Maryland
Department of the Environment

ANNUAL CLIMATE CHANGE REPORT

DECEMBER 31, 2020

PREPARED BY:

MARYLAND DEPARTMENT OF THE ENVIRONMENT

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Contents

Introduction

The Maryland Department of the Environment's (MDE) Annual Climate Change Report is written in accordance with State Government Article §2-1246, as required by §2-1305 of the Environmental Article. It details the status of programs managed by MDE that support the State's greenhouse gas (GHG) reduction and climate adaptation efforts. The report also recommends policy, planning, regulatory, and fiscal changes to existing programs.

MDE compiles this report along with the Greenhouse Gas Emissions Reduction Act (GGRA) Plan required by the 2016 GGRA Law, and the Annual Report of the Maryland Commission on Climate Change (MCCC).

Key Goals

- Net GHG reduction of 40% below 2006 levels by 2030
- Develop all GHG mitigation plans in recognition of the finding by the Intergovernmental Panel on Climate Change (IPCC) that GHGs should be reduced by 80-95% from 1990 levels by 2050
- Renewable Portfolio Standard (RPS) Target of 50% by 2030

Climate Framework and Laws

Greenhouse Gas Reduction Act:

In 2009, Maryland adopted the Greenhouse Gas Reduction Act (GGRA) and it was amended in 2016. The law requires the State to reduce GHG emissions 25% from a 2006 baseline by 2020, in a way that ensures a positive impact on Maryland's economy, protects existing manufacturing jobs, and creates new jobs in the State.

Maryland Commission on Climate Change:

In 2007, the Maryland Commission on Climate Change (MCCC) was established by Executive Order (01.01.2007.07), and is charged with developing an action plan and firm timetable for mitigation of and adaptation to the likely consequences and impacts of climate change in Maryland, including strategies to reduce Maryland's GHG emissions. As a result of the work of more than 100 stakeholders and experts, the MCCC produced a climate action plan, which was the catalyst for GGRA. In 2014, a second Executive Order (01.01.2014.14) expanded the scope of the MCCC and its membership to include non-State government participants.

During its 2015 session, the Maryland General Assembly codified MCCC into law, officially charging

MCCC with advising the Governor and General Assembly "on ways to mitigate the causes of, prepare for, and adapt to the consequences of climate change." The MCCC is chaired by MDE Secretary Ben Grumbles and consists of members representing state agencies and the legislature, local government, business, environmental nonprofit organizations, organized labor, philanthropic interests, and the State University system.

In mid-November 2020, the MCCC voted to approve their annual report. MDE followed up by submitting the report to the Governor and General Assembly. MCCC was able to reach a consensus on some very challenging issues and the group compiled recommendations that will help the state achieve GHG reduction while supporting the state's economy. A key finding in the report is the recommendation from the MWG to set a 50% by 2030 GHG reduction goal and a goal to get to net zero emissions by 2045, both with the same provisions to protect and stimulate the economy. It would be among the most ambitious goals of any American state. To support these ambitious goals, the report summarizes the latest science on climate change, which was provided by the Science and Technical Work Group (STWG) of the MCCC. The new goals are in line with the emission reduction pathways recommended by the IPCC to limit global warming below 1.5 degrees Celsius.

Another key finding of the MCCC report is how important it is that the State's GHG reduction goals be met while ensuring that equity and environmental justice principles are incorporated into all climate policies.

Transportation

Transportation and Climate Initiative

Formed in 2009, the Transportation and Climate Initiative (TCI) is a collaboration of mid-Atlantic, Northeast, and Southeast states; and Washington D.C., focused on reducing GHG emissions from the transportation sector. TCI jurisdictions worked through 2019 and 2020 to develop a potential regional cap-and-invest program for transportation emissions based on RGGI.

Under the program, participating jurisdictions would establish a cap on CO2 emissions from on-road vehicles. Oil companies complying with that regulation would purchase allowances from quarterly auctions, which would raise money for jurisdictions to invest in projects and programs.

A few jurisdictions finalized a Memorandum of Understanding (MOU) on December 21, 2020 to implement the cap-and-invest program. Maryland and seven other states committed to continue collaborating with the signatories and pledges to monitor the program as it evolves.

Multi-State Zero Emission Vehicle (ZEV) Task Force

On June 20, 2018, nine Northeast and West Coast states, including Maryland, reaffirmed their strong commitment to a clean, low-carbon transportation sector with the release of a new Multi-

State Zero Emission Vehicle (ZEV) Action Plan for 2018-2021 to support the successful implementation of the states' ZEV programs.

The Action Plan, which builds on the successes and lessons learned from implementation of an earlier 2014 ZEV Action Plan, presents 80 market-enabling recommendations for states, automakers, dealers, utilities, charging and fueling companies, and other key partners to rapidly accelerate mainstream consumer adoption of ZEVs, including plug-in hybrid, battery electric, and hydrogen fuel cell vehicles.

Release of the new Action Plan follows the 2017 expiration of the "travel" provision in the participating states' ZEV regulations, which allowed automakers to get compliance credit in Oregon and Northeast ZEV states for fully electric vehicles (EV) placed in California, and to use that credit to meet their ZEV obligations. Automakers are now required to deliver EVs to meet specific sales goals in Oregon and the Northeast ZEV states for the first time.

The updated ZEV Action Plan is the work of the Multi-State ZEV Task Force, which was formed in 2013 under a Memorandum of Understanding (MOU) signed by the governors of California and seven other states that have adopted California's ZEV program – Connecticut, Maryland, Massachusetts, New York, Oregon, Rhode Island and Vermont. New Jersey became the ninth ZEV state to join the coalition when they signed the MOU in May 2018. Together, the nine ZEV MOU states represent nearly 30% of the new car sales market in the United States.

The transportation sector is now the largest single source of GHG emissions across the nation. Light duty vehicles alone contribute almost 25% of total emissions. The state ZEV programs, which require automakers to deliver increasing numbers of ZEVs between now and 2025, are a key strategy in state climate plans.

To support successful implementation of the ZEV programs, the MOU states committed to the collaborative development and implementation of the first 2014 Multi-State ZEV Action Plan.

A New Market Phase

The ZEV market is entering a new phase of development. In the four years since the release of the first ZEV Action Plan, the cumulative number of ZEV sales in the United States has grown from 200,000 cars to more than 750,000 cars. During that same time in Maryland, sales of plug-in EVs have almost tripled. Market changes and technology developments have laid a strong foundation for rapid growth of the emerging EV market. Battery costs are continuing to decline and the electric range of lower-cost battery EVs is three times what it was in 2014. Consumers can now choose from more than 40 different plug-in and fuel cell models, and all the major automakers have announced plans to significantly expand EV offerings across multiple market segments in the next several years.

Key Action Plan Recommendations

While many of the recommendations in the 2014 Action Plan remain valid today, the new Action Plan represents a redoubling of state efforts to accelerate electrification of the light-duty vehicle market, and a recognition of the important role that public-private partnerships involving the automakers, dealers, utilities, and others play in the effort. Recommendations for states and other key partners in the updated Action Plan are focused on five priority areas:

- Raising consumer awareness and interest in EV technology;
- Building out a reliable and convenient residential, workplace and public charging/fueling infrastructure network;
- Continuing and improving access to consumer purchase and non-financial incentives;
- Expanding public and private sector fleet adoption; and
- Supporting dealership efforts to increase ZEV sales.

The full Multi-State ZEV Action Plan is accessible at: nescaum.org/documents/2018-zev-action-plan.pdf.

Maryland has been a leader in working to implement the ZEV Action Plan recommendations. For years Maryland has had various incentives, financial and other, for purchasing EVs. In 2018, Governor Hogan elected to not only extend the incentive for both EVs and infrastructure, but to significantly increase these incentives. Under the Clean Cars Act of 2017, Maryland offers a tax credit of up to $3,000 for electric and plug-in vehicles with a sale price up to $60,000. Governor Hogan increased the funding for this program from $1.8 to $3 million annually. In addition to vehicles, the Clean Cars Act allows both residential and commercial entities to receive a rebate of 40% of the purchase and installation of electric recharging equipment. Governor Hogan doubled the funding available for this program from $600,000 annually to $1.2 million. In addition to these programs, the State has many other incentives available such as the Alternative Fuel Infrastructure Program and offering high occupancy vehicle lane (HOV) access to plug-in vehicles. Through these efforts, Maryland now has over 1,500 public level 2 and 3 chargers throughout the State. In addition to these incentive-based programs, the State has been active in promoting EVs by performing outreach to build consumer awareness. Some of these efforts include hosting workplace charging events and staffing informational booths at events across the state.

Additionally, the Clean Cars Act of 2019 increases the transfer amount from SEIF to the Transportation Trust Fund (TTF) to $6 million and added fuel cell vehicles to be eligible for the excise tax credit and added them to Electric Vehicle Infrastructure Council (EVIC).

Effective July 1, 2019:

- For FY20, the lesser of $6 million or the actual total amount of credits allowed against the excise tax shall be transferred from SEIF to the TTF
- The bill defines fuel cell vehicles

- Adds fuel cell vehicles to the excise tax credit provision and amends the provision to read "the credit allowed may not exceed the lesser of the amount of excise tax paid for the purchase of the vehicle; or $3,000"
- Adds fuel cell vehicles to EVIC's purview and changes the name of EVIC to the Zero Emission Electric Vehicle Infrastructure Council
- Adds a fuel cell EV manufacturer representative and a fuel cell EV equipment representative to the Council
- Adds fuel cell considerations to the Council's action plan

Medium- and Heavy-Duty Zero Emissions Vehicles Memorandum of Understanding (MHDV ZEV MOU)

On July 14, 2020, 15 states and Washington, D.C. announced a joint MOU committing to work collaboratively to advance and accelerate the market for electric medium- and heavy-duty vehicles (MHDVs), including large pickup trucks. The goal is to ensure that 100% of all new MHDV sales be zero emission vehicles by 2050 with an interim target of 30% zero emission vehicle sales by 2030. States signing the MOU are: California, Connecticut, Colorado, Hawaii, Maine, Maryland, Massachusetts, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Vermont, and Washington. To provide a framework and help coordinate state efforts to meet these goals, Maryland and the other signatory jurisdictions will work through the existing multi-state ZEV Task Force to develop and implement a ZEV action plan for trucks and buses. The action plan will be completed in 2021.

MDE, MEA, and MDOT are holding a series of workshops and launching working groups to bring input and expertise into the action plan.

Short Lived Climate Pollutants (SLCPs)

Short-lived climate pollutants (SLCPs) are air pollutants that have relatively short lifetime in the atmosphere and a warming influence on our climate. As opposed to carbon dioxide (CO2), which has an atmospheric lifetime of about 100 years, SLCPs atmospheric lifetime ranges from a few years to a few days. The most common SLCPs are methane, black carbon, and hydrofluorocarbons (HFCs).

Methane is the second most emitted GHG in the U.S., accounting for about 10% of national emissions. Emissions of methane also contribute to ground level ozone. About 60% of all methane emissions are anthropogenic and are expected to increase. The primary sources are from

agriculture, waste treatment, and the oil and gas sectors. Capturing methane from these sources is cost effective, can improve air quality, provide fuel for industry, vehicles and industry, and displace other more carbon-intensive fossil fuels.

Black Carbon is a component of fine particulate matter, which is the result of incomplete combustion of fossil fuels and biomass, particularly from older diesel engines and forest fires. Black carbon has been identified as a risk factor for premature death. It warms the atmosphere by absorbing solar radiation, influences cloud formation, and darkens the surface of snow and ice, which accelerates heat absorption and melting.

HFCs are industrial chemicals primarily used for refrigeration and air conditioning. HFCs were created to replace extremely volatile chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) that were found to be ozone-depleting. The Montreal Protocol, a global agreement to protect the stratospheric ozone layer, phased out CFCs and HCFCs, and drove industry to utilize HFCs as the prominent alternative. HFCs are not ozone depleting, however, they have a high global warming potential. Most HFCs emissions result from leaks in refrigeration and air-conditioning systems. These HFC emissions, though relatively low at present, are projected to increase globally at a rate of 8-15% per year (ccacoalition.org/en/resources/hfc-initiative-factsheet). Additionally, HFC use is expected to increase disproportionately in developing countries due to population growth, rapid urbanization, electrification and changing consumption patterns. Reducing HFCs could provide mitigation equivalent to 100 billion tons of CO2 by 2050. Furthermore, improving the energy efficiency of room air conditioning equipment alone can provide further mitigation of up to 100 billion tons of CO2 equivalent by 2050. Maryland announced its intention to adopt regulations in 2020 to prohibit the use of high-warming HFCs, consistent with the vacated U.S. Environmental Protection Agency's (EPA) Significant New Alternatives Policy Program.

Maryland has several ongoing initiatives to address fugitive methane emissions. In late 2020, new regulations were promulgated for compressor stations and other related equipment. Ongoing efforts to address solid waste landfills, wastewater treatment plants and the distribution sector of the energy industry are currently being undertaken.

Volkswagen Mitigation Plan

On September 18, 2015, the EPA and the California Air Resources Board (CARB) issued a Notice of Violation of the Clean Air Act (CAA) to Volkswagen AG (VW), Audi AG, and Volkswagen Group of America, Inc. alleging that model year 2009-2015 Volkswagen and Audi diesel cars equipped with 2.0 liter and 3.0 liter engines included software that circumvents EPA and CARB emissions standards for nitrogen oxide. Approximately 550,000 vehicles in the U.S. had "defeat devices" installed; approximately 16,000 were delivered to Maryland.

On October 25, 2016, the U.S. District Court for the Northern District of California approved a

Partial Consent Decree between the U.S. Justice Department and VW regarding excess emissions of nitrogen oxide due to the installation of "defeat devices'' on 2.0 liter diesel engines. The use of "defeat devices'' has increased vehicle emissions of nitrogen oxide, resulting in adverse effects on air quality. The Consent Decree established an Environmental Mitigation Trust of $2.7 billion to fully remediate the excess nitrogen oxide emissions from the affected 2.0 and 3.0 liter vehicles. The State of Maryland is eligible to authorize spending $75.7 million from the VW Trust to use for specifically defined eligible mitigation projects. To guide the use of funds over the Trust's 10-year lifetime, Maryland has developed a Mitigation Plan that outlines the eligible projects Maryland will use to reduce excess nitrogen oxide emissions. More information on the Mitigation Plan can be found on MDE's website.

Benefit

Strategies for reducing nitrogen oxide emissions will in most cases also result in reductions of GHG emissions. Many of the programs to be implemented under the VW Mitigation Plan will reduce both CO2 emissions and emissions of black carbon. Applicants seeking funds from the VW Trust must submit a proposal to MDE that specifies, among other things, emission reductions from the planned project(s). The evaluation criteria for awarding funds includes benefits from reducing other pollutants such as CO2. As projects receiving funds from the VW Trust are implemented, MDE will track avoided/reduced CO2 emissions resulting from these projects. The evaluation criteria for proposed projects also includes identifying benefits to environmental justice and underserved communities. Addressing the needs of underserved communities is a priority for the MCCC.

Implementation Milestones

Under the Environmental Mitigation Trust established in the 2016 settlement, Maryland is eligible to receive $75.7 million for use on specifically defined mitigation projects to remediate the excess nitrogen oxide emissions. MDE was the lead agency tasked with developing Maryland's mitigation plan in accordance with the list of eligible projects and matching fund requirements required under Appendix D-2 of the Settlement. The draft plan placed priority on EV charging infrastructure – allocating the full 15%that is allowed for this category – and the replacement of older, dirty diesel engines with new, cleaner technologies. Electric buses and heavy-duty equipment such as trucks, boats and locomotives are potential projects that are eligible for funding.

MDE requested public comments on the draft plan and held public meetings in August 2018. Changes made to the draft plan in response to public comments include an increase in funding for local government projects, and the addition of a pilot program of electric school buses. The plan has been finalized and approved by the Trustee. Vehicle replacement project proposals were accepted until May 6, 2019. MDE received over 40 proposals for funding. MDE completed its review of these programs and submitted approximately 40 proposals to the Trustee for final approval. MDE has received Trustee approval on all proposals. MDE is now in the process of finalizing contracts between MDE and the Grantees. After this process is complete, MDE will review

remaining funds and look to reopen some funding categories for proposals in spring 2021.

Partners

MDE has conducted extensive outreach with citizens, advocacy groups, local and state government, and the private sector, with a focus on communities that bear a disproportionate share of the air pollution burden. Citizen and advocacy group engagement is a priority for Maryland. MDE has met with citizens at community meetings to discuss the opportunities for funding, as well as, to obtain input on project opportunities. MDE has also worked closely with MEA and Maryland Department of Transportation (MDOT), and its business units such as the Port and Transit administrations, as well as the Baltimore Port Alliance to identify projects to implement at Port facilities and in communities around the Port of Baltimore (POB).

Conclusion

The use of funds from the VW Trust to implement projects will provide air quality benefits, including reductions in GHG emissions, which contribute to meeting the policy goals in the GGRA. Projected emission reductions have not been included in the 2019 GGRA Draft Plan. MDE will be tracking these important emission reductions and including them in the final GGRA Plan and in updates to the GGRA Plan.

Clean Cars

The Maryland Clean Car Program (Model Year 2011) – The Maryland Clean Cars Act of 2007 required MDE to adopt regulations to apply California's Low-Emission Vehicle (LEV) standards to vehicles purchased in Maryland. The California program also includes a mandate for the sale of ZEVs (adopted 2007). In 2012, California adopted the Advanced Clean Cars Program that further reduced vehicle criteria emissions as well as GHG emission. By 2025, light-duty vehicles will reduce smog-forming pollutants by 75%, and GHG emission by 40% compared to vehicles in 2012. The Advanced Clean Cars Program also required an increase in ZEV production.

Regional Greenhouse Gas Initiative (RGGI)

RGGI is comprised of 10 states in the Northeast and mid-Atlantic regions. These states adopted market-based CO2 cap-and-trade programs designed to reduce emissions of CO2 from fossil fuel-fired electricity generators with a nameplate capacity of 25 megawatts or greater. RGGI states include Connecticut, Delaware, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont, Maryland and New Jersey. New Jersey rejoined RGGI after adopting rules in 2019, and participated in the first auction of 2020. After some setbacks in 2019, Virginia has finalized their regulations and is scheduled to join RGGI in 2021, while Pennsylvania has published proposed

RGGI regulations that would bring it into the program in 2022.

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 three-year compliance period. Auction proceeds go to the SEIF, and fund a number of State programs, including energy efficiency programs that result in lower CO2 emissions through reduced electricity demand. Further, auction proceeds fund renewable energy projects that reduce the amount of CO2 emissions generated by fossil fueled electricity generators.

The RGGI program has several unique features unlike other cap-and-trade programs in the U.S. The allowances are controlled by the states and can be allocated or sold to sources. Most states have opted to auction 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. 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, and 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 will annually receive 2.5% fewer CO2 allowances as the RGGI cap reduces by 10% during that time. Maryland originally set aside 7,388,491 allowances in four different accounts to prepare for special needs or programs, but this number and the number of set aside accounts was reduced through the 2016 Comprehensive Program Review.

RGGI is composed of individual CO2 Budget Trading Programs in each RGGI participating state. Each participating state's CO2 Budget Trading Program is based on the 2008 RGGI Model Rule, which was developed to provide guidance to states as they implemented the RGGI program. RGGI participating states completed a 2016 Comprehensive Program Review, which is a comprehensive evaluation of program successes, program impacts, the potential for additional reductions, imports and emissions leakage, and offsets.

Amendments to the Model Rule were developed by the RGGI staff as part of the Program Review. This effort was supported by an extensive regional stakeholder process that engaged the regulated community, environmental nonprofits, and other organizations with technical expertise in the design of cap-and-trade programs.

Implementation Milestones

Auctions

Maryland has successfully participated in all 50 regional auctions of CO2 allowances with RGGI. Auction proceeds go to the SEIF, which is administered by MEA. To date, Maryland has generated

$744,020,359.67 in cumulative proceeds.

RGGI 2016 Comprehensive Program Review

On August 23, 2017, after completing a comprehensive 1.5 year review, Maryland and the other RGGI participating states announced a consensus agreement on proposed program changes. A regional emissions cap trajectory is proposed that will provide an additional 30% cap reduction by the year 2030 with important new features and innovations. This announcement can be found on the RGGI website at rggi.org/docs/ProgramReview/2017/08-23-17/Announcement_Proposed_Program_Changes.pdf.

The 2016 Program Review culminated in the 2017 Model Rule, originally released in December 2017, and revised a year later in December 2018. The Model Rule represents a list of implementation milestones:

- It was required by the RGGI MOU.
- The RGGI states then updated their individual CO2 Budget Trading Programs with guidance from the 2017 Model Rule.
- Summary of Big Changes:
    - The regional emissions cap in 2021 will be equal to 75,147,784 tons and will decline by 2.275 million tons of CO2 per year afterward, resulting in 30% total reduction from 2020 to 2030.
    - The Third Adjustment for Banked Allowances would adjust the base budget for 100% of the pre-2021 vintage allowances held by market participants as of the end of 2020 that are in excess of the total 2018-2020 emissions. The third adjustment timing and algorithm is spelled out in the Model Rule and would be implemented over 2021-2025.
    - The Model Rule contains language for the continued use of a Cost Containment Reserve (CCR). The CCR would consist of a fixed quantity of allowances in addition to the cap. These would be held in reserve and only made available for sale if allowance prices exceed predefined price levels.
    - In a similar vein, the Model Rule created the Emissions Containment Reserve (ECR), a mechanism designed to respond to supply and demand if emission reductions costs are lower than projected.
    - The Model Rule eliminates two offset categories: the Sulfur Hexafluoride (SF6) Offset Category and the End-Use Energy Efficiency Offsets Category and the End-Use Energy Efficiency Offsets Category

Control period

RGGI's fourth three-year control period took effect on January 1, 2018, and extends through December 31, 2020 for the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont.

Overview of RGGI compliance:

- Each CO2 budget source must hold allowances equal to 50% of its emissions during each interim control period (the first two calendar years of each three-year control period). Interim control periods are the first two calendar years of each three-year control period. For the fourth control period, 2018 and 2019 were interim control periods.
- Each RGGI CO2 budget source must provide allowances equal to 100% of its remaining emissions for the three-year control period at the end of the control period. For the fourth control period, this deadline for CO2 budget sources to provide CO2 allowances and to certify compliance is 11:59 p.m. ET on March 1, 2021.
- Market participants can acquire allowances in two ways: through the CO2 allowance auctions and the secondary market. The next CO2 allowance auction is currently scheduled to be held in March 2021.

The Cap

The RGGI cap was first established during the period from 2005-2007. The participating states decided upon a generation-based program rather than a consumption-based program because the states had authority to control electric generating sources within their jurisdiction. The initial cap was based on the average of 2000-2002 CO2 emissions and the initial cap was set at 188,076,976 short tons of CO2. After a stabilization period, the cap would be reduced starting in 2015 by 2.5% each year until 2018 for a 10% reduction. When New Jersey left the program after 2011, the end of the first control period, the cap was adjusted to 165,184,246 short tons of CO2 to remove New Jersey’s emissions.

As the states tracked emissions to evaluate reductions, the downward trend in emissions became evident. The drop in allowance sales at the regional auctions also signaled an oversupply of allowances, and so the participating states elected to revise the cap as part of the 2012 Comprehensive Program Review. During the review, the states considered a number of potential caps in short tons of CO2, but ultimately the cap was set at 91 million short tons of CO2. The cap put downward pressure on carbon emissions, while receiving support from a wide variety of stakeholders and many generators.

During the 2016 Comprehensive Program Review the states selected a regional cap of 75,147,784 tons of CO2 in 2021, which will decline by 2.275 million tons of CO2 per year thereafter, resulting in

a total 30% reduction in the regional cap from 2020 to 2030.

Budget Adjustments

RGGI allows sources to bank allowances in two ways. Sources can use current vintage allowances to satisfy future compliance obligations. The participating states have also auctioned future vintage allowances in the past. These allowances often sell at prices lower than they would in the future.

The participating states addressed potential large banks of allowances through the 2012 Comprehensive Program Review by adjusting how many allowances will be sold through 2020. The participating states further addressed this issue in the 2016 Comprehensive Program Review through one additional, distinct budget adjustment. The private bank of allowances is now addressed through three distinct adjustments to the state budget. The Adjustment for First Control period Banked Allowances is established as 1,863,361 allowances applicable to allocation years 2014 through 2020. The Adjustment for Second Control Period Banked Allowances is established as 3,106,578 allowances applicable to allocation years 2015 through 2020. The newly created Third Adjustment for Banked Allowances adjusts the budget for allocation years 2021 through 2025. The third adjustment timing and algorithm is spelled out in the regulations. This addition helps to create a binding cap in light of the opportunity sources have to accumulate low cost allowances while states implement the regulatory changes needed to establish the lower cap.

Offsets

The RGGI regulations contain language that eliminates two of the five current offset categories; 1) Reduction in Emissions of SF6 due to obsolescence, and 2) Reduction or Avoidance of CO2 Emissions from Natural Gas, Oil, or Propane End-Use Combustion Due to End-Use Energy Efficiency due to improvements and availability of energy efficiency technologies. While these two offset categories were removed, the three remaining offset categories were maintained and updated. Any awarded offset allowances would remain fully fungible across the participating states.

Continually Stronger RGGI with Geographic Expansion

In 2017, RGGI completed a Program Review, and strengthened RGGI to continue steady, deeper reductions of GHG emissions by 2030. With the success of the initiative, and as a national leader in the effort to combat climate change, Maryland and the other participating RGGI states are actively working to engage new participants in the program. The first-in-the nation carbon cap-and-invest program for power plants has been strengthened by implementing the participating states' plan to secure an additional 30% reduction in power plant emissions by 2030, and expanding the program to new participating states in the region to reduce pollution from power plants supplying electricity into Maryland.

As the chair of the RGGI, Inc. Board of Directors since 2018, MDE led deliberations among the RGGI states to broaden participation to include New Jersey and Virginia. In July 2019, New Jersey finalized regulations allowing it to renew its participation in January 2020. Virginia also finalized regulations and will begin participation in 2021. In October 2019, Pennsylvania's Governor took the first big step to joining RGGI when he signed an executive order stating that Pennsylvania was to join RGGI as an initiative to fight climate change. Pennsylvania has since published proposed regulations that would bring them into the program in 2022.

Sustainable Materials Management (SMM)

Program Description

On June 27, 2017, Governor Hogan signed Executive Order 01.01.2017.13, Waste Reduction and Resource Recovery Plan for Maryland. The order adopts a first-ever sustainable materials management (SMM) policy for Maryland that aims to minimize the environmental impacts of the materials' use throughout the entire lifecycle. The policy emphasizes environmentally and economically sustainable methods to capture and reinvest resources into our economy, including everything from metals and plastics to energy, nutrients, and soil. It initiates a stakeholder consultation process to establish ambitious, but achievable goals and to ensure tracking of complete materials management data. It also empowers new partnerships across State and local agencies, the agricultural, energy, and transportation sectors, environmental organizations, and recycling innovators.

New Program Initiatives

Specifically, the order contains the following initiatives:

- A stakeholder consultation process to improve MDE's methodology for tracking waste generation, source reduction, and recycling, including recommendations to better account for business recycling activities and new voluntary statewide goals for continuous improvement in SMM; MDE created the Waste Reduction and Resource Recovery Executive Order webpage (mde.maryland.gov/programs/LAND/RecyclingandOperationsprogram/Pages/Waste-Reduction-and-Resource-Recovery-Executive-Order.aspx) to track items related to SMM. MDE met with stakeholders to develop goals and improvements to SMM. The result is the publication of the Waste Reduction and Resource Recovery Plan Goals and Metrics Recommendations in April 2019. It is available on the web page mentioned above or a directly at mde.maryland.gov/programs/LAND/RecyclingandOperationsprogram/Documents/Waste%2

0Reduction%20and%20Resource%20Recovery%20Plan%20Goals%20and%20Metrics%20Recommendations.pdf.

- A technical assistance partnership between the Department of Commerce and MDE will help establish new recycling businesses in Maryland; MDE has worked with Commerce to create better linkages between both agencies' assistance opportunities for SMM-related businesses. Both agencies agreed to place links on their webpages to direct interested parties to each agency's webpage. This will enable SMM businesses visiting MDE's website to find Commerce's business assistance programs and those visiting Commerce's website to find MDE permit assistance resources.

  MDE also conducted research and completed a compilation of Commerce and other state agency business assistance programs for which organics recycling projects may qualify. Commerce has also identified a point person to serve as the lead of a SMM workgroup within the Commerce Subcabinet. This point person also takes the lead in arranging multi-agency meetings with Commerce and MDE representatives and proponents of SMM-related businesses interested in coming to Maryland, to identify and provide any permitting or business assistance.

- A partnership between the Department of Agriculture and MDE will provide research and demonstration of innovative nutrient recovery technologies in order to facilitate adoption of these technologies; MDE participates on the Technical Advisory Committee for the Animal Waste Technology Fund. The Animal Waste Technology Fund provides grants to companies that demonstrate new technologies on farms and provides alternative strategies for managing animal waste. The technologies may generate energy from animal waste, reduce on-farm waste in local waterways, and repurpose manure by creating marketable fertilizer and other products and by-products.

- A partnership between the MEA and MDE will research and promote adoption of energy recovery technologies such as anaerobic digestion (AD); MEA has a Commercial, Industrial and Agricultural grant program to support improving the energy efficiency and reducing the energy costs of enterprises in Maryland's commercial, industrial, and agricultural sectors.

  In support of energy recovery technologies such as AD and considering that some facilities may be subject to MDE, MDA and PSC permits and approvals, MDE worked with MDA, the PSC and several programs to develop a guidance document intended to assist prospective AD facilities in identifying applicable laws and regulations.

- A partnership between the Department of Transportation and MDE will provide guidance to increase the reuse of dredged materials, including by State agencies; and MDE worked with

the MDOT Maryland Port Administration (MPA) to publish technical screening criteria and guidance on the reuse of dredged materials. MDE created the Dredging and Dredged Material Management webpage at mde.maryland.gov/programs/Marylander/Pages/dredging.aspx.

- Outreach partnerships will increase awareness of the benefits of and opportunities for waste diversion.

On May 4, 2017, Governor Larry Hogan signed House Bill 171, entitled Yard Waste, Food Residuals, and Other Organic Materials Diversion and Infrastructure – Study, Chapter 384, Acts of 2017. The bill became effective July 1, 2017, and required MDE to study, review, explore, identify, and make recommendations regarding specified matters related to the diversion of yard waste, food residuals, and other organic materials from refuse disposal facilities; and to evaluate the status of infrastructure in the State.

The law required MDE to consult with multiple stakeholders to conduct the study. These stakeholders included: several state agencies; the University of Maryland (UMD); Johns Hopkins University's Center for a Livable Future; farm industry and environmental nonprofits; food service trade groups; the Maryland Food Bank; organic materials recycling businesses and trade groups; and other stakeholders in Maryland's organic materials recovery industry. A total of 10 public meetings were held, with participation and input from other interested parties. Some of the recommendations, which have been completed or are ongoing, include the development of partnerships between various State agencies to conduct research and provide assistance and opportunities to SMM related businesses. Specifically, one such recommendation was to expand the Farm Food Donation Tax Credit Pilot Program, which was later accomplished in the 2019 Legislative Session. This provision was extended to all counties through the 2021 tax year. Another recommendation of the law pertained to outreach to horse farm operators regarding composting. MDE, along with MDA and the UMD provided a day-long seminar in 2019, and another half day webinar in 2020.

MDE regularly participates in Sustainable Materials Management Maryland (SM3) efforts. SM3's vision is to improve the environment and create economic development opportunities in the State by identifying and executing creation and innovative sustainable materials management projects and activities, through private and public sector voluntary collaborations.

The Resource Management Program along with the Office of Communications within MDE utilizes social media to promote and inform the public on proper recycling and to post positive messages regarding waste diversion and sustainable materials management. These social media campaigns have been developed around recycling to reduce contamination as well as pet waste and anti-litter efforts. MDE's Recycling webpage continues to be updated and also contains a vast amount of resources. This was also an outcome of the HB 171 Study Group.

In addition, MDE participates in Keep Maryland Beautiful efforts, and also worked with Baltimore City to organize recycling collection and outreach events in October 2020. MDE organized collaborative food summits, conducted composting educational workshops, published a waste sort study; and annually holds a Rethink Recycling art sculpture contact for high school students.

Challenges

As MDE initiates the new partnership and consultation processes included in the executive order, it will work to better quantify the GHG emissions benefits and jobs impacts of the initiatives for inclusion in the final GGRA Plan.

The Port Partnership

Lead Agencies: MDE/MDOT/MPA/MEA

Program Description

In December 2015, MDE, MEA, and the MDOT Maryland Port Administration (MPA) entered into a voluntary agreement that commits the agencies to work cooperatively to identify, develop, and, when appropriate, implement voluntary projects that will reduce GHG emissions and increase energy efficiency at the Port of Baltimore (POB). The port partnership workgroup is primarily focused on reducing emissions at the Port to help the state meet air quality and climate change goals, but also acknowledges the role that the Port plays in driving economic growth and creating jobs.

The workgroup made up of representatives from the participating agencies has been meeting monthly to efficiently and effectively leverage resources and pool their knowledge to implement the agreement's goals. In December 2020, the partnership received significant support from MEA. The increased participation from important stakeholders, like MEA, resulted in an update to the 2015 Voluntary Agreement.

New Voluntary Agreement

MDOT MPA, MDE's Air and Radiation Administration (ARA), and MEA worked together on projects of mutual interest that have improved air quality and enhanced the port business environment. These innovative projects and programs have demonstrated both environmental and economic benefits to the region and the State. Since 2008, the POB has received $11 million in EPA grants to upgrade and buy new equipment and vehicles. The POB Diesel Equipment Replacement Program has achieved over 3,300 tons of pollutant reductions since 2008. MDE, MDOT MPA, and MEA desire to build on and enhance their prior cooperative efforts. By executing the agreement, the parties

seek to improve air quality, achieve GHG reductions, and enhance public health, thereby benefiting the region and the State. They also seek to support a vibrant and thriving POB business environment, thereby benefiting the economic health of the region and the State.

The parties seek to engage and solicit input from stakeholders, including those that have been underserved and overburdened, and the private sector, when evaluating projects and programs to implement. The parties commit to working cooperatively to implement projects and programs that reduce air pollutants such as nitrogen oxides and particulate matter, and that further the policy objectives of GGRA. This work should include projects and programs to increase climate resiliency, reduce air pollution, and lessen climate change impacts in communities.

The purpose of the updated Voluntary Agreement is to document and confirm the parties' ongoing commitment to pursue mutually agreeable and cooperative efforts that will sustain and advance the economic health of the POB and protect the environment of the State of Maryland. It is recognized that MDOT MPA can only represent its own programs and actions, and not those of private interests at the POB. The Voluntary Agreement also documents and confirms the Parties' commitment to advancing the use of clean energy where practicable.

RECITALS

WHEREAS, MDOT MPA, MDE and MEA are committed to the protection and restoration of the environment of the State of Maryland; and

WHEREAS, MDOT MPA, MDE and MEA are committed to advancing the economic health of the State of Maryland through successful Port related business practices and appropriate development activities; and

WHEREAS, MDOT MPA owns several marine terminals and Port facilities in the State, and has a legislatively mandated mission "to stimulate the flow of waterborne commerce through the State of Maryland in a manner that provides economic benefit to the citizens of the State"; and

WHEREAS, stewardship and sustainability of the environment and protection of human health are essential elements of MDOT MPA's mission and have been incorporated into its daily practices as reflected in its ISO 14001:2015 EMS Certification; and

WHEREAS, MDOT MPA has taken innovative and effective actions, implemented operational efficiencies, purchased equipment, and installed upgrades to reduce air emissions; and

WHEREAS, MDOT MPA is implementing innovative technologies to increase energy efficiency and clean energy and is working with MEA and MDE to identify new projects to achieve the Governor's Executive Order 01.01.2019.08 of a 10% reduction in energy consumption; and

WHEREAS, MDOT MPA, MEA, and MDE will collaborate on efforts to identify energy efficiency, alternative fuels, clean energy and energy resiliency opportunities that benefit the state's clean energy, climate and economic development; and workforce goals.

WHEREAS, MDOT MPA has conducted and will continue to conduct extensive stakeholder outreach and citizen engagement activities in pursuing its environmental initiatives; and

WHEREAS, MDE is Maryland's principal regulatory agency with jurisdiction in the areas of environmental protection and pollution prevention, including air quality and climate change; and

WHEREAS, the Parties acknowledge that implementing air quality improvement projects provides an important environmental co-benefit that improves water

quality in the Chesapeake Bay; and

WHEREAS, MDE has developed and implemented numerous emissions reduction projects in the State that utilized a variety of technologies; and

WHEREAS, the Parties will coordinate in identifying funding sources for project implementation including but not limited to government and foundation grant programs; and

WHEREAS, the Parties to this Agreement understand that both the operations of MDOT MPA and the air quality challenges facing the State of Maryland are complex, and require increased innovation, funding, and expertise; and

WHEREAS, the Parties intend by entering into this Agreement to be better able to address these challenges by, among other things:
1) fostering positive interagency coordination, consultation, and cooperation; 2) creating a framework for improving working relationships and for better understanding each other's programs; 3) building trust among the agencies involved in the processes; 4) sharing technical expertise; 5) engaging other stakeholders involved in regional air quality issues; and 6) to the extent possible, promptly sharing data and documents relevant to air quality emissions reduction strategies and implementation plans

NOW THEREFORE, THE PARTIES AGREE THAT:

1. They will continue to work cooperatively to identify, develop and when appropriate, implement new, cost-effective, voluntary programs to reduce emissions and increase energy efficiency.

2. MDE and MEA will identify and assist MDOT MPA in applying for federal and State grants for these purposes.

3. The Parties will continue to meet in a workgroup and, where appropriate, form new ones on specific areas, including, but not limited to, developing current emissions inventory, identifying opportunities where MDOT MPA can reduce emissions, and pursuing grant/funding opportunities to implement projects.

4. They will meet periodically to discuss the ongoing efforts and plans for the future.

Benefits

As a result of this unique collaboration, Maryland has made great strides in implementing Port-related projects that have supported a number of emissions reduction grant-supported initiatives, such as projects funded by the federal Diesel Emission Reduction Act (DERA) Grants. DERA-funded projects have supported the replacement of drayage trucks, cargo handling equipment, and installation of idle reduction equipment on switcher locomotives. To date, over $18 million has been invested into diesel emission reduction activities at the Port.

Agreement-supported projects to date will, over the lifetime of the equipment, reduce in excess of 2,500 tons of air pollutants, including nitrogen oxides, particulates, hydrocarbons and carbon monoxide. The emission reduction activities at the Port will also result in significant reductions in GHG emissions, primarily CO2 and black carbon.

The Port-related emission reduction projects continue through 2019 and 2020. The partnership was successful in obtaining a $2.4 million grant, as part of the 2018 DERA process, which will be used to upgrade drayage trucks, cargo handling equipment, and marine engines. In addition to the 2018 DERA initiative, there are several Port projects that will be funded as part of the VW Mitigation Plan (see Section 4.5.11). Funding from the Mitigation Plan will be used to reduce diesel emissions from the legacy fleet, including drayage trucks and cargo handling equipment. All of the 2019-2020 projects will not only reduce key air pollutants, like nitrogen oxide and fine particulates, but will continue to provide significant reductions of CO2 and black carbon.

The partnership also supports research opportunities. MDOT MPA sponsored fellows from the Environmental Defense Fund's (EDF) Climate Corps Program in the summers of 2018 and 2019 on two different research projects. The first project involved studying the potential effectiveness of natural gas fuel cell technology to reduce emissions. This fuel cell study provided guidance for the workgroup as it seeks cost effective reduction projects. MDOT MPA is deploying a natural gas fuel cell to help with peak energy savings in one of its maintenance buildings as a result of this work. The second project looked at carbon sequestration at restored wetlands on dredged material and used Hart Miller Island (HMI) as the case study (see additional information below).

The partnership plans to continue to implement new emission reduction programs every year between now and 2030.

Partners

In addition to the primary partners, MDE, MDOT, and MDOT MPA, the workgroup's projects and initiatives have benefited greatly with the active involvement of others, including EDF, MEA, the Maryland Clean Energy Center, the U.S. Maritime Administration, and private port businesses. The workgroup also continues to place a high priority on involving key stakeholders, especially those in underserved areas and has received direct input from residents of the Turner Station, Curtis Bay, and Brooklyn communities.

Conclusion

The workgroup will build on its initial successes by continuing to pursue ways for the Port to grow sustainably. Specifically, the workgroup will focus on developing future innovative emission reduction and energy-saving projects and has already identified potential funding sources for these projects.

Over the past 20 years, the State, through MDOT MPA has worked diligently to identify and implement a variety of environmental programs, with a focus on climate initiatives for MDOT MPA and its tenants' operations, including the following items:

- Quantifying GHG and criteria air pollutant emissions from Port operations through land-side and water-side air emission inventories, which began in 2008 with the 2006 Comprehensive Baseline Inventory of Landside Air Emissions. Inventories help identify target areas for GHG reductions and track the progress of those programs.
- Promoting energy efficiency and grid resiliency through Port-wide energy audits and engaging with energy service companies (ESCOs) to design, build, and fund projects that save energy (thereby reducing GHGs), reduce energy costs, and decrease operations and maintenance costs at Port and tenant facilities.
- Securing over $18 million in federal and state funding to replace or retrofit older, less-efficient diesel engines in drayage trucks, cargo-handling equipment, harbor craft, and switcher locomotives. A highlight of the diesel emission reduction program is the Dray Truck Replacement Program, which provides funds to truck owners to help defray the cost of replacing older trucks with newer, more efficient models. Approximately 200 trucks have been replaced through this program. While primarily focused on reducing criteria pollutant emissions, the newer trucks are more efficient, resulting in reduced GHG emissions as well as fuel consumption.
- Reusing dredged materials for wetland and coastal habitat restoration projects. Along with providing habitat and water quality benefits, wetlands help store carbon and decrease storm surges, helping to enhance coastal resiliency in adjacent waterways.
- Instituting new technologies at Port terminals, such as optical character recognition cameras/software to track container movements at the terminal and instituting chassis pooling to reduce the number of truck moves, thereby, reducing trips, idling, and emissions.
- Partnering with community groups to promote environmental awareness and funding projects, such as the Schoolyard Greening Program, which replaces pavement at local schools with trees and planting to reduce stormwater runoff, provide greenspace, and promote carbon uptake.

GHG emission reductions from the partnership have not been included in the GGRA Plan. The partnership's goal is to implement new emission reduction projects through 2030 and beyond. By 2030, this partnership could achieve an additional reduction in GHG emissions approaching the 500,000 metric tons of CO2e (carbon dioxide equivalent) level. The Port initiatives will not only help reduce emissions of CO2, but it will also help reduce emission of black carbon, a very potent GHG. As this effort continues to grow, MDE plans to include GHG reductions in future plan updates.

Hart Miller Island Carbon Sequestration

HMI is a State-owned former dredged material placement site located within the Chesapeake Bay near the mouth of Back River. The site was originally two separate islands, Hart Island and Miller Island, which were both eroding at a rapid pace. The Maryland Geological Survey predicted that Miller Island would be gone by 2008, and Hart Island by 2045. In 1970, the U.S. Congress approved deepening of the POB navigation channels, and MDOT MPA began placing dredged material to join and restore Hart and Miller islands. HMI now includes wetlands, forests, trails, and sand beaches managed by the Department of Natural Resources (DNR). The restored south area opened to the public in 2016 for wildlife viewing and recreation.

Along with restoring nearshore habitat and creating a resource for recreational activities, HMI serves as a potential CO2 sink. MDOT MPA is currently investigating the amount and rate of carbon sequestration in the site to assess if HMI could be a significant carbon capture and storage opportunity. Closure and restoration of former dredged material sites, such as HMI, may provide sustainable and long-term sequestration of carbon through vegetation growth and creation of wetlands and marshes.

Addressing Short-lived Climate Pollutants

Methane Emissions from Sources in the Oil and Gas Industry

Program Description

Maryland, through MDE, and 13 other states filed a motion to intervene in a lawsuit against EPA's actions to halt regulation of leaks of GHG emissions and other harmful air pollutants from new sources in the energy industry. EPA requested that this lawsuit be held by the court due to EPA's related action on the proposed rulemaking discussed below.

In 2018, the EPA proposed amendments to the new source performance standards (NSPS) for pollutant controls in the oil and gas industry that were adopted in 2016. EPA proposed to reduce the monitoring frequency of fugitive emissions at compressor stations, and to extend the allotted time for owners and/or operators of compressor stations to repair fugitive emission components.

Additionally, EPA sought comment on the removal of the transmission and storage segment as a source category subject to new source performance standards. Lastly, EPA sought comment on extending the time period for owners and/or operators of well sites or compressor stations to conduct an initial monitoring survey and reoccurring leak inspections. MDE submitted written comments opposing EPA's proposed amendments to the new source performance standards for the oil and natural gas sector. Despite opposition from several states and environmental advocacy organizations, the EPA finalized the proposed amendments on August 13, 2020.

Maryland and 14 other states filed a lawsuit against the EPA for failing to perform a legal duty to control emissions of methane from existing oil and gas operations. Specifically, the suit charges that the EPA has violated the CAA by 'unreasonably delaying' its mandatory obligation under the Act to control methane emissions from these operations.

Implementation Milestones

The energy industry can be divided into four segments: (1) production; (2) gathering and processing; (3) transmission and storage; and (4) distribution. Maryland began taking steps to restrict methane emissions from the value chain by establishing law to ban hydraulic fracturing in the State—operations which occur in the production segment. With no gathering and processing operations in the State, Maryland then turned to the transmission and storage segment. On October 23, 2020, Maryland finalized regulations to reduce vented and fugitive emissions of methane from both new and existing natural gas transmission and storage facilities. Six existing facilities in Maryland will begin conducting surveys for methane leaks and report to MDE, beginning May 1, 2021. Staff are currently in the process of evaluating and drafting regulatory options to address methane emissions from the last segment of the chain, the distribution segment.

Methane Emissions from New and Existing Landfills

In 2018, a coalition of eight states, including Maryland, filed a lawsuit (California v. EPA) against the EPA over its failure to implement and enforce a critical landfill regulation. The regulation, which went into effect on October 28, 2016, requires new, modified and reconstructed municipal solid waste (MSW) landfills (the NSPS) as well as existing MSW landfills (emission guidelines or EG) to reduce emissions from methane-rich landfill gas. Despite litigation and other extenuating factors, MDE is in the process of updating the current Maryland regulation (COMAR 26.11.19.20 - Control of Landfill Gas Emissions from Municipal Solid Waste Landfills). On September 21, 2020, MDE held a virtual stakeholder meeting to discuss a new regulation that will build off the 2016 NSPS requirements for MSW landfills and will include additional requirements.

Hydrofluorocarbons

Program Description

Under a federal CAA program designed to identify and evaluate alternatives to stratospheric ozone-depleting substances, HFCs have been one of the most common alternatives. However, HFCs are extremely potent GHGs — one pound of certain HFCs is potentially as potent as 1,400 pounds of CO2. After efforts to phase out HFC stalled at the federal level, states began establishing their own phase-out initiatives. Maryland has finalized HFC regulations that are consistent with rules and laws enacted by U.S. Climate Alliance states, such California, Washington, Vermont, New Jersey, and Colorado. The regulations also model the stalled EPA rules, which phase out the use of certain HFCs in various end-uses — specifically in foam, aerosol propellants, refrigeration, and air-conditioning products and equipment — and will encourage the use of substances with lower GHG emissions that are widely available on the market. Other states in the U.S. Climate Alliance are expected to take similar steps.

Implementation Milestones

Maryland HFC regulations were adopted on October 6, 2020,and are in effect as of November 2, 2020. Compliance deadlines begin on January 1, 2021 for certain end-uses and will continue through January 1, 2024.

Challenges

Several companies approached MDE requesting an extension on compliance deadlines due to COVID-19 impacts on business operations. In response, MDE included a regulatory relief statement in the technical support document that accompanied the regulations. The statement directs companies facing COVID-19-related compliance challenges to submit a plan for compliance for review in accordance with Section 2-611 of the Environment Article. The submitted plan will be made available for public comment for 30 days on MDE's website, and MDE will, as required by statute, issue its response to the plan within 90 days.

Non-Traditional Programs

Climate Champions

Program Description

The Climate Champions program provides an opportunity for organizations to voluntarily commit to actions related to climate change and be recognized for their actions. These actions include, but

are not limited to mitigating the release of GHGs, building awareness on the issue, and adaptation and response measures. Participants document actions taken and the resultant outcomes. This documentation can include quantifiable or non-quantifiable metrics. Members are recognized for their participation in the program and successful actions are publicly recognized.

GGRA allows for voluntary actions to be credited toward meeting the State's goals. The Climate Champions program allows MDE to capture those voluntary actions that may be credited, including recognizing those organizations implementing those actions. To satisfy the GGRA goals related to the economic benefits resulting from addressing climate change, the Climate Champions program is a way to capture and document those benefits.

In 2018, MDE implemented the Maryland Climate Champion Challenge as part of the Maryland Green Registry. Participants identified a minimum of five actions that they implemented related to addressing climate change. Organizations entering the challenge include businesses, State and local government agencies and universities. Participants were recognized at an event on June 28, 2018.

Idle Free Maryland

Program Description

Idle Free Maryland is a partnership between the State, the private sector and Maryland schools, which is designed to reduce unnecessary idling through outreach, education and voluntary action. For now, the initiative focuses on three types of idling activities:

- Motorists who idle their cars for a variety of reasons,
- Idling by truckers, and
- Idling around schools.

Idling emits about 11 million tons of CO2, 55,000 tons of nitrogen oxides, and 400 tons of particulate matter in the U.S. each year. These pollutants contribute to climate change and can cause cancer, respiratory issues, reproductive effects, birth defects and other serious illnesses. Idling also impacts the health of Maryland streams, rivers, lakes, bays and coastal waters, increasing the levels of nitrogen in the Chesapeake Bay. Reducing vehicle idling is increasingly seen as a way to improve air quality and to help meet climate change goals.

The goal of the Idle Free program is to significantly reduce idling by building awareness of its impact on communities. The program establishes partnerships with motorists, communities, and the transportation industries with the intention of reducing emissions from unnecessary idling by decreasing the social tolerance of idling through fact-based education.

Resources have been created to help spread the word about idling's impact on health and the environment. The tools developed are aimed at educating motorists, schools, and transportation

industries on ways to implement an idle-reduction plan. The campaign includes a toolkit of more than 30 products, including fact sheets, social media materials, pledge sheets, signage, policies and other communications media. This includes resources developed specifically for implementation in schools (mde.maryland.gov/idlefreeMD).

Benefits

If every driver who took the pledge to be idle free could reduce their idling by just five minutes a day, it would prevent 25 pounds of harmful air pollutants and 260 pounds of CO2 from entering the atmosphere each year. Idle Free Maryland reductions will help the State meet its climate change goals by reducing GHG emissions. The initiative will also reduce emissions of other air pollutants and help the State better protect public health by continuing to make progress on ground-level ozone and fine particulate air pollution. If half of Maryland drivers would make that "five minutes a day" commitment, more than 50 million pounds of pollutants per year could be prevented from entering Maryland's air. Idle Free Maryland will not only improve the air quality in Maryland communities, but also reduce the negative impact of air pollution on streams, rivers, lakes, bays and the Chesapeake Bay.

Partners

MDE and its State partners, MDOT, MEA, and the Maryland State Department of Education, are working with several key partners to implement Idle Free Maryland. These include the Maryland Motor Truck Association. MDE is working with individual schools, many of which are Green Schools, to assist in implementing their own idle reduction strategies. Green Schools is a program administered by the Maryland Association for Environmental and Outdoor Education (MAEOE) so that schools and their communities can evaluate and improve their efforts in environmental sustainability. So far, over 55 partner schools and five State Green Centers, which work with schools to achieve their educational and environmental goals, have signed on as partners. MDE has participated in Green School evaluations, presented to teacher conferences, and had a booth at MAEOE's year-end Youth Summit where students could play games and get stickers while teachers could sign up their schools to become Idle Free Maryland partners. Opportunities for further engagement with communities, local governments, school systems and additional transportation industry sectors are continually being sought.

Conclusion

The tools and resources to launch Idle Free Maryland have been completed. Additional outreach and stakeholder engagement are planned to increase awareness of the program. MDE will continue to evaluate potential recognition and incentive programs to encourage involvement. There will also be increased emphasis on tracking the results from the Idle Free campaign and identifying avoided emissions due to the implementation of the program.

Projected emission reductions from the Idle Free initiative through 2030 have not been included in the 2019 GGRA Draft Plan. MDE expects the GHG emission reduction from this effort to exceed 100,000 metric tons of CO2e by 2030. As the program matures, MDE may include reductions in future updates to the plan.

Climate Ambassadors

Program Description

The Climate Ambassador Pilot Program is an effort to educate key stakeholders on climate change and the important actions Maryland is taking to address climate issues, in a way that allows these stakeholders to educate others on the same issues. In 2016, the Education, Communication, and Outreach (ECO) Working Group of the MCCC identified the need for a voluntary program that allows for education and training on the causes of climate change, its consequences, and actions that can be taken at the local level. The program will train Climate Ambassadors on climate science and how to inform others of climate change, and the adaptation and mitigation measures the State is using to address the issue.

Programmatic Approach

The Climate Ambassador Program gauges the success of and interest in a climate education program, and incorporates improvements for future implementation. MDE, in partnership with Maryland Delaware Climate Change Education Assessment and Research center (MADE CLEAR), is implementing the initial Climate Ambassadors training program with Bon Secours Community Works in West Baltimore. The curriculum is designed to train stakeholder participants around locally specific climate change concerns, impacts, and action steps. A “train the trainer” approach is used so that individuals can train and educate others, particularly among peers. This approach will encourage information sharing throughout communities and strengthen climate change action in Maryland. Individuals that become Climate Ambassadors are recognized for their participation.

The program endeavors to provide a deep knowledge base on climate change that reflects the interest of the community or organization receiving the training. The Climate Ambassador program can provide training on a variety of issues, including, but not limited to changing climate patterns, health impacts, social and economic impacts, equity, policy implications, and job creation. Specific frameworks and lessons learned will be shared between the Climate Ambassadors. The ECO Working Group serves as a conduit for this information sharing.

The development and implementation of Climate Ambassador Programs are supported by various agencies, including MDE, Maryland Department of Health (MDH), and DNR, through their existing stakeholder engagement efforts. In addition, community organizations, nonprofits, and environmental advocacy programs have shown interest in the training. MADE CLEAR has also

played a key role in the Ambassador program.

Additionally, MDE has also engaged with the Executive Director of SAFE Alternative Foundation for Education to implement a Climate Ambassador Program for their students. MDE has conducted extensive outreach in underserved communities to identify opportunities to further implement the Climate Ambassador Program. MDH is also implementing a Community Ambassador program in Prince George's County tailored to middle and high school students.

Education and Community Outreach Working Group

Program Description

The MCCC and the State have identified underserved communities as a priority for building awareness on issues related to climate change. To pursue this goal, the State, through MDE, DNR, and MDH, has made an effort to ensure that residents living in underserved communities are aware of the impacts of climate change, the actions that can be taken to address those impacts, and the available programs that can help fund some of the actions.

MDE Efforts

As part of this initiative, MDE has presented at community meetings and met with individual representatives from the Turner Station, Curtis Bay, West Baltimore, eastern Baltimore County and northern Anne Arundel County communities as well as with air and public health advocacy groups that interact directly with underserved communities. These meetings have presented good opportunities for MDE to learn about residents' air quality concerns, provide overviews on the impacts of climate change, and establish relationships and processes for sharing information in the future.

In support of the initiative, fact sheets developed by MCCC have been distributed to citizens and other stakeholders throughout Maryland, including in underserved communities. Additionally, MDE supports MCCC's ECO Working Group to coordinate and leverage the work in underserved communities being performed by the Commission on Environmental Justice and Sustainable Communities as well as the Children's Environmental Health and Protection Advisory Committee.

Benefits

All Maryland residents need to hear about the potential impacts of climate change and the actions that they can take to reduce their GHG emissions. MDE's initiative works to ensure that underserved communities are not left out of this dialogue. The meetings with communities and individuals in underserved areas have enabled MDE to convey important information about climate change to these audiences. In the meetings, MDE has explained how GHGs are emitted into the

atmosphere, the severe weather events and sea level rise that these emissions cause, and the resultant threats to human health and quality of life.

Actions that communities can take to reduce emissions and how they can protect themselves from the impacts of climate change are also explained. Perhaps most importantly, underserved communities are made aware of the programs that can help shoulder the financial burden for actions such making homes more energy efficient. Through these interactions, MDE is actively learning how to enhance its programs to help underserved communities. Working with citizens in these communities is an opportunity to build awareness of state policies and programs that focus on the impacts from climate change. As agencies conduct outreach with citizens, the feedback received is invaluable in the consideration of new policies and programs to aid these communities.

Partners

MDE has met with citizens andleading members of various community associations and organizations active in underserved communities. These include, but are not limited to:

- Greater Baybrook Alliance
- Bon Secours Community Works
- Turner Station Conservation Teams
- North Point Peninsula Council
- St. Helena Community Association
- Safe Alternative Foundation for Education
- Maryland Environmental Health Network
- Greater Pasadena Council
- Dundalk Renaissance Corporation
- Community of Curtis Bay Association

MDE looks forward to continued engagement with these partners, as well as developing productive relationships with other communities and advocacy groups.

Federal Measures

The GGRA requires that MDE report on the state of any federal program designed to reduce GHG emissions. The following initiatives are specific to EPA, but there are additional federal programs being implemented by other federal agencies such as Housing and Urban Development, Department of Energy, United States Department of Agriculture, etc. that are not specifically discussed in this chapter. Many of the rules and initiatives below are being challenged by states and industry in the courts.

Implications of a Change in Administration on Environmental Policy

The Affordable Clean Energy Rule (ACE) repealed and replaced the Clean Power Plan (CPP). The ACE rule replaces a regulation adopted under Clean Air Act Section 111 to reduce CO2 emissions from power plants with a system that defers to states to establish their own standards. Despite being repealed, the CPP is currently sitting with D.C. Circuit Court.

A new administration could potentially invalidate ACE, but has not indicated whether it will try to resurrect the CPP. Maryland is well positioned to comply with future federal programs given RGGI, the Renewable Portfolio Standard (RPS), and the proposed Clean and Renewable Energy Standard (CARES). However, Maryland will benefit from future federal programs as the federal programs clean the electricity mix that Maryland accounts for based on in-state consumption.

Other EPA Regulatory Initiatives

Stationary Sources

The New Source Review (NSR) program requires industrial facilities to install updated pollution control equipment when they are newly built or when a change is completed that increases the facility's emissions significantly. There are three types of NSR programs. First, the Prevention of Significant Deterioration program applies to major new sources or major modifications to a source within an attainment area, and requires the source install the best available control technology. Second, the Nonattainment NSR program applies to major new sources or major modifications to a source within a nonattainment area, and requires the source install the lowest achievable emission rate system. Third, the Minor NSR program applies to minor new sources or minor modifications to major or minor sources within both an attainment or nonattainment area, and requires the source meet any emission control measures required by the state.

Along with the proposal of the ACE Rule in 2018, the EPA proposed a change to the NSR program. The change to the NSR program would allow sources to exceed annual emissions, as long as their hourly emission rates are not exceeded. The new exemption allows electric generating units (EGUs) to extend their life and increase their use of fossil fuels, leading to increased release of CO2, and other pollutants. EPA's regulatory impact assessment projected substantial increases in sulfur dioxide (SO2) and nitrogen oxide under the ACE Rule compared to the CPP.

Transportation/Mobile Sources

The EPA proposed the *S*AFE Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks. The proposed SAFE Vehicles Rule would replace the existing federal 2021-2025 light-duty vehicle GHG emission standards that matched the California standards. The proposed SAFE Vehicles Rule would roll back these existing federal light-duty vehicle emissions standards for model years 2021-2025. The proposed rule also curtails the authority for states to adopt

California's standards by limiting states in adopting more stringent rules than the federal government.

Renewable Fuel Standard Program

EPA is also responsible for developing and implementing regulations to ensure that transportation fuel sold in the U.S. contains a minimum volume of renewable fuel. By 2022, the Renewable Fuel Standard (RFS) program will reduce GHG emissions by 138 million metric tons, about the annual emissions of 27 million passenger vehicles, replacing about 7% of expected annual diesel consumption and decreasing oil imports by $41.5 billion.

Heavy-Duty Trucks

The EPA and the U.S. Department of Transportation's National Highway Traffic Safety Administration jointly finalized standards for medium- and heavy-duty vehicles that would improve fuel efficiency and cut carbon pollution. The vehicle and engine performance standards would cover model years 2018-2027 for certain trailers and model years 2021-2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks. The final standards are expected to lower CO2 emissions by approximately 1.1 billion metric tons, save vehicle owners fuel costs of about $170 billion, and reduce oil consumption by up to two billion barrels over the lifetime of the vehicles sold under the program.

GHG Power Plant Emission Reductions from Federal Programs

GHG emissions from the energy supply sector in Maryland include emissions from fossil fuel-fired electricity generation and represent a substantial portion of the State's overall GHG emissions. Electricity demand in Maryland is expected to increase over time and thus, if unmitigated, GHG emissions will also likely increase. Because approximately 40% of electricity consumption in Maryland is generated out-of-state in the surrounding PJM electricity grid region, State programs alone cannot effectively control GHG emissions from power consumed in Maryland.

Existing and proposed federal rules summarized in this section (Boiler Maximum Achievable Control Technology; GHG New Source Performance Standard; and GHG Prevention of Significant Deterioration Permitting Program) are expected to reduce GHG emissions from Maryland and out-of-state power generators.

Boiler Maximum Achievable Control Technology (MACT)

The Boiler MACT rule applies to any stationary source with a boiler or group of stationary sources with boilers that emit 10 tons per year of any single Hazardous Air Pollutant (HAP) of 25 tons per year of any combination of HAPs. The Boiler MACT rules require operators to conduct a boiler tune-up to improve efficiency, minimize fuel consumption, and reduce emissions. The Boiler MACT program's purpose is to reduce GHG emissions from both Maryland and out-of-state power

generators.

The Boiler MACT rule will likely be updated in 2021. In compliance with U.S. Sugar Corp. vs EPA, EPA revised its MACT floor for 34 boiler subcategories.

GHG New Source Performance Standard

Program Description

EPA is using the New Source Performance Standard's authority under the federal CAA to promulgate new regulations to reduce GHG emissions from fossil fuel-fired power plants. These standards apply to new electric generating units and are based on existing technologies. EPA is coordinating this action on GHGs with a number of other required regulatory actions for other pollutants, thereby enabling electric generating units to develop multi-pollutant strategies to reduce pollutants in a more efficient and cost-effective way than would be possible by addressing multiple pollutants separately.

Program Objectives

The GHG New Source Performance Standard is designed with the intent to lower GHG pollution from fossil fuel-fired power plants.

Implementation Milestones

The New Source Performance Standard is fully enforceable through the federal CAA. MDE will implement the federal rules by adopting it into Maryland state regulations. The MDE Air Quality Compliance Program will then insure that the utilities comply with the requirements. Based on certified emissions reports, the MDE will be able to determine the amount of GHG reductions achieved.

GHG Prevention of Significant Deterioration Permitting Program

Program Description

The Prevention of Significant Deterioration (PSD) program is a federal preconstruction review and permitting program. It applies to new major stationary sources and major modifications at existing sources. PSD requires the application of Best Available Control Technology (BACT) to control emissions of certain pollutants, which now include GHGs. Sources subject to the requirements of the PSD program must evaluate and apply currently available measures and future technology as it develops to reduce GHG emissions.

The PSD program's "increment" is the amount of pollution an area is allowed to increase. The PSD program's increments prevent the air quality in clean areas from deteriorating to the level set by

the National Ambient Air Quality Standards. The National Ambient Air Quality Standards is a maximum allowable pollution amount. A PSD program increment, on the other hand, is the maximum allowable increase in concentration that can occur above a baseline concentration for a pollutant. The baseline concentration is defined for each pollutant and, in general, is the ambient concentration at the time that the first complete PSD permit application affecting the area is submitted. Significant deterioration is said to occur when the amount of new pollution would exceed the applicable PSD increment. It is important to note, however, that the air quality cannot deteriorate beyond the concentration allowed by the applicable National Ambient Air Quality Standards, even if not all of the PSD increment is consumed.

Program Objectives

The PSD program aims to limit the emissions of pollutants and GHGs by mandating that stationary sources use BACT. BACT determination is designed to be fair, as it considers the cost-effectiveness and relative energy and environment impacts of the controls.

Greenhouse Gas Reporting Program

The Greenhouse Gas Reporting Program collects GHG data from large emission sources across a range of industry sectors, as well as suppliers of products that would emit GHGs if released or combusted. GHG data are available through the Greenhouse Gas Reporting Program Data Publication Tool: epa.gov/ghgreporting/ghgdata/reportingdatasets.html.

Short-Lived Climate Pollutants

Program Description

SNAP was established under Section 612 of the CAA to identify and evaluate substitutes for ozone-depleting substances. The program looks at overall risks to human health and the environment of existing and new substitutes, publishes lists and promotes the use of acceptable substances, and provides the public with information. Based on a partial vacatur and remand, the EPA plans do not apply the HFC listings from the 2015 Rule 20. On June 12, 2020, a new rule was proposed that lists several substances as acceptable, acceptable subject to use conditions, or acceptable subject to narrowed use limits and clarifies status of acceptable fire suppression alternative.

Current Status of SNAP

On February 26, 2020, EPA affirmed the final rule, Protection of Stratospheric Ozone: Revisions to the Refrigerant Management Program's Extension to Substitutes. The final rule rescinds requirements for leak repair and maintenance of appliances using 50 or more pounds of substitute refrigerants, such as HFCs. The rule went into effect on April 10, 2020.

On April 7, 2020, the D.C. Circuit Court ruled that EPA did not properly implement its 2017 decision in Mexichem Fluor, Inc. v. EPA, 866 F.3d 451 (D.C. Cir.). In that case, the court determined that EPA could forbid companies using ozone-depleting substances from switching to HFCs as a substitute. The court also determined that EPA did not have the authority to make companies switch a second time if they had already switched to using HFCs as a replacement before the agency realized the harmful effects of HFCs. The D.C. Circuit Court now decides that EPA's response to the decision went too far by removing HFCs from the list of unsafe substitutes all together, thereby allowing current users of ozone-depleting substances to now shift to HFCs. The D.C. Circuit Court vacated EPA's guidance because it was made without notice to the public or an opportunity for comment. The court remanded it back to EPA for further proceedings. Nat. Res. Def. Council v. Wheeler, No. 18-1172 (D.C. Cir.).

On May 11, 2020, Maryland along with a coalition of other states and the Natural Resources Defense Council filed two separate petitions in the D.C. Circuit Court challenging EPA's 2020 refrigerant management rule. Nat. Res. Def. Council v. Wheeler, Docket No. 20-01150 (D.C. Cir.).

As efforts to phase out HFCs stalled at the federal level, states began establishing their own phase-out initiatives. Maryland has finalized HFC regulations that are consistent with rules and laws enacted by U.S. Climate Alliance states, such California, Washington, Vermont, New Jersey, and Colorado. The regulations also model the stalled EPA rules, which phase out the use of certain HFCs in various end-uses—specifically in foam, aerosol propellants, refrigeration, and air-conditioning products and equipment—and will encourage the use of substances with lower GHG emissions that are widely available on the market. Other states in the U.S. Climate Alliance are expected to take similar steps.