

CAP-AND-INVEST FOR MARYLAND

ISSUE BRIEF 4: PROGRAM COVERAGE

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**Climate Law &
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Climate Law & Policy Project

Climate Law & Policy Project is a 501(c)(3) non-profit organization. CLPP's mission is to help formulate and advocate environmentally, socially, and scientifically sound policies to reduce emissions and protect communities around the world from the impacts of climate change.

CLPP operates like a think tank – seeking practical and politically viable strategies – while simultaneously advocating for strong responses to avert the increasingly urgent problem of climate change.

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Introduction

Maryland's Department of the Environment (MDE) has discussed the possibility of developing an economy-wide cap-and-invest program for the state. This paper explores the issues involved in determining the *sectors and/or subsectors to be covered*.

Maryland has some of the most ambitious greenhouse gas (GHG) reduction targets in the country. By law, it must reduce emissions 60% from 2006 levels by 2031 and achieve net-zero emissions by 2045.

In December 2023, MDE released [Maryland's Climate Pollution Reduction Plan](#) (CPRP) laying out a strategy to achieve the state's near-term goal and place the state on a path to achieve its 2045 goal. The CPRP includes an economy-wide cap-and-invest program, both to close emissions gaps remaining after MDE's other policy recommendations are implemented (3.5 million metric tons of carbon dioxide equivalent [CO₂e] in 2031 and 15.6 million metric tons CO₂e in 2045) and to raise the roughly \$1 billion per year in new revenue the CPRP estimates is needed to fund several of these policy programs. (Alternative mechanisms, such as a carbon fee, are also included as potential revenue-raising options.) There is little detail in the CPRP about how cap-and-invest might be designed to best serve Maryland's needs.

In December 2024, the [annual report](#) from the Maryland Commission on Climate Change (MCCC) included a recommendation that the General Assembly authorize a study to evaluate the design of a cap-and-invest program. The MCCC's 2025 [recommendations](#) include a similar directive to the Moore Administration.

Not all stakeholders may be familiar with cap-and-invest and how it works. **Put simply, a cap-and-invest approach establishes a declining cap on emissions levels, requires polluters to acquire and retire emission**

allowances, and invests the proceeds of allowance sales (which can be substantial) in achieving a rapid, effective, and equitable transition to a decarbonized economy.

CLPP previously produced a [primer](#) that offered an overview of cap-and-invest, briefly described how it is being implemented in other jurisdictions, and identified some key design elements that must be considered to ensure cap-and-invest supports and complements other facets of Maryland's efforts to address climate change.

This issue brief is part of a [series](#) taking deeper dives into those and other design elements. Each brief focuses on one design element (or set of elements), reviews how other jurisdictions address that element, and discusses the issues at play as Maryland considers its own cap-and-invest program.

This brief focuses on **program coverage** — which sectors of the economy should have compliance obligations under the cap-and-invest program. The brief also touches somewhat on the issue of **point of regulation**, which concerns which entities within those sectors have compliance obligations.

For reasons discussed in this paper, Maryland should ensure coverage of its major emitting sectors. Transportation and buildings should be addressed via upstream coverage of fuels. Major industrial facilities should have compliance obligations. Most of the electricity sector should probably remain covered solely by the regional program already in place.

What Has to Be Decided Regarding Program Coverage?

Maryland's CPRP includes an economy-wide cap-and-invest program, but what "economy-wide" actually means will have to be determined.

In establishing an economy-wide program, it is important to include all major emitting sectors, but figuring out which sectors to include, and how, can be tricky.

For instance, Maryland is already part of a regional cap-and-invest program for the electricity sector: the Regional Greenhouse Gas Initiative (RGGI). How an economy-wide Maryland cap-and-invest program would interact with RGGI would have to be determined. Should Maryland leave electricity solely within RGGI and have the new cap-and-invest program cover only other sectors? Or should electricity be included in an economy-wide program in addition to RGGI? If the latter, should all electricity be covered or only electricity imported from non-RGGI states?

Other sectors raise different questions. The agriculture sector, for example, has energy-related emissions, but there are also non-energy-related emissions (e.g., from manure management) that might be more difficult to accurately monitor and quantify. Should the agriculture sector be included under an economy-wide cap, and if so, which of its emissions should be included? Another question is whether and how the carbon sink contributions of agriculture (e.g., carbon absorbed by soils) should be factored into the allowance program after 2031. Maryland law requires gross emissions to be reduced 60% by 2031, so sinks are excluded, but after 2031, targets are focused on *net* emissions, so agricultural, forest, and other biological sinks (and potentially technological removals of

carbon dioxide from the atmosphere) will count toward the 2045 net-zero emissions goal.

(These "negative emissions" could give rise to offsets — credits for reductions that occur in sectors outside the scope of the cap — which are discussed in another CLPP [issue brief](#).)

The treatment of Maryland's industrial emitters under an economy-wide cap-and-invest program will also have to be determined, especially since the long-standing manufacturing exemption under Maryland's Greenhouse Gas Reduction Act was removed during the 2024 legislative session ([HB 990](#)). Maryland will have to figure out what requirements to place on industry, particularly energy-intensive, trade-exposed (EITE) industries worried about maintaining competitiveness.

The transportation and buildings sectors are two of the three largest [sources](#) of emissions in Maryland (along with electricity), so it is important to include them in a cap-and-invest system, but this raises questions about the point of regulation — i.e., who has responsibility for complying with the cap by having sufficient allowances. Regulating further upstream, closer to the well head or mine mouth, involves fewer entities and simpler administration, while regulating further downstream moves the price signal closer to the point of actual decision-making. For example, gas producers or suppliers might be required to hold allowances to cover the natural gas they sell to commercial and residential building owners, but they have

little direct control over those emissions; they do not decide how well to insulate buildings, whether to buy the highest-efficiency appliances, or whether to electrify buildings. On the other hand, requiring every building owner to hold allowances could be quite burdensome and difficult for the state to manage and enforce. The same holds true in the transportation sector (fuel suppliers versus a multitude of vehicles). The extent to which downstream decision-makers are influenced by an upstream carbon price would largely depend on the extent to which the costs of allowances are passed through to end users of fossil fuels.

It should be noted that in conducting the modeling for the Climate Pollution Reduction

Plan, MDE covered many sectors in the cap-and-invest program, including road transportation, commercial and residential buildings, industry, and cement process emissions. It exempted electricity, agriculture, forestry and land use, direct emissions from the fossil fuel industry, non-cement industrial processes and product use, waste management, aviation, rail, shipping, and non-road diesel sectors. This modeling decision, however, should not be regarded as the final say on what the actual contours of a cap-and-invest program would be in Maryland. Which sectors would be obligated to acquire and retire allowances remains to be determined.

What Do Other Jurisdictions Do?

Cap-and-invest programs already exist or are under development in several North American jurisdictions. Maryland can learn from others' experiences and approaches.

California's cap-and-invest [program](#) covers approximately 80% of the state's greenhouse emissions. Under California regulations (§ [95811](#)), covered entities include:

- operators of a range of facilities (e.g., cement production, petroleum refining, pulp and paper manufacturing);
- first deliverers of electricity (i.e., electricity generators or importers);
- natural gas suppliers;
- suppliers of RBOB (a precursor of finished gasoline), distillate fuels, liquefied petroleum gas, blended fuels, liquefied natural gas, and compressed natural gas; and
- carbon dioxide suppliers.

These entities or their products must emit 25,000 metric tons or more of CO₂e per year to have compliance obligations (§ [95812](#)).

California specifies that certain emissions do not have compliance obligations, including many emissions from biomass-derived fuels and vented and fugitive emissions from the natural gas supply chain (§ [95852.2](#)).

Quebec's cap-and-invest [system](#), which is linked with California's, likewise covers about 80% of the province's emissions. Under Quebec regulations (§ [2](#) and [Appendix A](#)), covered entities include sources emitting 25,000 metric tons or more of emissions per year in the following sectors:

- mining, quarrying, and oil and natural gas extraction;
- electric power generation, transmission, and distribution;
- natural gas distribution;
- steam and air conditioning production for industrial purposes;
- manufacturing; and
- pipeline transportation.

In addition, the regulations specify that electricity importers and fuel distributors are covered by the program. Quebec's cap-and-invest [website](#) provides further clarity on the covered actors, specifying:

- Industrial establishments (e.g., aluminum smelters, cement plants, refineries, chemical plants, steel mills, mines);
- Electricity producers and importers; and
- Distributors of fuels used in Québec (gasoline, diesel fuel, propane, butane, kerosene, coal coke, petroleum coke, coal, distillation gas, ethanol, biodiesel, biomethane, natural gas, and heating oil).

Washington's cap-and-invest [program](#) covers roughly 75% of the state's emissions. As laid out in Washington statute (RCW [70A.65.080](#)), covered entities include sources emitting 25,000 metric tons or more of emissions per year in the following categories:

- owners or operators of facilities (e.g., plants, buildings, stationary equipment);
- first jurisdictional deliverers, generators, and importers of electricity;
- fossil fuel suppliers, unless the fuel will be delivered and combusted outside the state;
- waste-to-energy facilities (starting in 2027); and
- railroad companies (starting in 2031).

The Washington statute specifically exempts from coverage combustion of aviation fuels, marine fuels combusted outside the state, combustion of biomass / biofuels, emissions from fuels used exclusively for agricultural purposes, and emissions from landfills (which were removed from the program after adoption of a landfill-specific methane reduction program).

New York is currently developing an economy-wide cap-and-invest [program](#). Based on New York's December 2023 [pre-proposal outline](#), the cap-and-invest program may cover:

- stationary sources, including non-RGGI electricity generation sources, emitting 25,000 metric tons or more per year; and
- fuel suppliers providing more than 100,000 gallons of liquid fuel or 15 million cubic feet of gaseous fuel to NY end users.

New York's pre-proposal outline explicitly invites comments on whether and how to cover electricity generation and imports, and it notes that coverage of emissions from the use of refrigerants in commercial refrigeration systems is still to be determined. The pre-proposal indicates that residential wood burning, emissions attributed to aviation fuels, upstream emissions from in-state oil and gas infrastructure, emissions from refrigerants and propellants, emissions from septic wastewater, emissions from livestock and soil management, and emissions of sulfur hexafluoride from electricity transmission and distribution systems would not have compliance obligations under the cap-and-invest program.

The Regional Greenhouse Gas Initiative (RGGI) is a cooperative regional cap-and-invest [program](#) among several Northeastern and Mid-Atlantic states (including Maryland). Unlike the

other programs considered in this brief, it is not economy-wide. It solely covers the electric power sector. Within the RGGI states, fossil-fuel-fired electric power generators with a

capacity of 25 megawatts or greater have a compliance obligation. RGGI's program coverage is therefore more straightforward.

Discussion

The experiences and approaches of other North American jurisdictions can be instructive in considering the scope of a Maryland cap-and-invest program's sectoral coverage.

The cap-and-invest programs in place and under development in other jurisdictions have some clear similarities. They all include the major stationary sources of greenhouse gas emissions in their states, such as manufacturing facilities. To address transportation and the vast majority of buildings, they all move the point of regulation far up the chain, placing compliance obligations on fossil fuel producers, suppliers, transporters, and/or distributors. None of the programs include mobile sources of emissions directly.

All of the programs include the electricity sector, but with some important nuance relevant to Maryland's situation. California, Quebec, and Washington include all major electricity generators, importers, and distributors, but in none of those states was the electricity sector already in a regional cap-and-invest program. New York, however, is similar to Maryland in being part of RGGI. According to its pre-proposal outline, New York intends to include any non-RGGI electricity generators that are above the emissions threshold, but it has not yet determined what approach to take with regard to electricity generation from within the RGGI region. Maryland will have to address the same issue.

There appear to be four basic ways for a RGGI state to address electricity: (1) have electricity be covered only by RGGI; (2) have the economy-wide program cover only electricity not already

covered by RGGI (e.g., electricity imported from non-RGGI states), (3) have electricity be covered by both RGGI and the economy-wide cap-and-invest program, or (4) leave RGGI and cover electricity solely through the economy-wide program. One of the first two options is probably easiest, as the RGGI system is already in place, though policymakers will have to assess whether the pace of emission reductions in RGGI aligns with the reductions that the state needs to see from the electricity sector in order to meet state emission reduction targets. In addition, to the extent that prices for state allowances are higher than for RGGI allowances, the state would be missing out on potentially significant amounts of revenues that electric utilities could be investing for the benefit of ratepayers and to accelerate decarbonization (as discussed in the CLPP [issue brief](#) on allowance auctions and allocations). The second option would bring some electricity into the economy-wide program without overlapping with RGGI.

The third pathway would require the greatest levels of coordination between the programs to avoid duplication, reconcile purchased allowances under RGGI and (likely) freely allocated allowances under an economy-wide program, and address other logistical and design issues.

The fourth pathway is probably undesirable, given the regionality of the electricity system and the benefits of having a broader market.

Beyond the electricity sector, jurisdictions have not been uniform in their approach to some other sectors. For example, Quebec includes oil and gas extraction under its program, whereas New York proposes to explicitly exclude upstream emissions from oil and gas.

None of the programs cover emissions from agriculture, except to the extent that fuels used in agriculture face upstream compliance obligations — though Washington (uniquely) specifically exempts agricultural fuel use from coverage. Whereas Washington and (preliminarily) New York list sectoral exemptions from their programs, California lists

specific sources of emissions that are exempt, and Quebec does not appear to list exemptions at all, instead just defining which entities are covered. For Washington and New York, exemptions seem to be based on a mix of factors, including emissions beyond the jurisdiction (e.g., aviation fuels) and particular state interests. Maryland will have to make its own determinations about which sectors and subsectors, if any, are exempt.

Key factors to consider in deciding which sectors to encompass within the cap-and-invest program include the availability of reliable quantified emissions data in a sector, the responsiveness of a sector to a carbon price signal, administrative ease, and state revenue needs.

What Should Maryland Do?

MDE has discussed the possibility of developing an economy-wide cap-and-invest program to close an emissions gap and raise the substantial revenues needed to support the sectoral programs in its *Climate Pollution Reduction Plan*. One of the key elements to consider is which sectors to include — and how.

The main [sources of emissions](#) in Maryland are the transportation sector (~35%), electricity use (~21.5%), and residential, commercial, and industrial fuel use (~16%). Other sources include waste management (~9.8%), industrial processes (~8.5%), the fossil fuel industry (~5.4%), and agriculture (~3.6%). Maryland should ensure that at least its major sources of emissions are covered by a cap-and-invest program.

As in other jurisdictions, Maryland can cover the vast majority of emissions from transportation and residential, commercial, and industrial fuel use by ensuring that upstream fuels are covered by the cap-and-invest program. That is

also the most administratively feasible approach.

As for electricity, the path that is both simplest and most comprehensive would be to stay in RGGI and to include within the economy-wide program only those emissions not already covered by RGGI, such as electricity imported from non-RGGI states. Before making any determination, policymakers need to assess whether the pace of emission reductions in RGGI aligns with the reductions that Maryland needs to achieve in the electricity sector.

Whether or not the electricity sector is included in the economy-wide cap, sulfur hexafluoride

(SF₆) emitted from electricity transmission and distribution infrastructure should be considered for coverage under Maryland's cap-and-invest program, as already appears to be the case in Washington ([WAC 173-446-040](#) (3)(a)(i)(F)) and Quebec ([Q-2, r. 46.1](#), Appendix A). SF₆ represents only a small portion of Maryland's emissions, but it is the most potent known greenhouse gas, being 23,500 times more effective at trapping infrared radiation than an equivalent amount of CO₂. SF₆ destruction is no longer a permitted offset under Maryland's RGGI offset program, and it is not firmly regulated under any other Maryland program (unlike, say, [California](#)). Until such regulation is adopted, these SF₆ emissions should be covered under the cap.

Upstream emissions from the fossil fuel industry should be covered as well. As in other jurisdictions, major industrial facilities should also be covered under a Maryland cap-and-invest program, though Maryland should determine if any EITE industries require some sort of special treatment (e.g., free allocation of allowances, as discussed in the CLPP [brief](#) on auction and allocation of allowances).

What Maryland should do with respect to landfills is less clear. Washington is the only jurisdiction reviewed here that included landfills in its program, before removing them in favor of a landfill-specific program. This suggests that covering landfill emissions under a cap-and-invest program may not be required. Maryland adopted air pollution regulations in 2023 that restrict methane emissions from larger landfills ([COMAR 26.11.42](#)). Maryland also has regulations that allow landfill methane capture and destruction projects (that are not otherwise regulatorily required) to qualify to produce carbon offsets ([COMAR 26.09.03.03](#)). It may be easier for Maryland to leave landfills out of cap-and-invest compliance obligation coverage,

although the same considerations as arise in the electricity sector about the pace of emissions reductions and required auction revenue apply as well to landfills.

As for agriculture, no other jurisdiction includes agricultural emissions under cap-and-invest program coverage (apart from fuel use, which generally is passed through from upstream), and Maryland should probably pursue the same approach. Reducing non-fuel-based agricultural emissions and enhancing agricultural carbon sinks are of vital importance to achieving climate targets, but those efforts can probably be best achieved through mechanisms other than cap-and-invest compliance obligations.

Likewise, no other jurisdiction imposes compliance obligations related to land use (e.g., forests) in their cap-and-invest coverage, though many do allow forested land to provide offsets. (Offsets are a topic of another CLPP issue [brief](#).) Maryland allows such offsets — mainly derived from improved forest management — in its RGGI program ([COMAR 26.09.03.04](#)). The ability to quantify reductions in the forest sector at the project level for purposes of offsets does not necessarily mean it is feasible or advisable to include such lands in cap-and-invest coverage. Any effort to do so would require further study.