challenges Ahead | 18 |

Executive Summary

Maryland law (Environment Article §2-1401) states that on or before December 1 of each calendar year, the Governor shall report to the Senate Education, Health, and Environmental Affairs Committee, and the House Environment and Transportation Committee on the state's participation in the U.S. Climate Alliance (USCA). This report includes any collaborations or partnerships among USCA members or external stakeholders and any policies or programs that USCA has endorsed, undertaken, or considered.

The U.S. Climate Alliance

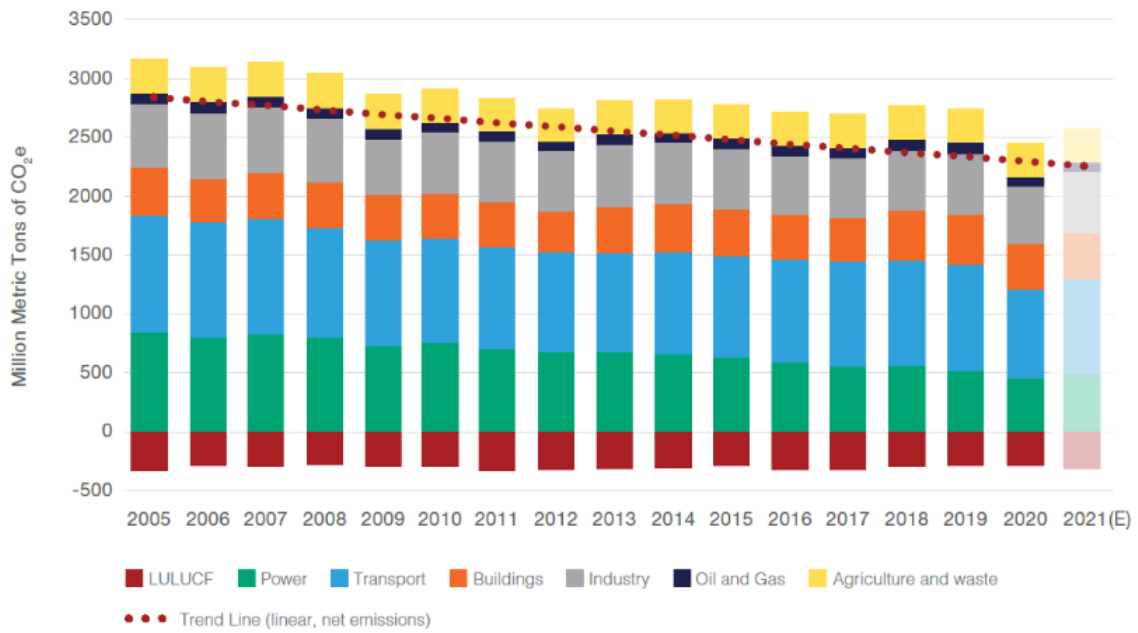
USCA is a bipartisan coalition of 24 members committed to taking real, impactful, on-the-ground action that urgently addresses the climate challenge. In becoming a USCA member, states commit to achieve the Paris Agreement's goal of keeping temperature increases below 1.5 degrees Celsius by:

1. Reducing collective net greenhouse gas (GHG) emissions at least 26-28% by 2025, and 50-52% by 2030, both below 2005 levels, and collectively achieving overall net-zero GHG emissions as soon as practicable, and no later than 2050;
2. Accelerating new and existing policies to reduce GHG pollution, building resilience to the impacts of climate change, and promoting clean energy deployment at the state and federal levels;
3. Centering equity, environmental justice (EJ), and a just economic transition in their efforts to achieve their climate goals and create high-quality jobs; and
4. Tracking and reporting progress to the global community in appropriate settings, including when the world convenes to take stock of the Paris Agreement.¹

Major U.S. Climate Alliance Progress

Over the past 5 years, USCA governors have built a foundation of ambitious climate action that is not only driving GHG emissions reductions, but also transitioning our states to a cleaner, healthier, more equitable, and more resilient future. USCA's collective net GHG emissions decreased by 24% between 2005 and 2020 (Figure ES-1). USCA members are making real progress across some of the largest emitting sectors; yet, it's estimated that 2021 GHG emission levels rose (to 20% below 2005 levels) as USCA members (and the country as a whole) recovered from the economic downturn caused by the COVID-19 pandemic.

¹ usclimatealliance.org/

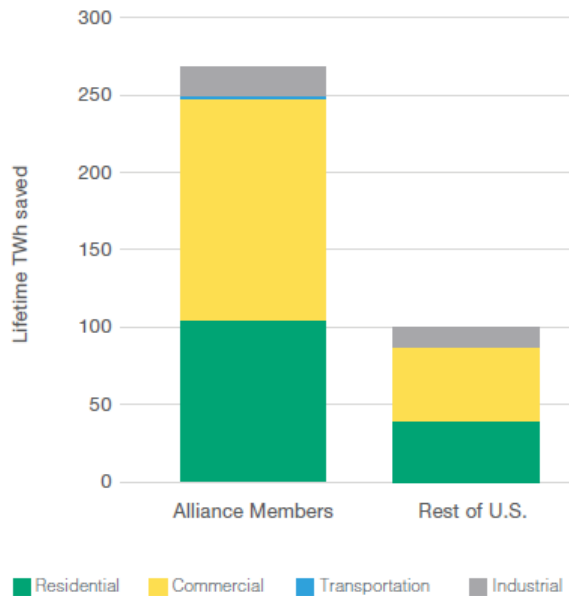


Source: Rhodium Group Climate Deck. Note: LULUCF = land use, land-use change, and forestry

Figure ES-1. USCA’s collective net GHG emissions decreased an estimated 24% between 2005 and 2020.

USCA members continue to exceed the rest of the U.S. in delivering benefits to their residents and businesses while implementing climate actions. At the same time, USCA states and territories are taking a broader and more thoughtful, deliberate, and inclusive approach in consulting with diverse stakeholders to develop new climate policies and programs, especially communities most impacted by fossil fuel production and pollution. Compared to the rest of the country, USCA members are collectively:

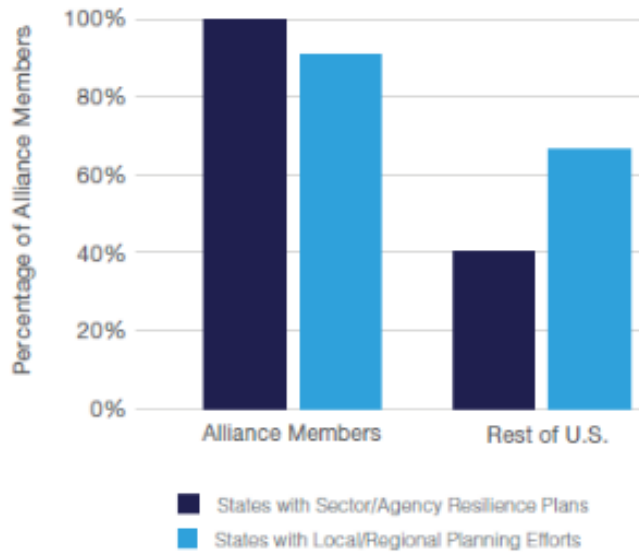
Delivering more energy savings to homes and businesses year-after-year (Figure ES-2). As of 2020, utility energy efficiency programs across USCA members saved a cumulative 1.5 megawatt-hours (MWh) of electricity per capita over the lifetime of these programs compared to 0.65 MWh per capita in the rest of the U.S.



Source: U.S. Energy Information Administration. Note: Energy savings represents changes in energy use for incremental programs

Figure ES-2. USCA members are generating much higher savings from utility energy efficiency programs compared to other states.

Centering resilience in more of their budgets and governance structures with designated resilience hubs and robust plans (Figure ES-3); doing so helps to support local adaptation planning, drives implementation, and pre-disaster response on the ground.



Source: Georgetown Climate Center

Figure ES-3. USCA members are creating adaptation and resilience plans that help drive implementation and pre-disaster preparation on the ground to a much greater degree compared to other states.

Generating a higher proportion of electricity from zero-carbon sources (Figure ES-4). Non-USCA states are more than twice as reliant on coal generation as USCA members. In 2020, non-USCA states generated three

times as much electricity from coal (581 terawatt- hour (TWh) vs. 192 TWh), and 1.5 times as much from natural gas (964 TWh vs. 660 TWh).

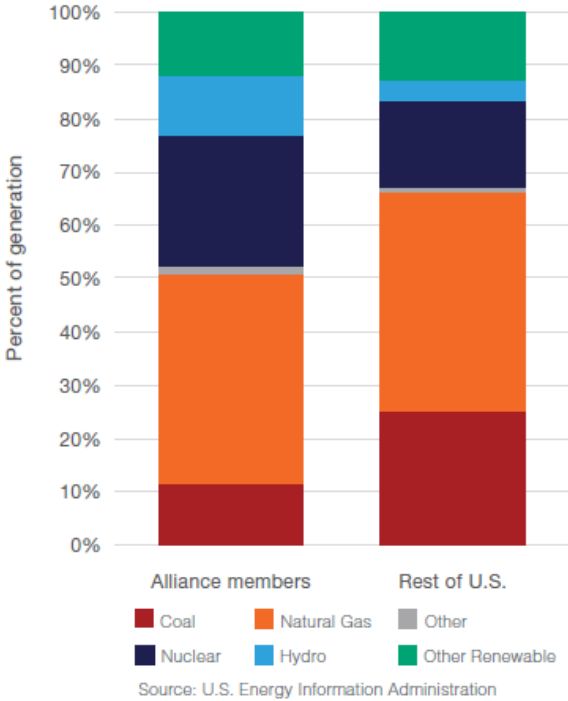


Figure ES-4. Nearly half of electricity generated across USCA members is now from zero-carbon resources, compared to about a third in the rest of the country (2020).

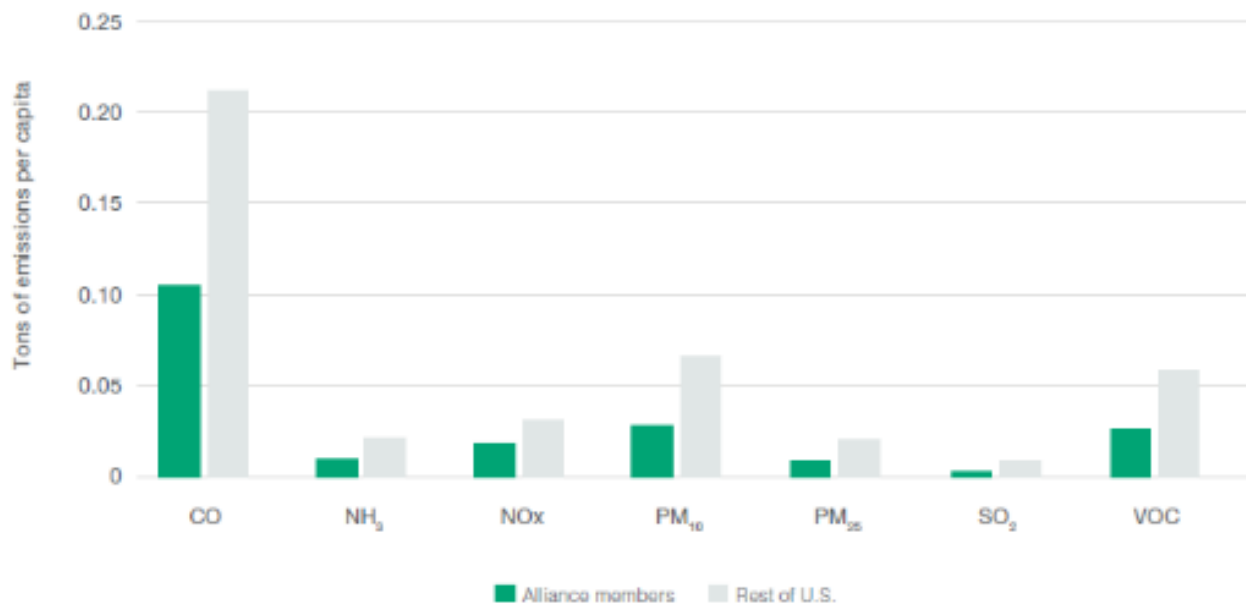
Employing more workers in the renewable energy and energy efficiency sectors (Figure ES-5). USCA members collectively employ more than 40% more workers in these fields compared to non-USCA states.



Source: U.S. Department of Energy, U.S. Energy & Employment Report

Figure ES-5. USCA members employ more renewable energy and energy efficiency workers compared to the rest of the country.

Achieving lower levels of harmful local air pollution (Figure ES-6). USCA members generate just half of the levels of criteria pollutants per capita compared to non-USCA states, on average.



Source: U.S. Environmental Protection Agency, Air Pollutant Emissions Trends Data

Figure ES-6. USCA members have lower levels of harmful air pollutants per capita than the rest of the country (2020).

Maryland's Role

As a national leader on climate change, Maryland continues to encourage all participating USCA members to adopt cleaner air standards and GHG goals as strong as Maryland's. In addition, Maryland has found USCA's coordination helpful and encouraging as we advance actions and partnerships in our own region.

Maryland's Greenhouse Gas Emissions Reduction Act (GGRA) Plans

Maryland continues to lead the nation through the implementation of the GGRA, which requires the state to achieve a minimum of a 40% reduction in statewide GHG emissions from 2006 levels by 2030. The goals in GGRA are consistent with the U.S. international commitment under the Paris Agreement to reduce emissions by 26-28% by 2025. Through the associated 2030 GGRA Plan, Maryland shares invaluable insight with other USCA members into how to incorporate climate policies that simultaneously benefit both the environment and the economy.

Maryland achieved its GHG reduction goal for 2020. The GGRA of 2009 established the goal of reducing statewide GHG emissions by 25% from 2006 levels by 2020. In 2020, statewide GHG emissions were 30% below the 2006 baseline based on a new GHG accounting methodology required by the Climate Solutions Now Act (CSNA), which is explained in this report. Statewide GHG emissions in 2020 were 33% below the 2006 baseline using the accounting methodology from when the 2020 goal was established and achieved.

In 2022, CSNA established new GHG reduction goals for Maryland. CSNA requires statewide GHG emissions to be 60% below 2006 levels by 2031, and net-zero by 2045. These are the most ambitious GHG reduction goals in the nation. As explained in this report, Maryland must develop a new plan to meet its new 2031 goal.

In 2021, the Maryland Department of the Environment (MDE) published the 2030 GGRA Plan, which identified a path to reducing emissions by around 49% by 2031, based on MDE's methodology that used the 100-year global warming potential (GWP) of GHGs. CSNA requires MDE to shift to using the 20-year GWP, which amplifies the near-term climate impact of methane (CH₄) and other short-lived climate pollutants. When the 2030 GGRA Plan is adjusted to the new methodology, it would achieve a 44% reduction in GHG emissions by 2031.

Climate Solutions Now Act (CSNA)

In 2022, Maryland's GHG reduction goals were modified. CSNA set new goals to reduce statewide GHG emissions by 60% by 2031, and achieve net-zero emissions by 2045.

The Maryland Commission on Climate Change (MCCC)

Maryland has been at the forefront of states taking action to address the consequences of climate change through the bipartisan efforts of the MCCC. MCCC is an independent body established in 2007 under executive order (01.01.2007.07) and codified in statute in 2015 under Title 2, Subtitle 13 of the Environment Article of the Maryland Annotated Code. MCCC is charged with developing an action plan and firm timetable for mitigating and adapting to the impacts of climate change. As a result of the work of more than 100 stakeholders and experts, MCCC produced a climate action plan, which was the catalyst for GGRA of 2009. MCCC may serve as an example to the other USCA members.

The Regional Greenhouse Gas Initiative (RGGI)

RGGI is a collaborative program among 12 eastern states to reduce CO₂ emissions from power plants through a regional cap-and-invest program. These states adopted market-based CO₂ cap-and-invest programs designed to reduce emissions of CO₂ from fossil fuel-fired electricity generators with a nameplate capacity of 25 MWh or greater. Thanks to its success, Maryland's participation in RGGI provides a real-world example of the benefits of cap-and-invest programs and both encourages and provides valuable insight to the other USCA members to take the necessary steps to develop and participate in similar programs. Over the course of 58 auctions dating back to 2009, Maryland alone has taken in more than \$1 billion, which has been used to fund an array of clean energy projects and energy assistance payment programs for low-income residents.

Opportunities and Challenges Ahead

Maryland has been at the forefront of states taking action to address the consequences of climate change with the development of the Sea Level Rise Response Strategy. The state went on to pass the Healthy Air and Clean Cars Acts, join RGGI, and pass GGRA. Through a range of programs, policies, and initiatives included in the 2030 GGRA Plan and new law establishing an ambitious 60% reduction target as well as a net-zero goal in 2045, Maryland is clearing a path for other states to fight climate change. However, based on current policies (both state and federal), significant gaps in policy outcomes remain. Based on the current implementation status and associated emission reduction rate of several emission drivers included in the 2030 Progress Report, the gaps identified could prevent Maryland from hitting its targets.

1 – The U.S. Climate Alliance

USCA is a bipartisan coalition of 24 governors harnessing the power of the state government to confront the climate crisis. To achieve the nation’s climate goals at the scale and speed necessary, bold and immediate action is needed at all levels of government. While passage of the Inflation Reduction Act represents significant progress in advancing the nation toward our climate goals, successfully limiting average global temperature increases to 1.5 degrees Celsius will continue to require state-level action. It is as important as ever for USCA members to continue driving the next generation of state climate solutions to ensure any national climate framework in the U.S. is sufficiently durable, impactful, and ambitious.

1.1 - Principles and Commitments

USCA members recognize that climate change presents a serious threat to the environment and our residents, communities, and economy. State-level climate action is benefiting our nation, and USCA members are growing our clean energy economies and creating new jobs, while reducing air pollution, improving public health, and building more resilient communities. USCA members remain committed to supporting the responsibilities outlined in the international Paris Agreement and continue to pursue aggressive climate action to make progress toward its goals.

USCA members hold firm in their commitment to provide the climate leadership the country needs to achieve the goals of the Paris Agreement and keep temperature increases below 1.5 degrees Celsius. Throughout the past years, USCA members have fought deregulation, supported the reinstatement of federal environmental safeguards, and adopted innovative climate policies across all sectors. These policies and programs provide a strong foundation to make their communities cleaner and more resilient.

Each USCA member commits to:

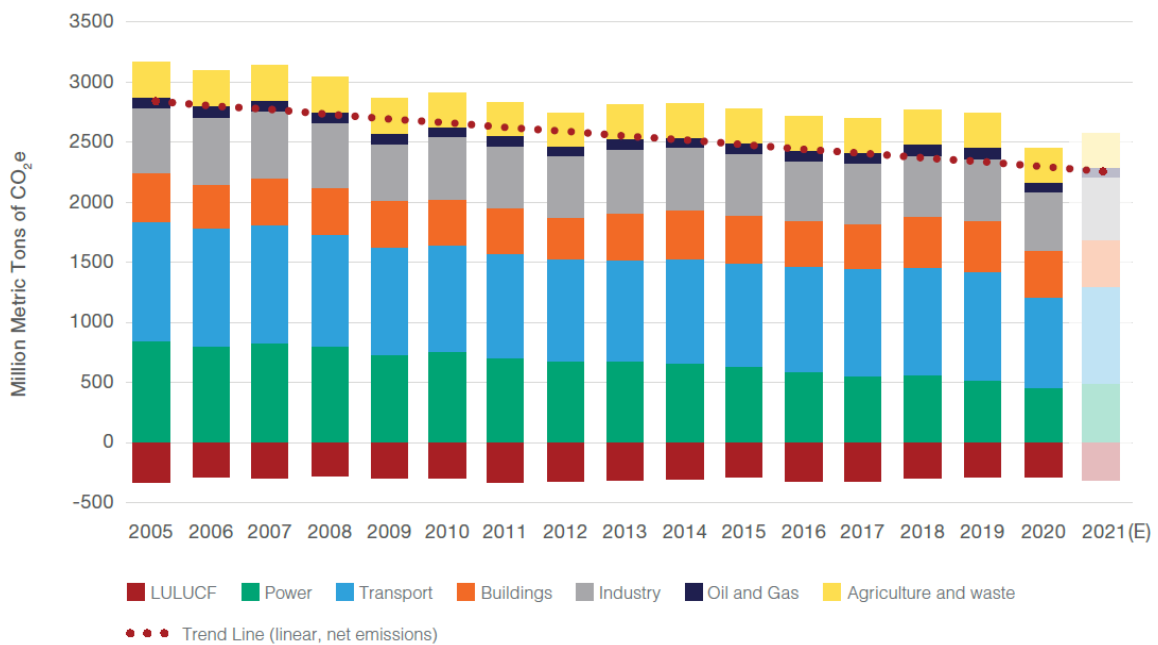
1. Implement policies that advance the goals of the Paris Agreement, aiming to reduce GHG emissions by at least 26-28% below 2005 levels by 2025.
2. Track and report progress to the global community in appropriate settings, including when the world convenes to take stock of the Paris Agreement, and
3. Accelerate new and existing policies to reduce carbon pollution and promote clean energy deployment at state and federal levels.²

² usclimatealliance.org/

2 – U.S. Climate Alliance Progress

USCA members implemented policies and actions that reduced collective net GHG emissions by 24% between 2005 and 2020 (Figure 1). While GHG emissions levels are estimated to have risen slightly in 2021 as the nation recovers from COVID-19 pandemic, USCA’s 2025 GHG emissions reduction target remains within reach (26–28% below 2005 levels). Meanwhile, USCA members delivered more co-benefits for their communities compared to the rest of the country, including lower levels of air pollution, more clean energy jobs, and larger energy savings for households and businesses.

Recognizing that more needs to be done, USCA members are moving beyond foundational climate policies to advance the next generation of innovative, high-impact, state-led climate actions that will result in even more significant reductions of GHG emissions while building just, equitable, and climate-resilient infrastructure, ecosystems, and communities. Members are making meaningful progress on the more than 40 high-impact actions that they committed to last year, along with additional new actions. In the past year alone, USCA members passed dozens of new laws to adopt more aggressive emissions reduction requirements and targets, reduce the climate impact of vehicles and buildings, and create governing bodies to guide state resilience and environmental justice actions and establish priorities. Members also have developed regulations to codify and operationalize their participation in carbon markets, Electric Vehicle(EV) sales, and CH₄ reductions from the energy sector. By enshrining many of these policies in statute, members are increasing the durability of the progress made thus far—protecting the health and well-being of Americans regardless of future political and legal shifts.



Source: Rhodium Group Climate Deck. Note: LULUCF = land use, land-use change, and forestry

Figure 1. USCA’s collective net GHG emissions decreased an estimated 24% between 2005 and 2020.

The following sections describing USCA’s initiatives and accomplishments borrow heavily from USCA 2022 Annual Report: Full Speed Ahead: States Delivering the Next Generation of Climate Action.³

2.1 – Climate Governance and Economy-Wide Solutions

Setting Ambitious Climate Targets

Planning climate action, setting targets, and engaging with communities, businesses, and other stakeholders are all foundational to a successful state climate framework. In 2022, many USCA members made significant progress in these areas by establishing increasing ambitious climate goals. Maryland enacted CSNA, which adopted GHG emissions reduction targets of 60% below 2006 levels by 2031, and net-zero emissions by 2045.⁴

Tracking Progress

With more climate goals, there comes a need for regularly updated GHG inventories and progress reports that reflect up-to-date information on where improvements can be made to achieve GHG emissions reduction targets. In 2021, Maryland published the 2030 GGRA Plan,⁵ which identified a path to reducing emissions by around 49% by 2031 based on MDE’s methodology that used the 100-year GWP of GHGs. CSNA requires Maryland to shift to using the 20-year GWP, which amplifies the near-term climate impact of CH₄ and other short-lived climate pollutants. When the 2030 GGRA Plan is adjusted to the new methodology, it would achieve a 44% reduction in GHG emissions by 2031.

In September 2022, Maryland released a progress report that evaluates progress toward meeting Maryland’s new 2031 goal by analyzing data on 11 different 2030 GGRA Plan metrics. The report finds that Maryland is roughly on track for meeting its prior targets, which would achieve a 44% reduction in statewide GHG emissions by 2031. However, with new targets in place, future actions may need to be considered.

Investing In and Financing Climate Solutions

Climate change continues to impact state economies. However, integrating climate change into legislative budget requests and financial decision-making can help ensure that state stewardship of public capital is aligned with a low-carbon future. For example, more than 12 states now require large insurance companies to adopt a climate risk disclosure standard, including California, Connecticut, Delaware, Maine, Maryland, Massachusetts, Minnesota, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Vermont, and Washington. The new standard aligns with the Task Force on Climate-Related Financial Disclosures, an international best-practice benchmark for disclosure. In 2022, The Maryland state legislature enacted legislation that requires the State Retirement and Pension System to assess its portfolio for climate risks.⁶

2.2 – Power

Making Progress Toward 100% Clean Energy

States are the primary driver for clean energy policy, including the development of clean energy standards.⁷ This authority is especially significant given the U.S. Supreme Court’s decision in *West Virginia v. U.S. Environmental*

³ usclimatealliance.org/annual-report.

⁴ Maryland General Assembly, *Climate Solutions Now*, June 2022, mgaleg.maryland.gov/mgawebsite/Legislation/Details/SB0528?ys=2022RS.

⁵ mde.maryland.gov/programs/air/ClimateChange/Pages/Greenhouse-Gas-Emissions-Reduction-Act-%28GGRA%29-Plan.aspx.

⁶ Maryland General Assembly, SB0566, *State Retirement and Pension System – Investment Climate Risk – Fiduciary Duties*, June 2022, mgaleg.maryland.gov/mgawebsite/Legislation/Details/SB0566?ys=2022RS.

⁷ U.S. Environmental Protection Agency, “U.S. Renewable Electricity Market,” February 2022, epa.gov/green-power-markets/us-renewable-electricity-market.

Protection Agency (EPA) that narrowed the federal government’s authority to confront climate pollution from the power sector. Importantly, the decarbonization of transportation, buildings, and industry is heavily reliant on rapid emissions reductions in the electricity sector to support increased electrification.

States and territories adopted new clean energy targets, and conducted planning and procurement to make progress toward achieving them. Accelerating this transition has become increasingly important as the U.S. seeks to become even more energy independent, although alleviating supply chain constraints will be needed to transition at scale.

Advancing Transmission and Distribution Grid Policy

To achieve a carbon-free power sector, we must modernize our grid. Studies continually point out the need for upgrading and vastly expanding transmission. Models estimate a 60% increase in electricity demand by 2030, and a need for a three to five-fold increase in transmission capacity by 2050.⁸ Improving generation and transmission planning, siting, permitting, and cost allocation methodologies remains critical to meeting power sector goals.

2.3 – Buildings

Developing Next-Generation Appliance StandardsTo decarbonize the buildings sector, millions of people and businesses need to transition to more efficient heating, ventilation, and air conditioning (HVAC), water heating, and other appliances within the one to two life cycles of equipment replacement. States are focusing on efficient, electric, and grid-connected buildings with policies that will help transform the new construction market and dramatically increase consumer options for efficient electric buildings. USCA members are working to save consumers money and drive emissions reductions through establishing and adding new products to their state appliance efficiency standards. States also have begun examining mercury standards for fluorescent bulbs and emissions-based standards for HVAC and water heating equipment. Maryland adopted minimum efficiency requirements for 13 products, including air purifiers, faucets, water coolers, and restaurant cooking equipment.⁹

Adopting More-Efficient Building Codes and Performance StandardsUSCA members support the development and adoption of zero-emissions building codes. This is the most effective tool for driving emissions reductions in new construction. Going beyond new construction, states are working on benchmarking and performance standards for their existing building stock.

Following the development of a comprehensive Maryland building transition plan, Maryland passed CSNA , which included 1) establishing a statewide building performance standard, 2) requiring the adoption of the 2018 International Green Construction Code by January 1, 2023, and the adoption of each new version of the code within 18 months of issuance, and 3) increasing the utility efficiency program goals and directed alignment with emissions reductions.¹⁰

Modernizing Utility Policy and Supporting Building Efficiency and ElectrificationState policies regulating electric and gas utilities are critical to decarbonization and consumer adoption of technology. States are working to ensure energy efficiency resource standards, utility electrification programs, and gas planning and procurement

⁸ Americans for a Clean Energy Grid, *Planning for the Future*, January 2021, cleanenergygrid.org/wp-content/uploads/2021/01/ACEG_Planning-for-the-Future1.pdf.

⁹ Maryland General Assembly, *HB0772, Maryland Energy Administration - Energy and Water Efficiency Standards – Alterations*, May 2022, mgaleg.maryland.gov/mgaweb/Legislation/Details/HB0772?ys=2022RS.

¹⁰ Maryland General Assembly, *SB0528, Climate Solutions Now* , April 2022 mgaleg.maryland.gov/mgaweb/Legislation/Details/sb0528.

are aligned with their climate targets, and continue to increase market and workforce support for building decarbonization industries, including providing consumer incentives through state programs.

2.4 – Industry

Creating Markets for Low-Carbon Industrial Products

Industrial decarbonization is an emerging policy arena in the U.S. . Given its diverse array of activities, which rely on large amounts of fuels to create high temperature heat and generate distinct process emissions, this sector can be difficult to decarbonize. Without additional policy action, industry is projected to become the largest source of national GHG emissions by 2030.¹¹ However, many states are moving forward and adopting regulations to reduce CH₄ and hydrofluorocarbons (HFCs), building markets for cleaner industrial products, and creating a policy environment to incentivize the deployment of low-carbon fuels, feedstocks, and carbon capture technology.

State governments purchase large amounts of carbon-intensive products, such as construction materials like cement, concrete, steel, glass, and aluminum. Procurement policies that address embodied carbon like Buy Clean, a concept pioneered by California and adopted by Colorado in 2021, continue to take hold in several other states and the federal government.

Maryland requires its Green Building Council (GBC) to investigate the mechanisms by which Maryland can procure low-carbon concrete for state-funded projects, including environmental product declarations , performance incentives for manufacturers, and performance-based GWP standards. GBC submitted its recommendations in November 2022.

Developing Markets for and Investing in Low-Carbon Industrial Fuels and Feedstocks

With \$8 billion in federal funding available for regional clean hydrogen hubs, 10 USCA members announced their intention to apply for these funds: via Memorandum of Understanding (MOU), governor announcements, legislation, and through letters. States are also developing programs, plans, and regulations to reduce emissions from and increase the efficiency of manufacturing.

In the 2021 bipartisan Infrastructure Investment and Jobs Act (IIJA), it calls for funding multiple regional hubs dedicated to developing and expanding clean hydrogen infrastructure. ConnectedDMV, an initiatives-based, charitable 501(c)(3) organization that works with regional organizations across Washington, D.C., Maryland, and Virginia, and a cross-sector coalition of more than 40 partners representing Washington, D.C., Maryland and Virginia announced that the Mid-Atlantic Hydrogen Hub (MAHH) is pursuing one of the U.S. Department of Energy regional clean hydrogen hubs backed by a total of \$8 billion in federal funding. These new market hubs will create clean energy jobs, reduce greenhouse gas emissions, and position America to compete in the clean energy market on a global scale. The state of Maryland is continuing the dialog with ConnectedDMV, and other potential organizations, as the national hydrogen hub competition advances.

Reducing Emissions of Short-Lived Climate Pollutants (SLCPs)

USCA members continue to lead the nation with policies that address super-polluting CH₄, HFCs, and ozone precursor pollutants. USCA, in collaboration with industry and non-governmental organization partners, also is

¹¹ Ben King et. al., *Taking Stock 2022: US Greenhouse Gas Emissions Outlook in an Uncertain World*, Rhodium Group, July 14, 2022, rhg.com/research/taking-stock-2022/.

working to help states adopt revised building codes that permit the use of low-GWP equipment, actively breaking down one of the biggest barriers to implementation of low-GWP equipment and HFC phase down.

MDE promulgated a regulation in 2020 that will phase out the use of certain HFCs in multiple end-uses, such as foam products and certain refrigeration equipment in retail establishments such as supermarkets. These regulations drive GHG emission reductions as the prohibited HFCs are transitioned to lower GWP substitutes. With the proposed action in place, HFC emissions are expected to be reduced annually starting in 2021, and by approximately 23% in 2030.

2.5 – Transportation

Increasing Low and Zero-Emissions Vehicles on the roads

Transportation is the country's largest source of GHG emissions. Getting more zero-emissions vehicles (ZEVs) on the road while reducing vehicle miles traveled (VMTs) are critical solutions for decarbonizing this sector. Both need to be advanced in tandem since increased VMTs can counteract the emissions reduction benefits of increased ZEV adoption.

USCA members are now developing the next generation of policies that will further accelerate the transition to ZEVs, including putting cleaner and more efficient medium and heavy-duty vehicles, like buses and trucks, on the road, which will increase demand for vehicles powered by domestically generated electricity and other low-carbon fuel sources.

Expanding Access to Clean, Affordable, and Resilient Transportation Options

USCA members are developing programs and regulations to increase investments in lower-carbon, multimodal, and affordable transportation options that improve efficiency and resilience while reducing the need for energy-intensive fuel production, importation, and consumption.

Leading the Way with Zero-Emissions Public and Government Fleet Adoption

USCA members are taking action to decarbonize public fleets, helping expand the marketplace for ZEVs across all vehicle classes and shifting government procurement towards a domestic clean energy future. Maryland passed CSNA, which among other measures established ZEV requirements for the state fleet and local school buses, and established an electric school bus pilot program to facilitate electric school bus adoption.¹²

Maryland is committed to the conversion of ZEV technology for the medium- and heavy-duty (MHD) vehicle fleets. In 2020, Maryland signed the MHD ZEV MOU and has been actively participating in the Multi-State ZEV Task Force to develop the MHD ZEV Action Plan. The plan will provide a framework for meeting the target of at least 30% of all new truck and bus sales being ZEVs by 2030, and 100% by 2050 that includes only ZEV buses beginning in 2023.

Additionally, in 2022 Maryland passed legislation to establish an electric school bus pilot program.¹³ The new program requires the Public Service Commission (PSC) to implement and administer the pilot program where school districts in each utility service area will be eligible to purchase zero-emission electric buses rather than diesel ones at no additional cost to the school districts. Investor-owned utilities may recover reasonable costs of

¹² Maryland General Assembly, Climate Solutions Now , mgaleg.maryland.gov/mgawebsite/Legislation/Details/SB0528?vs=2022RS.

¹³ Maryland General Assembly, Public Utilities – Electric School Bus Pilot Program, mgaleg.maryland.gov/2022RS/bills/hb/hb0696E.pdf.

the pilot program through a ratepayer adjustment. Each investor-owned utility that implements the program will provide rebates to school districts for a minimum of 25 electric buses; the rebates are capped at \$50 million during the pilot program, which will run 3-5 years. The utility, in consultation with participating school districts, will provide annual reports on the environmental, health, and other costs and benefits of the program.¹⁴

2.6 – Just Transition and Equity

Developing Tools and Criteria to Advance Equitable Outcomes

Without careful planning, transitioning to a net-zero economy could lead to disproportionate impacts on workers and communities tied to carbon-intensive industries. At the same time, historically marginalized communities have faced a disproportionate burden of climate impacts and fossil fuel pollution.¹⁵ To help alleviate these systemic injustices, states are creating more participatory processes and practices across government, standing up new governance structures to shape equitable policies, and developing new metrics and tools to ensure an equitable distribution of benefits and investments across impacted communities. MDE created an EJ Screening Tool, which can drill down to community levels, based on data derived from the U.S. Census Bureau.¹⁶

Dashboards and screening tools can help disseminate information about climate action outcomes, identify and eliminate existing disparities, and expand economic diversification efforts to communities impacted by climate change. At the same time, the development of frameworks and criteria can help to ensure improved participatory practices, opportunities for input in climate change policymaking processes, and disbursement of resources.

Establishing and Advancing EJ Offices and Councils

Dedicated professionals help to ensure that a just and equitable transition is included in all climate policies and programs. Over the past year, half a dozen USCA members established or advanced the capacity and authority of EJ offices and councils. In Maryland, the Commission on Environmental Justice and Sustainable Communities (CEJSC) was recently expanded and given new statutory requirements. MCCC's Climate Justice team meets regularly and reviews CEJSC products and current work.

Allocating Resources to Overburdened Communities

Commitment of resources helps to ensure that programs can be implemented on the ground to advance economy-wide and sector-specific goals and help local communities—particularly those that have been historically overburdened—transition to a clean energy economy. Maryland's CSNA directs MDE and the CEJSC to “adopt a methodology for identifying communities disproportionately affected by climate impacts” and set a goal for the percentage of funds dedicated to meeting the state's emissions targets that benefit disproportionately affected communities by the end of 2023.¹⁷

Establishing Training Programs

¹⁴ mdlcv.org/wp-content/uploads/2022/02/ESB-Pilot-Program-coalition-fact-sheet-1.pdf.

¹⁵ Ihab Mikati et al. “Disparities in Distribution of Particulate Matter Emission Sources by Race and Poverty Status,” *American Journal of Public Health*, April 2018, ajph.Aphapublications.org/doi/10.2105/AJPH.2017.304297; U.S. Global Change Research Program, “Chapter 15: Tribes and Indigenous Peoples,” Fourth National Climate Assessment, 2018 (revised June 2019), nca2018.globalchange.gov/chapter/15/; U.S. Global Change Research Program, “Chapter 9: Populations of Concern,” *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*, 2016, health2016.globalchange.gov/low/ClimateHealth2016_09_Populations_small.pdf.

¹⁶ State of Maryland, “MDE EJ Screening Tool,” accessed August 16, 2022, mdewin64.mde.state.md.us/EJ/.

¹⁷ Maryland General Assembly, Climate Solutions Now, mgaleg.maryland.gov/mgawebsite/Legislation/Details/SB0528?ys=2022RS.

Developing a diverse and robust clean energy workforce is critical to achieving climate goals. Over the past year, multiple states initiated workforce analyses, development, and training programs to engage all levels of society in climate mitigation and adaptation solutions. Maryland joined the ranks of states that have expanded their youth conservation corps programs to encompass climate more broadly.¹⁸

2.7 – Resilience

Scaling Funding to Drive Implementation

Choosing not to plan, prepare, and adapt to the climate impacts and disasters ahead is no longer an option. Together states, cities, and communities must move swiftly to become more resilient. In doing so, they can save billions of dollars and make America’s communities more vibrant, healthy, and prosperous. Pre-disaster, inclusive planning is an economic, societal, and ecological imperative.

USCA members have made significant strides in resilience planning and are ready to implement solutions that build equitable resilience across their states and for their communities. The transition from planning to implementation requires significant resources, so USCA members are thinking creatively about how to leverage funds and identify opportunities for synergy with disaster recovery dollars and pre-disaster resilience funding structures. Federal action also is vital as it is a key to expanding and securing opportunities to plan and implement inclusive climate resilience solutions.

MDE is leading the development of a plan to plant and maintain five million native trees in Maryland by 2031 with support from the Commission for the Innovation and Advancement of Carbon Markets and Sustainable Tree Plantings and sister agencies the Maryland Department of Natural Resources, Maryland Department of Agriculture, and Maryland Department of Transportation.¹⁹ The plan will focus on afforestation and urban tree planting in underserved areas, with the final plan delivered in October 2022.²⁰ To support progress tracking, MDE is developing a tree data tracking platform that: 1) allows the public to register planting projects, 2) maintains all spatial and non-spatial data in a state-accessible geodatabase, and 3) publishes the spatial locations of these projects on a public-facing interactive online map. MDE also is building out a framework for state engagement with the carbon market, which will clarify additional avenues for private investment to scale tree planting and other restoration efforts in the state.

Centering Equity and Equity-Based Solutions in Resilience Agendas

To increase social equity in building resilience, USCA members have committed to centering equity, environmental justice, and a just economic transition in their efforts to achieve their climate goals and create high-quality jobs. USCA members are developing climate resilience plans that consider adaptive capacity and impacts on the whole community—especially lower income, minority, or otherwise vulnerable communities. By embedding equity across agency authorities and including language that prioritizes community resilience and social equity, the states are building climate resilience for the whole community.

¹⁸ State of Maryland, Senate Bill 528, 2022, mgaleg.maryland.gov/2022RS/bills/sb/sb0528E.pdf.

¹⁹ Maryland Department of the Environment, “The Maryland Carbon Markets and Trees Commission,” accessed August 16, 2022, mde.maryland.gov/programs/air/ClimateChange/Pages/Trees-Commission.aspx.

²⁰ mde.maryland.gov/programs/air/ClimateChange/Documents/FINAL_Plan-for-Growing-5-Million-Trees-in-Maryland_10.28.22%20%281%29.pdf

In 2022, Maryland released the Maryland Climate Adaptation and Resilience Framework Recommendations, an update to the state’s adaptation plan that aims to guide and prioritize action over the next 10 years, specifically in vulnerable and underserved communities.²¹ The framework addresses sector-specific adaptation needs and opportunities as well as considers overarching issues that impact all sectors, specifically: diversity and environmental justice, climate jobs and training, and local government action and state service delivery.

Developing and Improving Resilience Metrics, Indicators, and Standards to Track Progress and Drive Decision-Making

Climate resilience action is an iterative process that requires the use of metrics that track processes, outputs, and community outcomes. USCA members are developing metrics that can be used to evaluate and align efforts to advance a state’s climate resilience vision. These metrics are a critical piece to climate resilience, as they can justify and scale funding for projects and programs that strengthen inclusive, equity-centered resilience planning.

In partnership with the University of Maryland Center for Environmental Sciences - Integration and Application Network (UMCES-IAN), Maryland developed the first Coastal Adaptation Report Card. The report card is a suite of indicators to track Maryland’s adaptation progress. UMCES-IAN reviewed existing adaptation metrics and developed a new series to track progress toward state resilience goals. The report card provides a high-level overview to decision and policymakers, including a thorough methodology providing the scientific rationale for the indicators, their thresholds, and the data used to calculate the scores.

2.8 – Natural and Working Lands

Expanding Innovative Funding, Financing, and Partnership to Drive Transformative Natural Climate Solutions

Natural and working lands (NWL) is a complex sector, representing multiple land types with varying ownership and management, and which collectively remove carbon dioxide from the atmosphere and reduce net GHG emissions. In 2020, NWLs offset 13% of USCA-wide GHG emissions. Due to the scope and diversity of the sector, it is critical that states continue to push no-regrets land management, conservation, and restoration strategies that build resilience and support equitable access to nature while reducing emissions and increasing carbon storage and sequestration.

While most USCA members have standalone NWL plans or incorporate NWLs in climate action or resilience plans, USCA members are shifting the focus on NWLs in traditional climate conversations by elevating innovative funding and financing mechanisms for swift, multi-benefit NWL management, conservation, and restoration efforts.

Maryland’s Conservation Finance Act is a nation-leading law that results in a comprehensive suite of changes to state contracting law, environmental funds, and green infrastructure programs that will help achieve Maryland’s Chesapeake Bay, forest conservation, climate, and environmental justice goals without increasing the state budget.²² Projects, such as wetlands restoration and other nature-based initiatives are now eligible for traditional

²¹ State of Maryland, *Maryland Adaptation and Resilience Framework Recommendations, 2021-2030*, 2022.

mde.maryland.gov/programs/air/ClimateChange/MCCC/Documents/MD%20Climate%20Adaptation%20and%20Resilience%20Framework%20Recommendations.pdf.

²² Maryland General Assembly, *Conservation Finance Act*, 2022, mgaleg.maryland.gov/mgawebsite/Legislation/Details/SB0348.

infrastructure financing, and the law leverages private financing to ensure public funds are used more quickly and cost-effectively.

Improving NWL Analysis and Accounting for Net-Zero Implementation

As states plan for their near-term and mid-century climate goals, they are working to improve inventory and accounting methods for land-based carbon flux and advancing programs, policies, and incentives to reduce GHG emissions and enhance resilient carbon sequestration and storage. USCA members are trying to better understand how much NWLs contribute to the overall state carbon budget, as NWLs can both contribute to a state's emissions profile, and they can sequester and store carbon. Beyond that, states are focused on advancing policies that increase the NWL carbon sink in a resilient manner given each state and region's unique biophysical conditions.

Maryland employs the best available soil carbon science to improve the resolution of annual agricultural soil fluxes in the state's inventory. This pioneering effort is in direct alignment with recommendations included in the state's 2021 annual report and will be critical to meeting Maryland's 2045 net-zero goal.²³

Avoiding Conversion and Smart Land Use Planning

Given that management and protection of existing habitat often is easier and less costly than stem-scale restoration, USCA members are focused on how they can center climate and carbon in key, often cross-cutting land use, planning, and development conversations. USCA members are working to aggregate and advance best practices and cross-cutting policies to avoid the conversion of lands so that land carbon storage is maintained and enhanced over time.

2.9 – Social Cost of Greenhouse Gases

Valuing Damages Caused by Climate Pollution

The social cost of GHGs (SC-GHG) represents the present value of the costs associated with emitting one additional ton of GHG emissions in the future. It considers impacts such as changes in net agricultural productivity, human health effects, property damage from increased flood risk and other natural disasters, disruption of energy systems, risk of conflict, environmental migration, and the value of ecosystem services. Essentially, the SC-GHG is a tool that policymakers can use to help understand the monetary benefits of reducing GHG emissions.

States have utilized SC-GHG in electric power sector planning and resource compensation, but are now looking to follow the federal government's lead and expand its use across all relevant agencies. This will allow them to justify strong environmental policies across all sectors and allocate funds more effectively by considering the true cost of climate change damages. Over the past year, many states have expanded their use of the SC-GHG to help inform planning and regulatory actions.

In the Years Ahead

USCA members will continue to collaborate to advance our shared priorities and build a durable climate framework that can be adopted and tailored by other states and the federal government. This includes efforts to improve the data, methodologies, and tools used by states for more robust policy decision-making and

²³ Maryland Commission on Climate Change, *2021 Annual Report and Building Energy Transition Plan*, mde.maryland.gov/programs/air/ClimateChange/MCCC/Documents/2021%20Annual%20Report%20FINAL%20%282%29.pdf.

communication of progress. At the same time, USCA members will work together across our eight policy priority areas to put our 2030 climate goals within reach, including:

Power: Continue implementing IJJA programs in the year ahead, particularly those related to modernizing the power grid, and respond to and implement EPA power sector regulations and Federal Energy Regulatory Commission transmission-related rulemakings.

Buildings: Work to adopt net-zero codes, state building performance standards, gas system planning, clean heat standards, and next-generation appliance and equipment standards. USCA also will coordinate to strategize ways to achieve net-zero goals in state-owned buildings and facilities.

Industry: Develop and greatly expand policies that directly target industrial carbon dioxide to meet long-term climate goals. This will require developing industry-specific recommendations in climate action plans and state energy plans, establishing GHG reduction targets for specific industries, and accounting for industrial fuel-switching in utility resource plans.

Transportation: USCA members also are looking to expand access to ZEVs and public EV charging infrastructure and expand access to clean, affordable, and efficient multimodal transportation networks that provide additional travel options beyond driving.

Just transition and equity: Continue working to embed principles of a just and equitable transition and center equity across all climate policies and engaging with impacted communities to develop new tools, programs, and metrics to ensure an equitable distribution of investment and benefits.

Resilience: Measure the effectiveness of strategies, programs, and policies to build the resilience of our systems, especially those communities on the frontlines of a changing climate. USCA will continue to elevate and prioritize resilience alongside GHG mitigation so that our mitigation strategies have lasting impact.

NWL: Improve the modeling and analysis of NWL carbon budgets and fluxes and map out pathways and policies to reach USCA as well as federal midcentury net-zero goals.

SC-GHGs: Work together with the federal government and outside experts to build capacity across state agencies on how to utilize SC-GHG and where needed, develop new tools.

3 - Maryland's Role

In January 2018, Governor Hogan proudly committed Maryland to participation in USCA. When there was discussion of the U.S. withdrawing from the Paris Agreement, Governor Hogan disagreed with the decision and maintained the importance of aggressive, but balanced action in states, communities, and businesses, and the need for multistate collaboration and international leadership.

Over the course of 2022, Maryland has worked with USCA members to share insights, experiences, and strategies to meet and excel beyond the requirements of the Paris Agreement. Maryland has encouraged all USCA members to adopt clean air standards and GHG goals as strong as Maryland's. Through collaborative efforts, USCA members are demonstrating leadership in addressing climate change and inspiring climate action throughout the country.

During the past year, Maryland has been a national leader and active participant in USCA, contributing our experience, knowledge, and cutting-edge research. Many USCA members have looked to Maryland as a model and to learn from our collaborative and groundbreaking work on the Healthy Soils Initiative, MCCC, RGGI, the 2030 GGRA Plan and the recently released 2030 Progress Report, and CSNA. USCA has played an integral role in helping Maryland launch a regulatory initiative to phase out HFCs and work to strengthen our forest and agricultural carbon sequestration programs.

3.1 – Maryland's GGRA Plans

GGRA²⁴ requires MDE to develop plans to achieve the state's GHG emissions reduction goals and to monitor the implementation of those plans. GGRA further stipulates that MDE must submit a report to the Governor and the General Assembly describing 1) the state's progress toward achieving its GHG reduction goals and 2) the GHG reductions needed by 2050 to avoid changes to the Earth's climate system, based on the predominant view of the scientific community at the time of the latest report.

3.2 – 25% by 2020: Achieved

Maryland more than achieved its GHG reduction goal for 2020. GGRA of 2009 established the goal of reducing statewide GHG emissions by 25% from 2006 levels by 2020. In 2020, statewide GHG emissions were 30% below the 2006 baseline based on a new GHG accounting methodology required by CSNA, which is explained in this report. Statewide GHG emissions in 2020 were 33% below the 2006 baseline using the accounting methodology from when the 2020 goal was established and achieved. Figure 4 (below) shows the state's GHG emissions over time. Reductions in the electricity sector made large contributions toward reaching the goal.

The COVID-19 pandemic had a significant impact on GHG emissions in 2020. The pandemic's most pronounced impact on GHG emissions was in the transportation sector, specifically regarding on-road gasoline and aviation emissions, resulting from restrictions and stay-at-home orders in the state beginning in 2020. Statewide GHG emissions would have likely been 26% below 2006 levels in 2020 without COVID-19 impacts using the new accounting methodology. Thus, Maryland would have met or exceeded its GHG reduction goal for 2020 with or without COVID-19 impacts.

²⁴ MD Env Code § 2-1204 (2016).

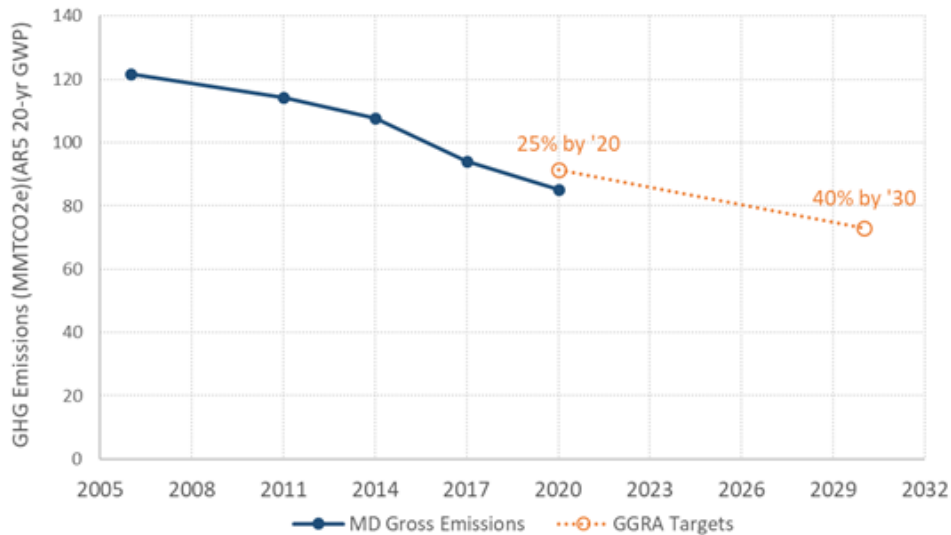


Figure 4. Maryland’s statewide GHG emissions from 2006-2020 and GGRA emission reduction goal

3.3 – 60% by 2031 on the path to Net Zero by 2045

In 2022, CSNA established new GHG reduction goals for Maryland. CSNA requires statewide GHG emissions to be 60% below 2006 levels by 2031, and net-zero by 2045. As explained in this report, Maryland must develop a new plan to meet its new 2031 goal.

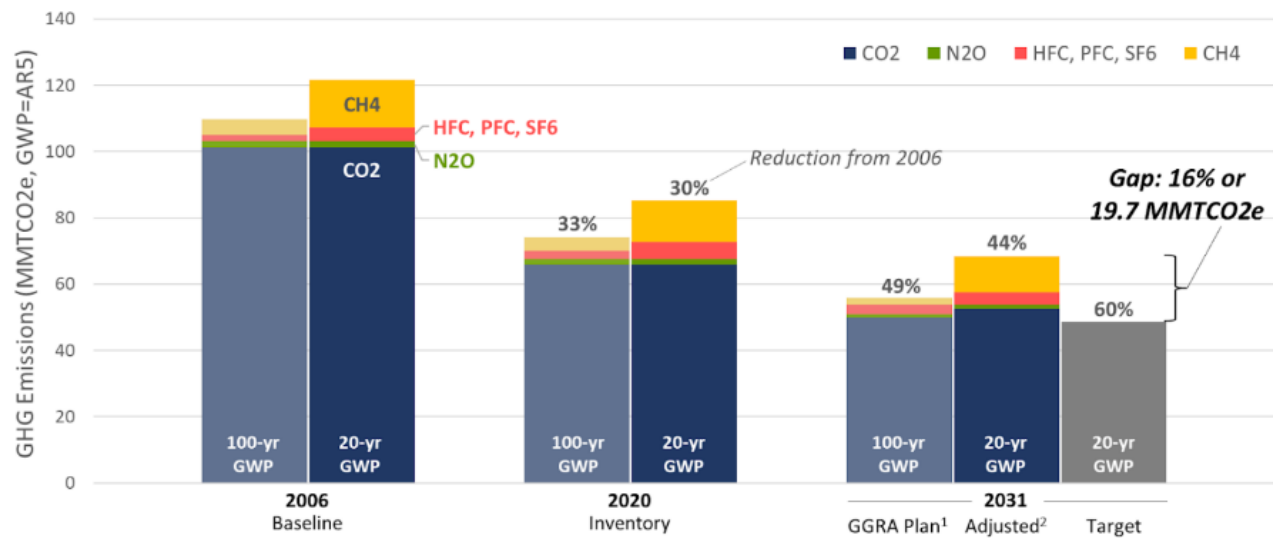
In 2021, MDE published the 2030 GGRA Plan,²⁵ which identified a path to reducing emissions around 49% by 2031 based on MDE’s methodology that used the 100-year GWP²⁶ of GHGs. CSNA requires MDE to shift to using the 20-year GWP, which amplifies the near-term climate impact of CH₄ and other short-lived climate pollutants. When the 2030 GGRA Plan is adjusted to the new methodology, it would achieve a 44% reduction in GHG emissions by 2031.

The 2030 Progress Report evaluates progress toward meeting Maryland’s new 2031 goal by analyzing data on 11 different 2030 GGRA Plan metrics. The report finds that Maryland is roughly on track for meeting its prior targets, which would achieve a 44% reduction in statewide GHG emissions by 2031. However, with the new targets in place, future actions may need to be considered.

Figure 2 (below) illustrates the impact of shifting from the 100-year to 20-year GWP, and the gap between projected and target GHG emissions levels in 2031. If the 2030 GGRA Plan were fully implemented, then the state would need to find an additional 19.7 million metric tons of carbon dioxide equivalent (MMTCo₂e) reduction - or an additional 16% reduction in statewide GHG emissions from 2006 levels - by 2031 to meet the goal for that year.

²⁵ The final version of Maryland’s 2030 GGRA Plan can be found on the Maryland Department of the Environment website at mde.maryland.gov/programs/air/ClimateChange/Pages/Greenhouse-Gas-Emissions-Reduction-Act-%28GGRA%29-Plan.aspx.

²⁶ GWP is a measure of the amount of energy that is trapped in Earth’s atmosphere over a given timeframe from one ton of emissions of a given gas, relative to the amount of energy trapped by one ton of carbon dioxide (CO₂). For example, CH₄ traps 28 times more energy than CO₂ over a 100-year period and it traps 84 times more energy than CO₂ over a 20-year period based on the IPCC Fifth Assessment Report .



¹ 2031 emissions results from the 2030 GGRA Plan modeling

² Reflects 20-yr GWP and updated estimates for landfills, jet fuel, and ODS substitutes

Figure 2. Maryland historical emissions, projected emissions, and emissions gap.

By the end of June 2023, MDE intends to publish a draft plan to identify the measures that are needed to achieve the new goal of reducing statewide GHG emissions by 60% by 2031. The measures that will be required to achieve the new goal have not yet been modeled; however, Maryland will not achieve the 2031 goal by implementing the 2030 GGRA Plan measures alone. Federal actions, including funding, may help the state implement select 2030 GGRA Plan measures, but the state will need to develop and implement significantly more stringent measures over the next 8 years to achieve the 2031 goal.

Fortunately, Marylanders do not need to wait for a new GHG reduction plan to know how to take action to address climate change. Here are four priority actions to take this decade that will help Maryland meet its GHG reduction goals:

- Rapidly transition to EV/ZEV vehicles while continuing to support plug in hybrid vehicles to achieve reductions in the near term;
- Rapidly construct more in-state clean power generation, especially solar power;
- Rapidly replace space heating and water heating equipment with efficient electric heat pumps; and
- Plant, grow, and manage more trees.

3.4 – Climate Solutions Now Act (CSNA)

In 2022, Maryland’s GHG reduction goals were modified in response to the latest science indicating that more stringent goals are necessary to combat climate change. CSNA set new goals to reduce statewide GHG emissions by 60% by 2031, and achieve net-zero emissions by 2045. CSNA also requires MDE to shift to using the 20-year GWP for CH₄ in future GHG reduction plans. Following GHG accounting norms, MDE will apply the 20-year GWP to all GHGs, which amplifies the role of CH₄ and other short-lived climate pollutants in the state’s GHG emissions inventory. MDE now estimates that the 2030 GGRA Plan, if fully implemented, would reduce statewide GHG emissions by around 44% by 2031 using the new accounting methodology. This leaves approximately 19.7 million

metric tons of MMTCO₂e or an additional 16% reduction in statewide GHG emissions from 2006 levels to be achieved by 2031.

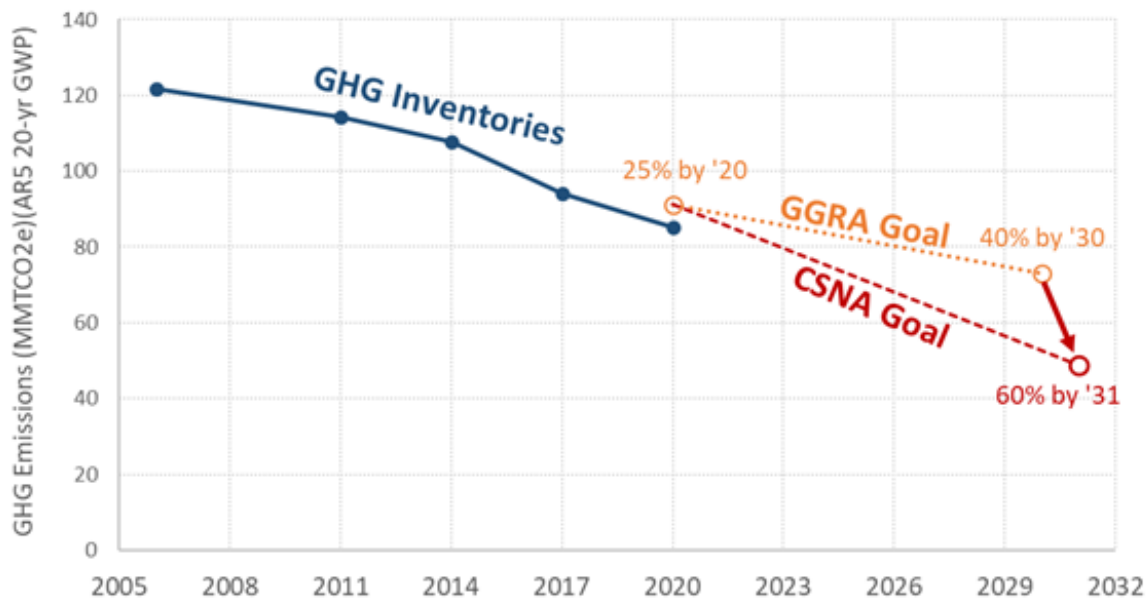


Figure 3. Maryland’s statewide GHG emissions from 2006-2020 and GGRA and CSNA emission reduction goals.

MDE must develop a plan to achieve the 2031 goal by the end of 2023. The plan must include policy recommendations for the continued operations of Maryland’s existing zero carbon electric generators, produce a net economic benefit to the state and net increase in jobs, use the 20-year GWP for CH₄, and may not include road construction as GHG reduction measures. A draft plan is due to be published in June 2023.

3.6 – Maryland Commission on Climate Change (MCCC)

MCCC is an independent body that was established under executive order and charged with developing an action plan and firm timetable for mitigating and adapting to the impacts of climate change in Maryland. As a result of the work of more than 100 stakeholders and experts, MCCC produced a climate action plan, which was the catalyst for GGRA.

Governor Hogan signed the Commission on Climate Change Act of 2015 to codify MCCC. MCCC is required to report to the Governor and the legislature annually “on the status of the state’s efforts to mitigate the causes of, prepare for, and adapt to the consequences of climate change, including future plans and recommendations for legislation, if any, to be considered by the General Assembly.” Under the law, MCCC is charged with several actions, including:

- Strengthen the Climate Action Plan;
- Develop broad private and public partnerships with local, state, and federal government;
- Communicate and educate citizens about the urgency of acting to reduce the impact of climate change;
- Conduct an inventory of GHG emission sources;

- Address the impacts of climate change on low income and vulnerable communities;
- Assess impacts that climate change may have on the Maryland's economy, as well as specific sectors such as agriculture; and
- Develop strategies for adaptation and mitigation.

MCCC consists of 26 members, including representatives of state government, the legislature, business and labor, nonprofit organizations, local government, and academia. The Deputy Secretary of MDE serves as the Chair of MCCC.

MCCC currently has four working groups: Adaptation and Resiliency Working Group (ARWG); Education, Communication, and Outreach Working Group (ECO); Greenhouse Gas Mitigation Working Group (MWG); and Scientific and Technical Working Group (STWG). Each working group meets throughout the year to address MCCC's responsibilities through a series of presentations and discussions to develop the recommendations made in the annual report.

Under CSNA, MCCC must create several new reports and add four new working groups with an extensive list of required representatives to be appointed. Each of the four new working groups is required to have members of the Senate and House, cabinet level officers (or their designees) as well as numerous representatives of industry and environmental groups. Combined, the new working groups add 66 appointed positions to the 85 current positions on the pre-existing groups. The four new working groups CSNA added are:

- **Just Transition Employment and Retraining:** Will focus on transitioning workers in fossil fuel industries to employment opportunities in a clean energy economy. Most of the members will be appointed from labor organizations or impacted industries.
- **Energy Industry Revitalization:** Will focus on the possible impacts to small businesses and potential facility closures as the result of climate change policies.
- **Energy Resilience and Efficiency:** Will primarily be composed of representatives of electric energy companies and will focus on energy infrastructure improvements, transmission efficiency and battery backups.
- **Solar Photovoltaic Systems Recovery, Reuse and Recycling:** Will focus on options for recycling or reusing solar panels.

It is the ongoing endeavor of MCCC and its working groups to ensure that Maryland is utilizing the best science available to progress on limiting climate change (or mitigating) and adapting to the changes that do occur, keeping open lines of communication in both directions with the residents of Maryland.

USCA member states have looked to Maryland as a prominent example of bipartisan leadership on climate action. Maryland routinely shares advice with USCA on both the logistical structuring of bipartisan bodies and planning actions for climate mitigation and adaptation.

3.7 – The Regional Greenhouse Gas Initiative (RGGI)

The Maryland Healthy Air Act required Maryland to join RGGI by July 2007. MDE subsequently adopted COMAR 26.09.01 to .03, implementing the “Maryland CO₂ Budget Trading Program,” which became effective on July 17, 2008. COMAR 26.09.04 (“Auctions”) became effective as a permanent regulation on August 25, 2008.

RGGI is a collaborative program among 12 Eastern states to reduce CO₂ emissions from power plants through a regional cap-and-invest program. These states adopted market-based CO₂ cap-and-invest programs designed to reduce emissions of CO₂, from fossil fuel-fired electricity generators with a nameplate capacity of 25 MWh or greater. Due to its success, RGGI has grown substantially in recent years, with New Jersey renewing its participation in the program in 2020, Virginia joining in 2021, and Pennsylvania proposing regulations to begin participation in the future. RGGI is currently composed of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont, and Virginia. Participating RGGI states each require electricity generators to have acquired, through regional auction or secondary market transactions, one CO₂ allowance for every ton of CO₂ emitted over a 3-year compliance period. Maryland has participated in RGGI since its inception 12 years ago. Through RGGI, the participating states have cut power plant emissions in half while benefiting with billions of dollars of economic benefit and creating thousands of jobs.²⁷

RGGI sets a binding cap on CO₂ emissions from power plants in the region that reduces every year. To achieve the 100% clean electricity by 2040 goal, the 2030 GGRA Plan proposes to reduce the RGGI cap to zero by 2040, with cost controls. Maryland will bring that goal into the upcoming Program Review, where the RGGI participating states convene to establish the program's future goals. Combined with the Renewable Portfolio Standard and proposed Clean and Renewable Energy Standard program, that would all but eliminate CO₂ from Maryland power plants and substantially reduce emissions from the power plants in nearby states that supply electricity into Maryland.

The RGGI program has several unique features unlike other cap-and-invest programs in the U.S. The allowances are controlled by the states and can be allocated or sold to sources. Currently, states have opted to auction most of the allowances to sources through quarterly auctions. Proceeds from the auctions are used to fund energy efficiency programs to reduce demand for electricity and provide a means to lower CO₂ emissions. Further, auction proceeds fund renewable energy projects that reduce the amount of CO₂ emissions generated by fossil fuel-fired electricity generators. Under RGGI, more than half of all funds collected by Maryland are invested in energy assistance for low-income households, and energy efficiency in low- and moderate-income communities. The states conducted the first quarterly regional auction in September 2008, and the program officially began in January 2009.

RGGI originally set a cap of 188,076,976 tons of CO₂ emissions for the region, based on average 2000 to 2002 CO₂ emissions from eligible electricity generators subject to the program. Maryland received 37,503,983 CO₂ allowances each year through 2013. After the 2012 Comprehensive RGGI Program Review, changes to the cap resulted in Maryland receiving 20,360,944 CO₂ allowances in 2014. Between 2015 and 2020, Maryland's allowance budget was reduced by 2.5% per year along with the other participating states. Maryland originally set aside 7,388,491 allowances in four different set aside accounts to account for special needs or programs, but this number and the number of set aside accounts was reduced through the 2016 Program Review.

In the 2016 Program Review, the RGGI states established a cap for the 2020s that declines by 30% from 2020 to 2030. Each individual state's allowance budget, including Maryland's, will decrease each year accordingly. That

²⁷ rggiprojectseries.org/

cap decline may need to accelerate in the 2020s to work toward the longer term 100% clean electricity by 2040 goal.

As of the date of this report, Maryland has successfully participated in all 58 regional auctions of CO₂ allowances with RGGI. Auction proceeds go to the Strategic Energy Investment Fund, which is administered by the Maryland Energy Administration. Maryland has received \$1,006,552,034 in cumulative proceeds.²⁸

3.8 – Opportunities and Challenges Ahead

Through a range of programs, policies, and initiatives included in the 2030 GGRA Plan and now a new law establishing an ambitious 60% reduction target by 2031, Maryland is clearing a path for other states to fight climate change. However, based on current policies (both state and federal), significant gaps in policy outcomes remain to achieve the 2031 target. Based on the current implementation status and associated emission reduction rate of several emission drivers included in the 2030 Progress Report, the gaps identified could prevent Maryland from hitting its 2031 target.

A supplemental sensitivity analysis as part of the 2030 GGRA Plan modeling identified an “optimistic scenario” that considers how Maryland could achieve additional GHG reductions with supportive federal actions. While the optimistic scenario shows that Maryland could exceed a 44% reduction in GHG emissions by 2031 with supportive federal actions, it also shows that Maryland could still need to find an additional 13 MMTCO₂e of reductions over the next 8 years to achieve the 60% by 2031 goal.

A wide range of emission reduction successes have been presented herein, but this report also indicates that without full implementation of the programs included in the 2030 GGRA Plan, additional support from the federal government, and significant new state and local actions, Maryland may not meet the mandated 60% reduction by 2031 goal established by CSNA.

The analysis conducted for the 2030 Progress Report indicates that certain sectors comprise much of the emissions and policy gap, with a particular need to rapidly transition to ZEVs and efficient electric heating systems in buildings. Further, more rapid deployment of renewable energy is necessary to build upon the already strong reductions from electricity generation and provide sufficient zero-carbon electricity to power those electrified transportation and building sectors. MDE is working with MCCC, state agencies, federal agencies, and the private sector to find opportunities to accelerate decarbonization of these and other sectors.

Maryland has been an early national leader on climate and continues to work to meet the most ambitious goals in the nation for reducing GHG emissions.

²⁸ [rggi.org/auctions/auction-results](https://www.rggi.org/auctions/auction-results).