

Independent Emissions Market Advisory Committee

Subcommittee Report on Offsets

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Overview

Offsets are an important part of both the current and post-2020 cap and trade program. By statute and regulation, the requirements for offsets and the allowable amounts are defined differently for pre-2021 and post-2020 market periods. In the pre-2021 market period, no statutory limits apply, but ARB has established limits by regulation. Under ARB regulations, regulated entities can submit offset credits to cover up to 8% of their emissions through the end of 2020. Beginning in 2021, new offset limits apply pursuant to the cap-and-trade extension bill, AB 398. Under AB 398, regulated entities can submit offset credits for up to 4% of their emissions associated with the years 2021 through 2025, and up to 6% for the years 2026 through 2030. In addition, no more than half of the offsets used in the post-2020 market period can come from projects that do not generate “direct environmental benefits” to California air or water quality.

The basic idea of the offset program is that a percentage of the reductions in carbon dioxide equivalent emissions under the cap-and-trade program can come from sectors outside of the cap and be used by regulated parties under the cap to meet part of their compliance obligations. The theory behind offsets is that—from a climate change perspective—it does not matter where or how a ton of emissions is reduced since climate change is caused by the accumulation of greenhouse gases in the atmosphere. One fewer ton in the atmosphere is one fewer ton, regardless of its source.

When offsets are used, total GHG emissions from “covered sources” (i.e., those that are regulated under the cap-and-trade program) increase and may exceed the nominal program cap, but the increases are “offset” by reductions outside the regulated sector. This is because for every offset credit used, emissions rise by one ton of carbon dioxide equivalent from covered sources. At the same time, however, every emissions increase at covered sources has a corresponding credited reduction from non-covered sources—most often in other states, but sometimes at in-state sectors not covered by the cap-and-trade program. Thus, even though GHG emissions from covered sources increase as a result of offset use, there is no net change in GHG emissions to the atmosphere.

ARB has approved six offset protocols to date. As of August 2018, ARB has issued over 116 million offset credits under these protocols, each worth a ton of carbon dioxide equivalent (ARB, 2018); Quebec has issued just over 600,000 offset credits from its own protocols (MDDELCC, 2018). The approved offset credits have overwhelmingly been issued by ARB under the U.S. Forest offset protocol, which has generated three quarters of the total supply. The Ozone Depleting Substances protocol is responsible for an additional 15% of the total issued to date, and a relatively small number of credits have been issued under the Livestock and Mine Methane Capture protocols. Two of the approved protocols, the Urban Forest and Rice Cultivation protocols, have not issued any credits thus far.

The table below shows the categories of offsets that have been approved by the Air Resources Board for use by regulated entities and the total number of credits issued to date.

Table 1: ARB-issued offset credits as of August 2018

Project type	Ozone Depleting Substances	Livestock	U.S. Forest	Urban Forest	Mine Methane Capture	Rice Cultivation
Total credits	17,249,969	5,060,098	89,180,683	0	5,272,971	0
% of total	14.8%	4.3%	76.4%	0%	4.5%	0%

Offsets can serve valuable functions but have also been controversial. The valuable functions include: 1) reducing cap-and-trade program compliance costs (i.e., providing price containment to the market); 2) stimulating innovation in non-capped sectors for reducing GHGs; 3) generating environmental co-benefits from offset projects, particularly with respect to local air pollution reductions; 4) providing revenue to sectors and jurisdictions that generate offsets for compliance purposes, including projects in disadvantaged communities within and outside of California.

The controversies about offsets include: 1) concerns about whether GHG reductions from offsets are real, additional, quantifiable, and permanent; 2) concerns about allowing regulated entities to purchase their way out of facility-level compliance rather than reducing their own emissions on site; 3) relatedly, losing co-benefits (particularly air pollution reductions) due to shifting GHG mitigation away from large stationary source emitters as a result of offset projects ; 4) depriving California of program auction revenue from the higher auction market prices that would result without carbon offsets; and 5) the distributional concern that offsets’ benefits may largely accrue outside of California yet be financed by California residents.

The state has made a policy determination to allow offsets, subject to statutory limits and conditions. As a result, our report does not rehash whether offsets should or should not be allowed, nor does it analyze whether the percentage of offsets allowed by regulation in the pre-2020 period and by statute in the post-2020 period are set at the optimal level. Instead, our report is directed at analyzing whether the current and proposed programs are meeting legislative and regulatory expectations, maximizing offset benefits and minimizing the risks of offsets.

Example: U.S. Forest protocol

In order to approve a compliance-grade offset protocol, ARB goes through an extensive public stakeholder process. The end result is a protocol that has been scrutinized by Board staff and stakeholders and subsequently approved by the Board itself. The way that offset projects earn credits under approved protocols is by meeting the protocol’s eligibility criteria and following its approved methodologies for calculating avoided or reduced greenhouse gas emissions. The protocols attempt to ensure that the accounted for emissions are semi-permanent: for example, the U.S. Forestry Protocol requires that projects have a life of 100 years; for avoided conversion projects (projects that avoid converting forestry land to another use), the owner must record a conservation easement against the

property; and offset providers must monitor the projects by visiting the sites every six years. If the offset project experiences a reversal, resulting in the release of carbon that was supposed to remain sequestered, there is a compensation rate that applies to intentional reversals, requiring compensation of allowances based on the number of years the project remained in compliance; there is also a buffer fund for unintentional carbon releases caused by events such as drought and wildfire.

The offsets subcommittee is interested in whether any new information and feedback could or should lead to any changes to the offset protocols.

Given the fact that the U.S. Forest protocol is responsible for three quarters of the offsets issued to date, it may make sense to first consider these issues in the context of the U.S. Forest protocol. For example, under the U.S. Forest protocol, a portion of the credits that would otherwise be awarded to offset projects are set aside in a buffer pool to protect against the risk of “unintentional reversal”—the possibility that fire, drought, disease, or other unexpected problems release the carbon that is stored in a credited forest. In light of the record fire season in California this year and last, is the size of the buffer pool sufficient to cover our best biophysical understanding of reversal risks in California? Across the West?

Similarly, the U.S. Forest protocol makes assumptions about the extent to which emissions will “leak” from offset projects. Take an avoided conversion project, for example (the protocol also covers reforestation projects and projects that improve forest management). The idea is that if a carbon-rich forest is protected to store carbon, rather than harvested to produce timber or cleared for some other land use, some share of the timber production will shift to another location, resulting in a reduction in the GHG benefits of the reductions or avoided emissions at the credited project (see Leakage subcommittee report for more detail).

The U.S. Forest protocol assumes that for Improved Forest Management projects, 20% of calculated project-level benefits will leak (ARB, 2015: 69-70 (see “Secondary Effects” in Equation 5.10)). ARB’s protocol is based on the Climate Action Reserve’s voluntary forest offset protocol, Version 3.3. Last year, the Climate Action Reserve updated its leakage factor for Improved Forest Management projects. The previous version of the Climate Action Reserve’s forest protocol, Version 3.3, used a leakage factor of 20% for Improved Forest Management projects (CAR, 2012: 62 (see “Secondary Effects” in Equation 6.13)). In the new Version 4.0 of the Reserve’s protocol, however, the leakage factor for Improved Forest Management projects can now be as high as 80% for improved Forest Management Projects (CAR, 2017: 62-63 (see “Secondary Effects” in Equation 6.10)).

Leakage factors are a controversial part of forestry offsets and, in fact, the Environmental Commissioner of Ontario recently recommended that Ontario not pursue forest offset credits (Environmental Commissioner of Ontario, 2018: 144-145) because of concerns about the evidentiary basis for the leakage factor. Some peer reviewed studies suggest that a leakage number that is significantly higher and perhaps closer to 80% may be appropriate (Wear & Murray, 2004: 328; Gan & McCarl, 2007: 430). The Environmental Commissioner’s report also cited evidence that in some cases lower leakage rates similar to the U.S. Forest protocol’s number may be appropriate, but noted that the evidence supporting these lower rates excludes international leakage effects and that inclusion of international leakage effects significantly increases leakage estimates in other contexts (Environmental Commissioner of Ontario at 145, citing a study of Pacific Northwest leakage rate estimates). While the subcommittee has not had time to independently survey the academic literature on leakage rates, we note that review studies identify a wide range of leakage rates that range close to zero to more than 90% (Siikamäki et al.,

2012: 11). At least in this review, lower leakage estimates are associated with project- or country-level analysis, whereas higher estimates are associated with regional or global analysis.

Given that the U.S. Forest protocol is the largest of the protocols in terms of credits issued, it would be helpful to have a better understanding of the scientific basis for leakage factors and the temporal accounting between reductions that are credited, emissions that leak, and actual physical emissions reductions or avoided emissions that take place. It would also be helpful to know if ARB is considering revising the protocol to reflect the Climate Action Reserve changes. The subcommittee recognizes, however, that leakage factors may be highly contextual to each individual project and therefore empirically difficult to estimate. Nevertheless, if reliance on the protocol continues to be large, additional information would be useful to understand whether and to what degree leakage is occurring, as well as to evaluate whether or not credits under this protocol can be reliably deemed “quantifiable” pursuant to state law.

Post-2020 offsets

One of the key reforms that the cap-and-trade extension bill, AB 398, made to the offsets program is to limit the total number of offset credits that can be used from projects that do not produce “direct environmental benefits,” or DEBs, to in-state air or water quality.

These direct environmental benefits are defined by statute as “the reduction or avoidance of emissions of any air pollutant in the state or the reduction or avoidance of any pollutant that could have an adverse impact on waters of the state.” We have reviewed the draft regulations and accompanying documentation ARB released on September 4 and have only one clarifying suggestion.

ARB proposes to adopt the statutory definition of direct environmental benefits directly from the statute, which seems appropriate as a starting point. In its staff report, ARB has provided helpful examples of the ways in which the existing approved protocols for in-state projects provide direct air and water pollution benefits (for example, reduced runoff from offsets that produce healthy forests and reduced air pollution from livestock projects) and is recognizing them by regulation as producing the direct environmental benefits contemplated by the statute. This treatment seems consistent with the statutory language and intent of the legislature.

One key question is whether project-level GHG reductions or avoided GHG emissions constitute a DEB. This issue has been discussed extensively in the cap-and-trade stakeholder process and in legislative oversight hearings. It is relevant because if offset projects can establish a DEB on the basis of project-level GHG reductions or avoided emissions, then all offset projects would meet this standard and AB 398’s restrictions on this point would be rendered meaningless on implementation. We assume that the language in AB 398 requiring DEBs refers to environmental benefits to air or water quality that occur in addition to those impacts that are traceable to reduced or avoided GHG emissions; otherwise, the language of the statute would seem superfluous. On the other hand, we have not conducted an extensive legal analysis of the issue and have not looked for extrinsic evidence of legislative intent to restrict DEBs in this fashion. We are, instead, following a relatively standard canon of statutory construction that words in a statute are to be given effect rather than to have no consequence.

ARB proposes to operationalize the DEBs requirement in Section 95989 of the regulations. In subsection (a), ARB proposes to allow projects that are located in California to demonstrate a DEB either via their location in California or by avoiding GHG emissions within the state based on its analysis showing that

in-state offset projects under the currently approved protocols produce air and/or water pollution benefits. In subsection (b), ARB proposes a set of requirements for out-of-state entities. In order to demonstrate a DEB, out-of-state projects must show either “[1] the reduction or avoidance of emissions of any air pollutant that is not credited pursuant to the applicable Compliance Offset Protocol in the State or [2] a reduction or avoidance of any pollutant that could have an adverse impact on waters of the State.” The first clause addresses how an out-of-state project can demonstrate a DEB on the basis of air pollution and excludes “pollutants that are credited” under an offset protocol (i.e., it excludes the GHG emissions credited by the offset project). In contrast, the second clause addresses how an offset project can establish a DEB on the basis of a water pollution benefit. Unlike the first clause, however, the second does not explicitly exclude pollutants that are credited by the applicable Compliance Offset Protocol (i.e., the second clause does not exclude GHG emissions).

We recommend that ARB clarify whether it intends to foreclose the argument that a project-level avoided GHG emission or GHG reduction constitutes the “reduction or avoidance of any pollutant that could have an adverse impact on waters of the State.” The provision as currently drafted is ambiguous in this regard and could raise questions on implementation. GHGs are considered “air pollutants” under the federal Clean Air Act (*see Massachusetts v. EPA*) and therefore might be considered “any pollutant” under Section 95989(b). Given this relationship, it may be useful to clarify that to qualify as an offset credit providing direct environmental benefits in state, a project must reduce or avoid not only greenhouse gas emissions but at least one additional air or water pollutant that “could have an adverse impact on waters of the state.”

Finally, the new restrictions on offsets to require that half produce direct environmental benefits in state will restrict the number of offset projects that are eligible for compliance. The subcommittee is interested in knowing what efforts ARB, and/or the Compliance Offsets Protocol Task Force established pursuant to AB 398, are undertaking to increase the supply of offset credits that will meet the DEB requirements. Additionally, the subcommittee thinks it would be beneficial for ARB to analyze the degree to which DEB-compliant offsets are likely to be available in the post-2020 period and whether such offsets will provide cost-containment. One commenter (Dentons) notes that the supply of credits under existing protocols may increase if allowance prices rise; we would encourage ARB to consider whether and how rising allowance prices might affect the supply of offset credits in such an analysis.

Summary of recommendations

A. Recommendation for amendments to draft regulations

- As specified above in more detail, we recommend clarifying the definition of DEBs with respect to projects that may adversely affect waters of the State.

B. Longer term recommendations

- As described above, we recommend that CARB determine whether the buffer pool amount included in the U.S. Forestry offset protocol is sufficient to protect against unintentional reversals given the recent experiences with drought and wildfire.
- We also recommend that CARB either conduct or solicit research to determine whether the leakage rate for avoided conversion projects in the forestry protocol is appropriate.

- We further recommend that CARB consider whether it should amend the U.S. Forest Offset Protocol to change the leakage factor for Improved Forestry Practices to be consistent with recent changes to the Climate Action Reserve Forestry Protocol.
- Finally, we recommend that CARB either conduct or solicit research to determine how many offsets are likely to be DEB-compliant in the post-2020 period and whether offset credits are likely to provide cost containment in the cap-and-trade program.

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