

Department of Legislative Services
 Maryland General Assembly
 2019 Session

FISCAL AND POLICY NOTE
 First Reader

House Bill 514 (Delegates Stein and Barve)
 Economic Matters and Environment and
 Transportation

Greenhouse Gas Emissions Reductions - Statewide Greenhouse Gas Inventory
 and Carbon Sequestration

This bill requires the Maryland Department of the Environment (MDE), beginning January 1, 2020, and biennially thereafter, to establish a greenhouse gas (GHG) emissions reduction target, as specified. By July 1, 2021, and biennially thereafter, MDE must determine whether the target was exceeded and calculate the cost to sequester the amount of carbon dioxide (CO₂) emissions equivalent to the amount of GHG emissions that exceeded the target. The Governor must include funding in the State budget (up to \$25 million) to cover the sequestration costs, as specified. MDE, in consultation with the Maryland Department of Agriculture (MDA), must award a contract to sequester the amount of CO₂ emissions equivalent to the amount of GHG emissions that exceeded the target. **The bill takes effect July 1, 2019, and terminates June 30, 2032.**

Fiscal Summary

State Effect: General fund expenditures increase by \$0.8 million in FY 2020. Future years reflect ongoing costs and mandated funding beginning in FY 2023. Revenues are not affected. **This bill establishes a mandated appropriation from FY 2023 through 2032.**

(\$ in millions)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Revenues	\$0	\$0	\$0	\$0	\$0
GF Expenditure	0.8	0.8	0.8	25.8	25.8
Net Effect	(\$0.8)	(\$0.8)	(\$0.8)	(\$25.8)	(\$25.8)

Note: () = decrease; GF = general funds; FF = federal funds; SF = special funds; - = indeterminate increase; (-) = indeterminate decrease

Local Effect: The bill does not materially affect local government finances or operations.

Small Business Effect: Meaningful.

Analysis

Bill Summary: Beginning January 1, 2020, and on January 1 of each even-numbered year thereafter (through 2030), MDE must establish a GHG emissions reduction target that is set at an amount that ensures that the requirement to reduce GHG emissions by 40% from 2006 levels by 2030 is achieved, as specified. The target must be expressed as (1) a percentage of the State's total economy-wide GHG emissions and (2) in million metric tons of CO₂ equivalents (MMtCO₂e).

By July 1, 2021, and by July 1 of each odd-numbered year thereafter (through 2031), MDE must calculate the GHG emissions reductions achieved during the previous target period, the amount of GHG emissions that exceeded the target, and the amount of CO₂ emissions equivalent to that amount. In each year that MDE determines that the target has been exceeded, the Secretary of the Environment must determine the cost of sequestering the amount of CO₂ emissions equivalent to the amount of GHG emissions that exceeded the target. This cost must be provided to the Governor, and the Governor must include an amount equivalent to that cost in the State budget for the fiscal year after the cost determination is made. The amount included in the State budget may not exceed \$25 million.

If GHG emissions for a previous target period exceed the target amount, MDE, in consultation with MDA, must issue a request for proposals to select a Maryland-based entity to sequester CO₂ emissions in an amount equal to the amount of GHG emissions that exceeded the target. A proposal must meet specified requirements, including that it must include CO₂ sequestration activities that MDE determines provide verifiable and long-term sequestration, including forestation and agricultural activities. MDE may select multiple proposals for the sequestration of CO₂ emissions. By December 1 each year that MDE determines that a target has been exceeded, MDE, in consultation with MDA, must award a contract for sequestration activities that (1) in the aggregate, does not exceed \$25 million and (2) gives priority to proposals that sequester CO₂ on the most efficient basis. The funds for a contract must be allocated on July 1 of the year after MDE determines that a target has been exceeded.

Current Law/Background: A "CO₂ equivalent" is the measurement of a given weight of GHG that has the same global warming potential, measured over a specified period of time, as one metric ton of CO₂.

Maryland's Healthy Air Act

The Healthy Air Act of 2006 established emission limits for nitrogen oxides, sulfur dioxide, and mercury from specified electric generating facilities in the State. The Act also addressed CO₂ emissions by requiring the Governor to include the State in the Regional

Greenhouse Gas Initiative (RGGI). In 2007, Maryland joined RGGI, a cap-and-trade program established in conjunction with eight other northeastern and mid-Atlantic states. Each state limits CO₂ emissions from electric power plants, issues CO₂ allowances, and establishes participation in CO₂ allowance auctions. In August 2017, the participating states agreed to further reduce the program's carbon pollution cap.

Greenhouse Gas Emissions Reduction Act

The Greenhouse Gas Emissions Reduction Act, originally enacted in 2009 and made permanent and expanded in 2016, was enacted in light of Maryland's particular vulnerability to the impacts of climate change. Under the Act, the State must develop plans, adopt regulations, and implement programs to reduce GHG emissions by 25% from 2006 levels by 2020 and must further reduce GHG emissions by 40% from 2006 levels by 2030; the 2030 reduction requirement terminates December 31, 2023. MDE advises that to meet the 2030 reduction requirement, the State needs to reduce approximately 60 MMtCO₂e. MDE is expected to release a draft plan to reach the 2030 reduction requirement soon.

Pursuant to the Act, by October 1, 2022, MDE must report on the progress toward achieving the 2030 reductions as well as the reductions needed by 2050 to avoid the most dangerous impacts of climate change, as specified. MDE is also required to review and publish an updated statewide greenhouse gas emissions inventory every three years. The most recent inventory was due in 2017 but has not yet been published; MDE advises that it expects to publish it soon. **Exhibit 1** provides a timeline of key dates and activities specified under the Greenhouse Gas Emissions Reduction Act.

To achieve GHG reductions, the State developed a comprehensive, multi-sector, multi-agency plan with assistance from more than a dozen State agencies and nongovernmental organizations. Among the suite of Maryland's programs, EmPOWER Maryland, the Maryland Renewable Energy Portfolio Standard, and the State's participation in RGGI are projected to provide some of the greatest reductions in GHG emissions.

Exhibit 1
Key Dates under the Greenhouse Gas Emissions Reduction Act

<u>Date</u>	<u>Action</u>
December 31, 2018	MDE deadline to submit proposed 40% emissions reduction plan to Governor and General Assembly, following public workshops
December 31, 2019	MDE deadline to adopt final 40% emissions reduction plan
Calendar 2020	State deadline to reduce GHG emissions by 25% below 2006 levels Inventory of statewide GHG emissions due
October 1, 2022	Deadline for submission of independent academic study of economic impact on manufacturing sector; and MDE deadline for submission of report on progress toward required 2030 reduction and toward achieving reductions needed by 2050 based on contemporary science
December 31, 2023	Termination of the 2030 reduction goal
Calendar 2023	Inventory of statewide GHG emissions due
Calendar 2026	Inventory of statewide GHG emissions due
October 1, 2027	MDE deadline for submission of report on progress toward achieving the 2030 reduction goal and toward achieving reductions needed by 2050 based on contemporary science
Calendar 2029	Inventory of statewide GHG emissions due
Calendar 2030	State deadline to reduce GHG emissions by 40% below 2006 levels, unless otherwise specified

GHG: greenhouse gas

MDE: Maryland Department of the Environment

State Expenditures: General fund expenditures increase by \$826,365 in fiscal 2020 for MDE and MDA to hire staff to set annual GHG emissions targets, conduct an annual statewide GHG emissions inventory, and identify methods to sequester CO₂ emissions, as discussed below.

However, the Department of Legislative Services advises that a significant portion of the costs associated with this bill will be incurred beginning in fiscal 2023 due to the bill's requirement that the Governor include funding in the State budget each year in an amount equivalent to the cost of sequestering CO₂ emissions equivalent to the amount of GHG emissions that exceed the target. Beginning in fiscal 2023, general fund expenditures increase by nearly \$26.0 million annually for staff and sequestration contracts. The information and assumptions used in calculating the estimate are stated below:

- as mentioned above, State GHG emissions need to be reduced by roughly 60 MMtCO_{2e} to meet the 2030 reduction requirement;
- the current program is not designed to result in linear GHG emissions reductions over time, so it is likely that the reduction target is not met each year; and
- obtaining compliance-grade sequestration is expensive (as discussed below) and \$25 million is a relatively minimal amount of funding given the level of reductions needed; accordingly, it is assumed that the maximum amount of sequestration funding authorized in the bill (\$25 million) is spent each year.

According to MDE, agricultural or forested land can sequester carbon at a rate of approximately five metric tons per acre. *For illustrative purposes*, MDE advises that if the State misses a GHG emissions reduction target by one million metric tons in any given year, up to about 200,000 acres need to be placed into agricultural production or forested. Assuming it costs \$1,000 for each acre of sequestration, only 25,000 acres of sequestration can be accomplished with the \$25 million cap on annual sequestration expenditures; this would only offset 125,000 metric tons of CO₂ emissions.

MDE also advises that sequestration projects take a long time to have an effect on emissions reductions, and MDE does not expect any GHG emissions reductions from sequestration activities in one year to result in reductions by the next year.

Maryland Department of the Environment – Administrative Expenditures

General fund administrative expenditures for MDE increase by \$621,819 in fiscal 2020, which accounts for the bill's July 1, 2019 effective date. This estimate reflects the cost of hiring four natural resources planners, two regulatory and compliance engineers, one senior regulatory and compliance engineer, and one regulatory and compliance engineer supervisor to (1) obtain necessary data and conduct an updated statewide GHG emissions inventory each calendar year; (2) conduct quality control and quality assurance reviews of

the annual emissions inventory; (3) set annual emissions reduction targets and determine whether the reduction targets are met; (4) develop expertise in carbon sequestration and develop criteria for appropriate sequestration projects in order to determine the cost of sequestering excess CO₂ emissions; (5) submit requests for proposals and award sequestration contracts; and (6) conduct ongoing review of the implementation of sequestration projects. It includes salaries, fringe benefits, one-time start-up costs, and ongoing operating expenses. The information and assumptions used in calculating the estimate are stated below:

- MDE currently publishes an inventory of statewide GHG emissions every three years, and current staff levels struggle to meet this deadline, so requiring the department to publish a compliance level inventory annually significantly increases the department’s workload; and
- MDE does not collect data on CO₂ sequestration, and currently available data does not meet the quality of the data used in MDE’s GHG emissions inventory, so MDE needs to create a new template and add data to the current inventory process in order to determine annual CO₂ sequestration requirements.

Positions	8
Salaries and Fringe Benefits	\$577,699
Equipment/Operating Expenses	<u>44,120</u>
Total MDE FY 2020 Expenditures	\$621,819

Future year administrative expenditures reflect full salaries with annual increases and employee turnover and ongoing operating expenses.

MDE notes that even with additional staff and resources, publishing an emissions inventory by July 1 each year will be virtually impossible because of data limitations; MDE reports that the earliest the emission inventories can be completed is the fall of the following year.

Maryland Department of Agriculture – Administrative Expenditures

General fund expenditures for MDA increase by \$204,546 in fiscal 2020, which accounts for the bill’s July 1, 2019 effective date. This estimate reflects the cost of hiring one administrator and one agricultural resource conservation specialist to (1) identify and assess potential carbon sequestration measures; (2) assist MDE with executing contract agreements for necessary CO₂ sequestration measures; (3) verify and maintain agricultural CO₂ sequestration measures; and (4) report annually to MDE. It includes salaries, fringe benefits, one-time start-up costs, and ongoing operating expenses, including annual consulting costs. The information and assumptions used in calculating the estimate are stated below:

- MDA is the lead agency in charge of administering CO₂ sequestration contracts for agricultural operations;
- MDA does not have expertise in CO₂ sequestration;
- according to MDA, the technical understanding of carbon sequestration potential of agricultural practices is still theoretical, and no field validation studies exist that would allow MDA to assess or estimate tons of sequestered carbon; thus, ongoing consulting assistance is needed to develop program criteria and evaluate program performance; and
- although contracts to sequester excess CO₂ emissions will not be awarded until fiscal 2023, staff are needed immediately to develop policies and procedures to implement the bill's requirements.

Positions	2
Salaries and Fringe Benefits	\$129,716
Consulting Costs	40,000
Equipment/Other Operating Expenses	<u>34,830</u>
Total MDA FY 2020 Expenditures	\$204,546

Future year expenditures reflect full salaries with annual increases and employee turnover and ongoing operating expenses, including consulting costs.

MDA advises that the technical and scientific consensus to quantify carbon sequestration potential on agricultural lands will not likely occur within the next five years. Existing tools and research are in the early stages and will need adequate time to be field validated.

Small Business Effect: The bill creates a significant new opportunity for small businesses. Beginning in fiscal 2023, up to \$25 million annually will be available to conduct CO₂ sequestration activities. Any small businesses that are involved with the industry have an opportunity to contract with MDE and MDA to sequester CO₂ emissions.

Additional Information

Prior Introductions: None.

Cross File: None.

Information Source(s): Governor's Office; Maryland Department of Agriculture; Department of Budget and Management; Maryland Department of the Environment; Department of Legislative Services

Fiscal Note History: First Reader - March 7, 2019
mm/lgc

Analysis by: Kathleen P. Kennedy

Direct Inquiries to:
(410) 946-5510
(301) 970-5510