CAP-AND-INVEST FOR MARYLAND

ISSUE BRIEF 6: OFFSETS

Donald Goldberg
Dave Grossman

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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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About the Authors

Donald Goldberg is the executive director and founder of CLPP. Previously, he directed the climate program at the Center for International Environmental Law.

Dave Grossman is a senior advisor to CLPP and is the principal and founder of Green Light Consulting, a consulting practice specializing in research, analysis, writing, and strategic guidance on climate change and clean energy issues.

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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 *how offsets should be addressed in a Maryland cap-and-invest program*.

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 climate 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 a 3.5 million metric ton emissions gap remaining after MDE's other policy recommendations are implemented 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 a cap-and-invest system 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 should authorize a study to evaluate the design of a cap-and-invest program. The MCCC's 2025 recommendations include a similar directive aimed at 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 the issue of whether and how offsets should be included in a Maryland cap-and-invest program — in other words, the extent to which projects that occur outside of sectors covered by the cap should be able to generate credits that entities in covered sectors can use to meet their compliance obligations under the cap.

For reasons discussed in this paper, Maryland should carefully weigh the pros and cons of including offsets as a compliance option within a state cap-and-invest program. If Maryland chooses not to allow offsets under the cap-and-

invest program, it should find other ways to drive emission reductions in sectors not covered by the cap. If Maryland chooses to allow offsets, it should: only allow offsets that provide emission reductions and removals that are reliably quantifiable, additional, and permanent; ensure the projects provide environmental benefits to the state; protect overburdened communities; and maintain the integrity of the state's climate targets by keeping offset credits under, not additional to, the emissions cap.

What Has to Be Decided Regarding Offsets?

Cap-and-invest programs set declining limits on emissions levels in covered sectors, but Maryland will have to determine whether entities in covered sectors can offset some of their compliance obligations by supporting projects in non-covered sectors.

Offsets are generally emission-reducing, emission-avoiding, or emission-removing projects that occur in sectors not covered by the cap (and are thus tied to decisions made about the scope of program coverage, discussed in an earlier CLPP brief). These projects generate credits that can be used, under some cap-and-invest systems, to cover a portion (usually small) of an entity's compliance obligation, replacing the need for some allowances. In addition to spurring reductions in non-covered sectors, common arguments for allowing offsets include providing compliance flexibility and reducing costs.

Offset projects involve some kind of verification and certification to ensure they are real, permanent, verifiable, and quantifiable, but despite these precautionary requirements, the offset market has been beset by challenges about how real some of the purported reductions or removals are.

Offsets represent a tricky area for cap-and-invest program design. Maryland will have to determine how much of an entity's compliance obligation, if any, could be met by offset credits.

If some level of offsets is allowed, Maryland will also have to decide a slew of other questions. For instance, which kinds of projects should qualify to generate offset credits under the program? Should emission avoidance projects (e.g., building new renewable energy facilities) count? Emission reduction projects (e.g., capturing methane emissions from dairy farms and landfills)? Or only emission removal projects (i.e., removing GHGs from the atmosphere)? If removal credits are allowed, are both biological approaches (e.g., soils, trees) and engineered approaches (e.g., direct air capture facilities) acceptable, or only one or the other? If biological offsets are allowed, what rules are needed to ensure they are ecologically sound?

There are other questions as well. Should the overall number of allowances issued be reduced by the number of offset credits submitted for compliance, to stay on track for emission reduction targets? Should only projects that can demonstrate "additionality" (i.e., that the emission reductions would not have happened if the project had not occurred) be allowed, or should projects not be measured

against such a counterfactual? How can Maryland ensure that the offset credits actually reflect real reductions in emissions? Should projects only be eligible for offset credits if they are located in Maryland, or should offsets be allowed from projects in other states (or even countries, particularly since the parties at the annual UN climate negotiations in November 2024 finally reached agreement on the building blocks of a global carbon market and crediting mechanism)? The answers to these questions can be complicated.

What Do Other Jurisdictions Do?

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

California's cap-and-invest program allows for offsets as a cost-containment measure. California issues tradable offset credits for six types of projects (as long as the projects are listed with an approved Offset Project Registry):

- Livestock (installation of a biogas control system for manure management on dairy cattle and swine farms);
- Mine methane capture (capture and destruction of methane that would otherwise be vented into the atmosphere as a result of mining operations at active coal and trona mines and abandoned underground coal mines);
- Ozone-depleting substances (destruction of high global warming potential ozone-depleting substances that would have otherwise been released to the atmosphere);
- Rice cultivation (reductions in methane emissions from flooded rice fields);
- U.S. forests (activities that sequester carbon on forestland); and
- Urban forests (planting and maintenance activities to permanently increase carbon storage in urban trees).

The vast majority of offset credits in the California system have come from the U.S. forests category, with much smaller amounts from ozone-depleting substances, mine methane capture, and livestock. There have been none from rice cultivation or urban forests.

Entities covered by the cap can use offset credits to meet a small percentage (the "quantitative usage limit") of their compliance obligations. Entities could use offset credits to meet up to 8% of their compliance obligations through 2020, but that percentage dropped to 4% for 2021-2025; the limit will rise to 6% for 2026-2045 (17 CCR § 95854, AB1207 (2025)).

California offsets must come from within the United States or U.S. territories (17 CCR § 95972(c)), with the Compliance Offset Protocol for each project type specifying the exact geographical limitations. Starting with 2021 emissions, no more than half of an entity's quantitative usage limit can come from projects that do not provide direct in-state environmental benefits (i.e., do not reduce or avoid air or water pollution in California) (17 CCR §§ 95854, 95802).

To qualify for credits under the California system, offset projects have to meet additionality requirements laid out in regulation (17 CCR § 95973), as well as any additionality

requirements in the specific Compliance Offset Protocol for each project type. The projects cannot have been otherwise required by law, regulation, or any legally binding mandate or been likely to occur in a conservative business-as-usual scenario.

The offset credits submitted for compliance in California's system have historically been in addition to the program's allowance budgets. In other words, California did not reduce the number of allowances it auctioned or allocated to reflect the number of offset credits submitted. Given that many California offset credits come from out of state, this meant that California's emissions may exceed state targets, though this was theoretically compensated for by lower emissions elsewhere. However, in September 2025, California enacted AB1207, which, among other things, moved offsets to be under the cap — directing that allowances equal in number to the offset credits issued in the prior year be removed (and retired) from the next year's allowance budget.

Quebec's cap-and-invest system, which is linked with California's, also allows for offsets. There are seven types of projects eligible for generating offset credits in the Quebec system:

- Landfill methane reclamation and destruction;
- Destruction of certain halocarbons contained in insulating foam from refrigeration, freezer, or air-conditioning equipment (including ozone-depleting substances);
- Carbon sequestration through afforestation or reforestation on private lands;
- Capturing and destroying methane from manure storage facilities;
- Capturing and destroying methane from drainage systems at active coal mines (underground or surface);
- Capturing and destroying methane from ventilation air at active underground coal mines; and
- Manure anaerobic digestion.

While there are several categories, the only offset credits issued so far in Quebec have been for landfill methane and halocarbon destruction.

Entities covered by the cap can use offset credits to meet up to 8% of their compliance obligations in a compliance period (Q-2, r. 46.1 §20).

Some offsets in the Quebec system have more geographic restrictions than those in California. Landfill methane projects (Q-2, r. 35.5 §4), afforestation and reforestation projects (Q-2, r. 35.3.1 §4), projects to destroy methane from manure storage facilities (Q-2, r. 46.1 Appendix D), and manure anaerobic digestion projects (2023 regulation) must be located in Quebec. Projects to destroy methane from coal mines (both drainage and ventilation systems) must be implemented in Canada (Q-2, r. 46.1 Appendix D). For projects to destroy certain halocarbons, the recovery/removal of halocarbons must happen in Canada, though their destruction can occur in either Canada or the United States (Q-2, r. 35.4 §3).

Offset credits in Quebec must reflect GHG reductions or removals that are additional — i.e., that would not occur under business-as-usual and that go beyond legal requirements. Quebec's offsets website explains that in the Western Climate Initiative (which encompasses Quebec's system, as well as California's), all GHG emission reductions and removals must go above and beyond the most stringent applicable regulations among the ones in use by WCI partner entities. This is known as regulatory additionality. (California, as part of WCI, appears to have the same requirement, in

order to "remove any incentive to weaken or solely maintain environmental protections to qualify more offset projects.")

The offset credits submitted for compliance in Quebec's system appear to be, like California's before AB1207, in addition to the program's allowance budgets.

Washington's cap-and-invest program, which started in 2023, allows for offsets for projects that reduce emissions or enhance removals of GHGs. Washington launched its program by adopting some of California's offset protocols (WAC 173-446-505). The four California protocols adopted by Washington are:

- U.S. forests;
- Urban forests;
- Livestock projects; and
- Ozone-depleting substances.

Washington is considering revising these protocols or developing new ones for additional project categories. The only offset credits issued so far in Washington have been for destruction of ozone-depleting substances.

Entities covered by the cap can use offset credits to meet a small percentage of their compliance obligations (WAC 173-446-600). During the first compliance period (2023-2026), entities can use offsets to meet up to 5% of their obligation, with an additional 3% possible using offset credits generated from projects on federally recognized tribal land. During the second compliance period (2027-2030) and all subsequent ones, the usage percentage drops to 4%, with an additional 2% possible from projects on tribal land.

Washington has stricter requirements than California and Quebec in terms of offsets needing to provide direct environmental benefits in the state, though the precise terms depend on whether Washington links with another jurisdiction's cap-and-invest system or not — which it is exploring but has not yet done (WAC 173-446-600). If Washington links, then during the first compliance period, at least half of offset credits must come from projects that provide direct environmental benefits to the state, with the rest coming from projects located in the linked jurisdiction(s). During the second period and subsequent ones, 75% of credits must come from projects that provide direct environmental benefits to the state, with the rest from the linked jurisdiction(s). If, however, Washington has not linked with another system (which is currently the case), then all offset credits must provide direct environmental benefits to Washington. Offset projects that are located within the state or that reduce or avoid GHG emissions that would otherwise occur within the state are presumed to provide direct environmental benefits in the state (WAC 173-446-595).

Offset credits in Washington, as in other jurisdictions, must reflect emission reductions or removals that are additional to those required by law and that would not have occurred otherwise (RCW 70A.65.170, WAC 173-446-500).

Like California after the 2025 enactment of AB1207, offset credits in Washington are under, not in addition to, the emissions cap. In other words, Washington reduces the number of allowances it issues by the number of offset credits that entities use (WAC 173-446-250), helping to keep the state on track for its emission reduction targets.

Washington also has the ability to reduce the number of offset credits an entity can use if the state determines that the entity contributes substantively to the cumulative air pollution burden in an overburdened community (RCW 70A.65.170).

The Regional Greenhouse Gas Initiative (RGGI) — a cooperative regional cap-and-invest program among several Northeastern and Mid-Atlantic states (including Maryland) that covers just the electric power sector — had included offsets within the RGGI Model Rule (Subpart XX-10) to provide compliance flexibility and encourage some emission reductions beyond the power sector. Following the conclusion of the third program review in July 2025, however, the Model Rule was updated such that, starting in 2027, RGGI offset allowances will no longer be awarded, though already awarded offset allowances can still be used for compliance.

Through 2026, RGGI has five project categories for the award of offset allowances:

- Landfill methane capture and destruction;
- Reduction of sulfur hexafluoride emissions;
- Forestry or afforestation;
- End-use efficiency in the building sector; and
- Avoided agricultural methane from animal manure and organic food waste.

The only offset allowances awarded in the RGGI system so far have been from a single landfill methane project located in Maryland. In addition, the previous RGGI program review, which resulted in the 2017 Model Rule, removed the sulfur hexafluoride, end-use efficiency, and afforestation categories (though the other forestry aspects, such as reforestation improved forest management, and avoided conversion, remained) (Subpart XX-10.3). States update their own regulations based on the Model Rule, and so far Delaware, Maine, Maryland, New Jersey, New York, and Vermont have removed these offset categories from their regulations. Massachusetts, New Hampshire, and Rhode Island do not award offsets for any project types (though power plants located in those states can use offset allowances awarded by another RGGI state).

During each RGGI control period, power plants can use offsets to meet up to 3.3% of their compliance obligations (Subpart XX-6.5).

To be eligible to generate offset allowances, a project must be located within one (or more) of the RGGI states (Subpart XX-10.3).

As in other jurisdictions, offset projects under RGGI must be additional to what is legally required (Subpart XX-10.3). In addition, offset projects cannot include an electric generation component (unless the project sponsor transfers to the state regulatory agency the legal rights to any renewable energy credits generated for compliance with a clean power regulation), cannot receive funding or other incentives from state system benefit funds, and cannot be generating credits under any other mandatory or voluntary GHG program (except for some forest projects awarded credits under voluntary programs).

As in Quebec, and unlike in Washington and post-AB1207 California, the offset credits submitted for compliance in the RGGI system are in addition to, not within, the program's allowance budgets (Subpart XX-1.2).

New York is in the process of developing an economy-wide cap-and-invest program. Based on New York's December 2023 pre-proposal outline, the state's cap-and-invest program will *not* allow for offsets. The pre-proposal outline notes that offsets can allow emitters to increase their direct emissions based on emission reductions or removals that occur elsewhere. The pre-proposal then explains:

> In New York, many Stationary GHG Emissions Sources that are anticipated to

be Obligated Entities under the Cap-and-Invest Rule are located in or near DACs [*disadvantaged communities*]. Allowing these GHG Emissions Sources to cover a portion of their compliance obligation with offsets could enable such sources to increase their direct on-site emissions. For this and other reasons, the Cap-and-Invest Rules would not include any provisions for the creation of offsets or for Obligated Entities to utilize offsets for compliance.

Discussion

The experiences and approaches of other North American jurisdictions can be instructive in considering how offsets should be treated in a Maryland cap-and-invest program.

The offset provisions of cap-and-invest programs in place in other jurisdictions have some clear similarities, with the exception of the program under development in New York, which (at least in the pre-proposal) will not allow for offsets at all. (Again, starting in 2027, RGGI too will not award offset credits.)

In terms of offset project categories, all of the jurisdictions that allow for offsets focus on emission reductions and removals, and all include categories related to forests and to methane emissions (from landfills, livestock, agriculture, mines, or some combination thereof). California, Quebec, and Washington also include ozone-depleting substances. All of the jurisdictions have offset project categories that have so far gone unused.

All of the jurisdictions with offsets allow emitters to use them to meet only a small percentage of their compliance obligations – between 4% and 8% in California, Quebec, and Washington, and 3.3% in RGGI (prior to 2027). All of them require offset credits to reflect emission reductions or removals that are additional to what is already legally required or would have happened anyway.

They also all have some sort of geographic restrictions on eligible offset projects to keep at least some of those projects relatively close, whether that is within the state, region, country, or continent. From a purely climate perspective, part of the rationale of offsets is that it does not matter where emission reductions or removals occur, since climate change is driven by global atmospheric concentrations of GHGs. Keeping projects close, however, may provide greater confidence in project verifiability, more in-state retention of economic benefits from investment in reductions, and more localized environmental quality improvements.

The jurisdictions notably diverge with respect to the effect of offsets on emission allowance budgets. Quebec and RGGI treat offsets as being additional to those budgets, creating the potential for offsets to lead the jurisdiction to exceed its emission reduction targets. In contrast, Washington (the newest program in operation) broke new ground by treating offsets as falling under the cap, reducing the number of allowances issued by the number of offset credits utilized. Washington's approach helps keep the state on track for its emission reduction targets. Following the enactment of AB1207 in September 2025, California will be following Washington's approach.

New York's preliminary decision not to allow offsets to be created or utilized in its cap-and-invest program and RGGI's decision to cease awarding offset credits highlight that the issues to be discussed regarding offsets are about not just *how* to incorporate them into a program but also *whether* to do so. There are pros and cons to including offsets.

Including offsets in a cap-and-invest program can provide greater compliance flexibility and cost-effectiveness for regulated entities. Offsets can also incentivize emission reduction and removal efforts by businesses and sectors not covered by a cap-and-invest program. For a new state program, allowing offsets could facilitate linkage with existing programs in California, Quebec, and Washington that allow offsets to be used to meet a small portion of compliance obligations.

There have been and could be numerous challenges with offsets, however. New York's rationale for not allowing offsets focuses on the potential effects on disadvantaged communities, although Washington took a different path by allowing offsets but retaining the ability to reduce the number of offset credits an entity can use if the entity meaningfully adds to the pollution burden in an overburdened community. In addition, a study of the early years of California's program found that the emission-reducing behavior of companies that used offsets and companies that did not were virtually identical (i.e., companies were not just buying offsets so they could continue to pollute). Still, the potential exists for emitting facilities in overburdened communities to use carbon offsets instead of reducing on-site emissions.

A long-standing problem with offsets has been concern about their quality and credibility — how real, additional, and/or permanent the emission reductions associated with the offset credits are. Offset projects have often been found to have overstated their associated emission reductions. This issue has particularly roiled voluntary carbon markets in recent years, prompting some entities to abandon offsets entirely, but it has also presented challenges for compliance markets such as state cap-and-invest programs. For example, in the California system, analyses have shown that U.S. forests offsets (which make up the vast majority of offset credits issued in California) often do not exhibit additionality; in other words, they come from forests that were at low risk of conversion or from regular forest management practices that would likely have happened anyway. Forest offsets can also face permanence challenges, such as from wildfires. The issues are not limited to forest offsets. There is uncertainty about the real level of emission reductions from other categories of offset projects as well, including agricultural offsets and methane capture offsets. If offsets are used instead of allowances in a cap-and-invest program — and particularly if those offsets are additional to the emissions cap — then offsets that do not reflect real emission reductions will lead to higher levels of emissions.

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 what role, if any, offsets should play in the program.

Maryland should carefully weigh the pros and cons of including offsets as a compliance option within a state cap-and-invest program.

One key benefit of offsets is that they can incentivize reductions in sectors not covered by the cap. If Maryland chooses not to allow offsets under the cap-and-invest program (and, frankly, even if it does), Maryland will have to find other mechanisms — such as direct regulation and investment of revenues from allowance auctions — to achieve reductions in sectors not covered by the cap. Both public and private investment in these sectors, in addition to investments in carbon removal, will be needed.

Maryland already allows for offsets under RGGI (until RGGI offsets are eliminated starting in 2027) and, as noted, is the site of the lone RGGI offset project. If Maryland decides to extend its offsets approach under RGGI to an economy-wide cap-and-invest program, it should learn from the experiences of other jurisdictions. Maryland should only allow offset categories that can be rigorously quantified and verified to be additional and permanent. It should ensure that all or most offset projects provide environmental benefits to the state. Maryland should limit the use of offsets to a small percentage of compliance obligations, and it should follow Washington's lead in having the option to further reduce that percentage to protect overburdened communities. Maryland should also follow Washington's example (and now California's) in keeping offset allowances under, not additional to, the cap, in order to protect the integrity of the state's climate targets.