



March 16, 2018

Rajinder Sahota, Asst. Division Chief
Industrial Strategies Division
California Air Resources Board (CARB)
1001 I Street
Sacramento, CA 95814

RE: Preliminary Discussion Draft of Potential Changes to the Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms

Dear Ms. Sahota:

The American Carbon Registry (ACR), a CARB-approved Offset Project Registry (OPR) for the California cap-and-trade program, welcomes the opportunity to offer input on CARB's Preliminary Discussion Draft of Potential Changes to the Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms (PDD). With the legislative extension of California's successful cap-and-trade program, we look forward to a program that continues to tackle climate change effectively and efficiently, both within and outside of capped sectors.

Additional Regulatory Text in Section 95854, "Direct Environmental Benefits in State" (DEBS)

ACR supports CARB's potential staff proposal to use the exact words in the statute to define DEBS in the Regulation. None of the available documents clearly indicates legislative intent. Some stakeholders may assert that the legislative intent is that all offset projects occur in-state. However, legislators could have easily articulated such an intent in the statute. They chose, instead, to focus on environmental benefits. The logical conclusion is that legislators did, in fact, mean what they actually said: that CARB, with its expertise, is to ensure that all offsets deliver air and water benefits to California.

AB 398 defines DEBS 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." Focusing on the second part of the definition, it is notable that legislators directed CARB to recognize not only any water pollutant but "any pollutant." Clearly, that includes greenhouse gases (GHGs), which the U.S. EPA has established are pollutants. The DEBS definition further accommodates any type of "adverse impact" on California waters. Waters of poorer quality or diminished availability obviously suffer adverse impact. Furthermore, by including pollutants that "could" result in adverse impact, the standard is only that a negative effect is possible. Climate change is already degrading the quality of California waters and decreasing supply, a trend expected to continue. GHGs adversely impact waters of the state. Reducing or avoiding GHGs delivers DEBS.

Higher GHG concentrations affect the quality of California waters in various ways, among which are the following:

- **Increases in pollutant levels and invasive species** resulting from **warmer waters**. Warmer waters may be more conducive to pathogens and nutrients, as well as heightening the potential for invasive species. Furthermore, levels of certain pollutants, such as ammonia and pentachlorophenol, may increase due to their chemical response to warmer temperatures.¹
- **Harmful algal blooms (HABs)** resulting from **warmer waters**. HABs lead to decreased dissolved oxygen levels and toxins that destroy aquatic life. Toxins can also threaten drinking water and, along with HABs' aesthetic effects, impair recreational uses.^{2,3}
- **Anoxic water bodies** resulting from **warmer water**. Aquatic life is impaired because oxygen is less soluble in warmer water and because the decomposition of algal blooms can deplete dissolved oxygen.^{2,3}
- **Higher contaminant concentrations and loss of aquatic habitats** resulting from **reduced stream flows**. Climate change is reducing the Sierra Nevada snowpack that California waterways depend on. The same pollutant load in a smaller volume of water results in higher concentration of pollutants. Aquatic habitats may suffer from decreased flows (impaired habitat and higher pollutant concentration), as well as higher water temperatures.^{2,3}
- **Higher turbidity and pollutant levels** resulting from runoff subsequent to **wildfires**. Ambient temperature increases, decreased snowpack, and dried vegetation are expected to increase the frequency and intensity of wildfires. Runoff in burned areas delivers sediment and contaminants to water bodies. Higher turbidity and pollutant levels can impact drinking water supplies, fish spawning, aquatic habitats, and stream channel morphology.^{2,3}
- **Higher turbidity and pollutant levels** resulting from **flooding**. "Atmospheric rivers" that trigger high-intensity storms and large floods are expected to increase in frequency. Floods deliver heavy loads of sediment and contaminants to water bodies, potentially affecting drinking water supplies, fish spawning, aquatic habitats, and stream channel morphology. Floods and heavy rainfall events could also overload sewer systems and treatment plants, resulting in discharge of wastewater to surface water bodies.^{2,3}
- **Saltwater Intrusion** resulting from **sea level rise and lower freshwater flows**. As sea levels rise, saltwater intrusion to Delta surface water and groundwater are expected to challenge availability for drinking and agriculture. The problem has already manifested when, during the recent drought, a lack of fresh water flowing to near-ocean water intakes lead DWR to build a \$37 million barrier to hold back ocean water.⁴

The following schematic illustrates how climate change impacts California surface waters:

¹ U.S. EPA, *The Effect of Climate Change on Water Resources and Programs*, p. 11.

https://cfpub.epa.gov/watertrain/pdf/modules/Climate_Change_Module.pdf

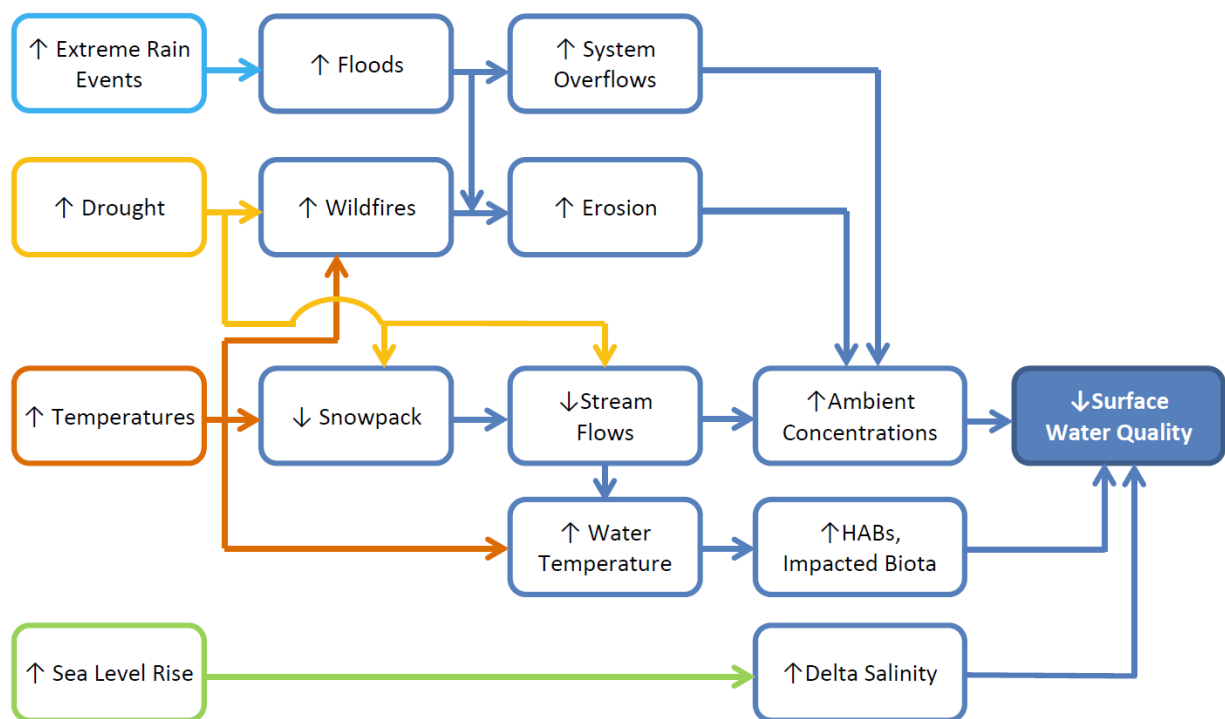
² Central Valley Regional Water Quality Control Board, *Central Valley Region Climate Change Work Plan*, Dec. 2017.

https://www.waterboards.ca.gov/centralvalley/board_decisions/tentative_orders/1712/20_climatechange/3_climatechange_wkpln.pdf

³ Los Angeles Regional Water Quality Control Board, *Los Angeles Region Framework for Climate Change Adaptation and Mitigation*, July 2015.

https://www.waterboards.ca.gov/losangeles/water_issues/programs/climate_change/docs/2015/Climatechange-frameworkforclimatechangeadaptation-final7-20-2015.pdf

⁴ Kasler, Dale and Ryan Sabalow, *The Sacramento Bee*, "How climate change could threaten water supply for millions of Californians," June 30, 2017. <http://www.sacbee.com/news/local/article158679214.html>



Source: Central Valley Regional Climate Change Work Plan, Central Valley Regional Water Quality Control Board, Dec. 2017

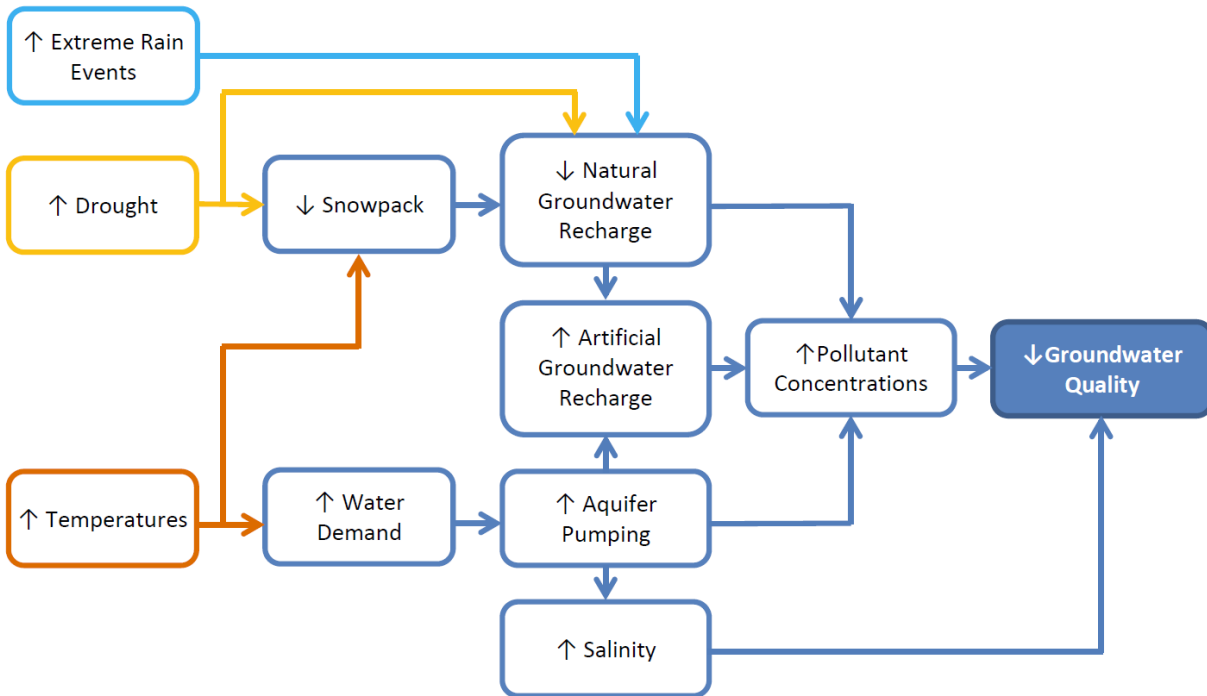
Groundwater is also susceptible to the impacts of GHG emissions. Aside from saltwater infiltration, effects include the following:

- **Lower water tables** resulting from **higher demand and reduced recharge**. Higher temperatures will increase demand for water for agriculture and other uses. Declining water supply and changing precipitation patterns may also result in reduced recharge of aquifers.^{5,6}
- **Higher concentration of contamination** resulting from **lower groundwater volume**. The same contaminant load will be more concentrated as water tables fall.^{5,6}

The following schematic summarizes how GHG emissions could impact California groundwater:

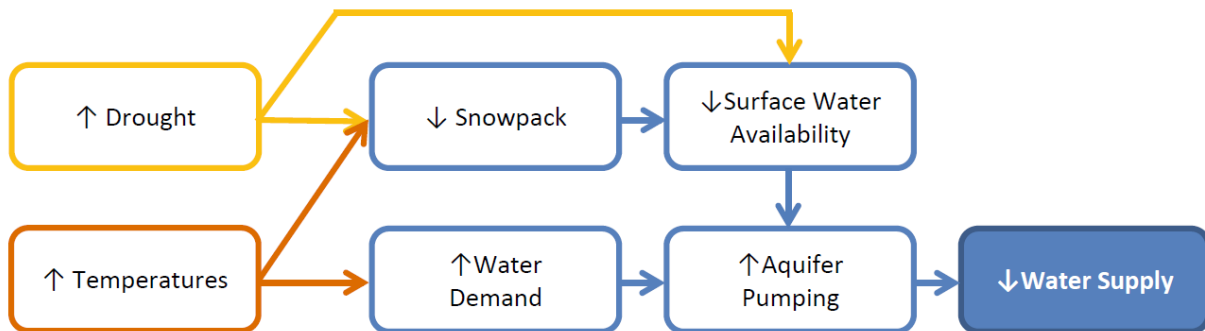
⁵ Central Valley Regional Water Quality Control Board, *Central Valley Region Climate Change Work Plan*, Dec. 2017. https://www.waterboards.ca.gov/centralvalley/board_decisions/tentative_orders/1712/20_climatechange/3_climatechange_wkpln.pdf

⁶ Los Angeles Regional Water Quality Control Board, *Los Angeles Region Framework for Climate Change Adaptation and Mitigation*, July 2015. https://www.waterboards.ca.gov/losangeles/water_issues/programs/climate_change/docs/2015/Climatechange-frameworkforclimatechangeadaptation-final7-20-2015.pdf



Source: Central Valley Regional Climate Change Work Plan, Central Valley Regional Water Quality Control Board, Dec. 2017

While water quality impacts are expected to limit water availability, climate change will also limit the absolute supply of water. Decreased snowpack and shrinking water bodies will limit availability for all uses^{7,8}, with concomitant ecological impacts. The following schematic outlines how GHG emissions will limit water supply in California:



Source: Central Valley Regional Climate Change Work Plan, Central Valley Regional Water Quality Control Board, Dec. 2017

⁷ California Climate Change Center, *Using Future Climate Projections to Support Water Resources Decision Making in California*, pp. 45-46, May 2009.

https://www.water.ca.gov/LegacyFiles/pubs/climate/using_future_climate_projections_to_support_water_resources_decision_making_in_california/usingfutureclimateprojtosuppwater_jun09_web.pdf

⁸ Hayhoe, Katharine, et al., *Proceedings of the National Academy of Sciences*, "Emissions pathways, climate change, and impacts on California," Aug. 24, 2004. <http://www.pnas.org/content/pnas/101/34/12422.full.pdf>

California's water policies and programs recognize how climate change affects California waters and seek to mitigate the impact. Policy elements include reducing GHG emissions. State Water Resources Control Board Resolution No. 2017-0012 summarizes water quality impacts as follows⁹:

Examples of water quality impacts include, but are not limited to: dry periods and drought lowering stream flow and reducing dilution of pollutant discharges, harmful algal blooms due to a combination of warm waters, reduced ability of warm water to hold dissolved oxygen, and nutrient pollution, more erosion and sedimentation caused by intense rainfall events, especially following wildfire, and increased velocity of stream flow, potential sewer overflows due to more intense precipitation and increased storm water runoff, rising sea levels inundating lowlands, displacing wetlands, and altering tidal ranges, and increasing areas subject to saltwater intrusion into groundwater, and water pollution and increased absorption of carbon dioxide creating coastal zone "hotspots" of acidification and hypoxia.

The Resolution further states, "Mitigation, in the context of climate change, refers to actions taken to reduce concentration of greenhouse gases in the atmosphere. The most effective way to reduce greenhouse gas concentrations in the atmosphere is to reduce emission sources."

The California Climate Adaptation Strategy, as well as plans by regional water boards, catalogs the impacts of climate change on California water bodies.^{10,11,12} Nowhere in state policies and plans is a distinction made between in-state and out-of-state GHG sources and their effect on waters of California. Implementation of DEBS should be consistent, incorporating an equally robust recognition of the GHG-water nexus.

The DEBS interpretation ACR proposes obviates the need for an assessment of each offset project against DEBS criteria. However, should CARB proceed with establishing a framework for project-by-project DEBS assessment, ACR supports the approach proposed in the PDD. Of critical importance is the opportunity for every offsets project to meet the DEBS requirement with sufficient justification.

Offsets from projects listed with an OPR by Dec. 31, 2020 should be deemed to have met the DEBS requirement. All the projects benefit California waters. Furthermore, to disqualify some would subject them to a set of rules that did not exist when investment decisions were made.

⁹ State Water Resources Control Board Resolution No. 2017-0012, adopted March 7, 2017, www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2017/rs2017_0012.pdf

¹⁰ *California Climate Adaptation Strategy, Chapter 7 – Water Management*. http://www.climatechange.ca.gov/adaptation/documents/Statewide_Adaptation_Strategy_-_Chapter_7_-_Water_Management.pdf

¹¹ Central Valley Regional Water Quality Control Board, *Central Valley Region Climate Change Work Plan*, Dec. 2017. https://www.waterboards.ca.gov/centralvalley/board_decisions/tentative_orders/1712/20_climatechange/3_climatechange_wkpln.pdf

¹² Los Angeles Regional Water Quality Control Board, *Los Angeles Region Framework for Climate Change Adaptation and Mitigation*, July 2015. https://www.waterboards.ca.gov/losangeles/water_issues/programs/climate_change/docs/2015/Climatechange-frameworkforclimatechangeadaptation-final7-20-2015.pdf

Update and Adoption of Offset Protocols

With passage of AB 398, uncertainty regarding cap-and-trade extension and the future role of offsets has been removed. Furthermore, the steep emission reductions mandated by SB 32 necessitate additional offset supply to limit costs to consumers. CARB should, therefore, include in the 2018 rulemaking the update of existing protocols and adoption of new ones. ACR would like to highlight several candidate protocols that offer substantial potential in-state, thereby aligning with even the most restrictive DEBS interpretation. As updated and new protocols that clearly meet DEBS requirements are readily available to address cost containment needs, their consideration need not wait for the Compliance Offsets Protocol Task Force to be established. The lead time necessary to generate offsets compels action to increase supply potential now.

- 1) [Destruction of Ozone Depleting Substances and High-GWP Foam](#). The protocol updates the CARB ODS Compliance Offset Protocol that was first adopted by CARB in 2011 and subsequently revised in 2014. The protocol was updated to include new eligible sources of ODS used in air conditioning and refrigeration equipment, in medical aerosol applications and for fire suppression. Additionally, to incentivize foam destruction projects, of which there have been none to date, the ACR protocol includes multiple new eligible foam sources including walk-in coolers, refrigerated transportation, refrigeration cases, pipe insulation and marine foam, and provides new emission factors and quantification methods for foam projects, as well as for monitoring destruction events conducted at facilities that are a part of an enclosed equipment de-manufacturing system. Updating this protocol would support the Short-Lived Climate Pollutants (SLCP) Strategy.
- 2) [Transition to Advanced Formulation Blowing Agents in Foam Manufacturing and Use](#). It is common for foam used in certain technologies to be produced using blowing agents that contain hydrofluorocarbons (HFC) which are released during foam manufacture, use, and at end-of-life. Alternatives to these HFC-based blowing agents are available but are not currently commonly used in certain segments of the foam manufacturing industry. The eligible sectors included in the protocol are as follows:
 - Extruded polystyrene boardstock
 - Two-component rigid polyurethane spray foam
 - Rigid polyurethane foam used in residential refrigerators and freezers
 - Rigid polyurethane injected foam used in the following sub-applications:
 - Marine flotation or buoyancy
 - Heating, Ventilation, Air Conditioning and Air Handling Systems
 - Refrigerated Transport
 - Industrial Refrigeration Systems
 - Garage and entry doors
 - Retail Food Refrigeration (to be adopted)Adoption of this protocol would also support the SLCP Strategy, as well as the statutory goal of reducing HFC emissions 40% by 2030.
- 3) [Advanced Refrigeration Systems](#). The intent of the protocol is to incentivize GHG emissions reductions through the deployment and use of advanced refrigeration systems in large commercial and stand-alone commercial refrigeration. The refrigerant industry has been moving to introduce advanced commercial refrigerant technologies for some time, yet the adoption of these technologies

has been slow. Such systems may deploy refrigerants such as hydrocarbons, ammonia, carbon dioxide, and hydrofluoroolefins as alternatives to HCFC or HFC refrigerants that are commonly used. The protocol includes a framework to incentivize the increased uptake of these available alternatives in commercial refrigeration. Adoption of this protocol would also support the SLCP Strategy and the statutory goal of reducing HFC emissions 40% by 2030.

- 4) [Restoration of California Deltaic and Coastal Wetlands](#). Eligible project types in the protocol include wetland creation and a switch from row crops to rice cultivation in the Sacramento-San Joaquin Delta, as well as tidal wetland creation in the Suisun Marsh and California coastal areas. In the absence of these projects (i.e., the baseline scenario), wetlands would continue to subside, or in some cases disappear entirely, or result in severe CO₂ oxidation. If restored, these ecosystems can store large quantities of carbon in rich peat soils. Research in the San Joaquin delta shows that, per acre, wetlands are the most carbon-rich ecosystem. The protocol would also contribute to the 2017 Scoping Plan goal of managing natural and working lands to mitigate 15-20 million metric tons of CO₂ by 2030.

ACR partnered with the Sacramento–San Joaquin Delta Conservancy, HydroFocus, University of California Berkeley, and Tierra Resources to develop this carbon offset protocol to quantify GHG emission reductions. Funding was provided by the Sacramento Municipal Utility District (SMUD), the California Coastal Conservancy, Metropolitan Water District, and California Department of Water Resources.

- 5) [Compost Additions to Grazed Grasslands](#). Adding compost to grazed grasslands has been demonstrated to increase soil carbon sequestration and avoid emissions related to the anaerobic decomposition of organic waste material in landfills. Apart from the economic benefit of increased forage production, applying compost to grazed grasslands also has many environmental co-benefits such as improved soil quality, decreased risk of water and wind erosion by increasing soil aggregation, and increased nutrient and water availability for vegetation. The protocol was developed by Terra Global Capital with support from the Environmental Defense Fund, Silver Lab at the University of California Berkeley, and the Marin Carbon Project.

Adoption of this protocol would complement the increasingly stringent organic waste diversion regulations. The protocol would help create a new market for diverted waste, and the economics of the protocol should improve with the increased supply of organics. This protocol would also contribute to the 2017 Scoping Plan goal of managing natural and working lands to mitigate 15-20 million metric tons of CO₂ by 2030.

Section 95976: Monitoring, Reporting, and Record Retention Requirements for Offset Projects

(d)

ACR recommends that the section be clarified with respect to when a project is considered terminated. This section states that failure to submit an Offset Project Data Report (OPDR) results in project termination. It also states that if an OPDR is not submitted within the 28 months of listing (a regulatory deadline) then, to remain eligible, it is possible to update a project listing to reflect the most recent version of a compliance offset protocol. Further, the section states that an OPDR must be submitted by the end of the *next* reporting period to maintain continuous reporting (i.e. indicating that the deadline to submit

an OPDR within four months of the end of a reporting period does not need to be met to maintain eligibility). It is currently unclear when failure to submit a OPDR would result in project termination.

Section 95987: Offset Project Registry Requirements

(b)(3)

If CARB's intent is to require OPRs change project status to "inactive" and "terminated" in accordance with the stated criteria, then ACR recommends that instances of "may" be revised to "shall." In addition, inclusion of the word "any" prior to "registry offset credits" could be eliminated without loss of meaning. Following is the relevant text, with the key words italicized.

- "the Offset Project Registry...*may* update the project listing status to 'Inactive' if the project has not been issued *any* registry offset credits or CARB offset credits or update the listing status to 'Terminated' if the project has been issued *any* registry offset credits or CARB offset credits. The Offset Project Registry *may* update the listing status to 'Inactive' or 'Terminated' if..."

(b)(3)(A-C)

The preceding text states, "The Offset Project Registry may update the listing status to 'Inactive' or 'Terminated' if any of the following circumstances exist." With respect to items A, B, and C, it is unclear which designation is triggered. ACR recommends that this language be clarified.

(b)(4)(F)

The requirement that the OPR's memo indicate "when, if ever, the offset project may receive offset credits" appears to put the OPR in the position of regulatory interpretation. The language of the regulation should be the Offset Project Operator's guide as to the possibility of future offset issuance. ACR recommends that this requirement for memo content be eliminated.

(b)(5)

- If CARB's intent is to require OPRs update project status to "Completed" in accordance with the stated criteria, then ACR recommends that the word "may" be revised to "shall" in the following sentence: "An Offset Project Registry *may* update an offset project's listing status to 'Completed' if..."
- With the word "and" before criterion (4), the requirements to change a project's status to "completed" seem to combine criteria that should apply separately to forestry and non-forestry projects. It appears that the first three criteria should apply to non-forestry projects, while the fourth criterion should apply only to forestry projects.

Section 95985: Invalidation of CARB Offset Credits

The aggressive GHG reduction goal of SB 32 portends significantly higher prices in the grocery aisle, on utility bills, and at the gas pump. Emissions reductions outside the cap could mitigate these price impacts, but current invalidation rules constrain the offsets market. ACR, therefore, recommends that CARB undertake more substantial changes to the manner in which invalidation is handled and the criteria for invalidation. We suggest CARB could increase offsets usage by (a) switching from buyer liability to a buffer pool approach and (b) clarifying invalidation criteria.

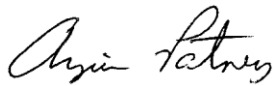
A buffer pool approach for all projects would not be unlike that currently used for forestry projects. In the highly unlikely event that offsets need to be invalidated due to a regulatory non-compliance (based on program history), credits from the buffer pool would be invalidated to maintain the integrity of the program.

California law requires that linked jurisdictions' programs be "equivalent to or stricter" than California's. Quebec and Ontario both employ buffer pools for their offset programs, and this approach was satisfactory to CARB and Governor Brown. Given that Oregon's climate bills encourage development of a framework for offset project aggregation, a buffer pool would again likely be the chosen mechanism to address invalidation.

Second, CARB could further define what constitutes grounds for invalidation. ACR suggests that reason for invalidation should be limited specifically to issues that compromise the GHG reduction itself. Enforcement for violations unrelated to GHG reductions is already under the purview of local, state, and federal regulators. With risk of invalidation clearly limited to issues pertaining to the integrity of GHG reductions, compliance entities would be in a much better position to understand and accept the risk.

We appreciate the opportunity to provide these comments, and we look forward to continued engagement as the process moves forward. If you would like to further discuss our thoughts, please feel free to get in touch.

Respectfully,

A handwritten signature in black ink, appearing to read "Arjun Patney".

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