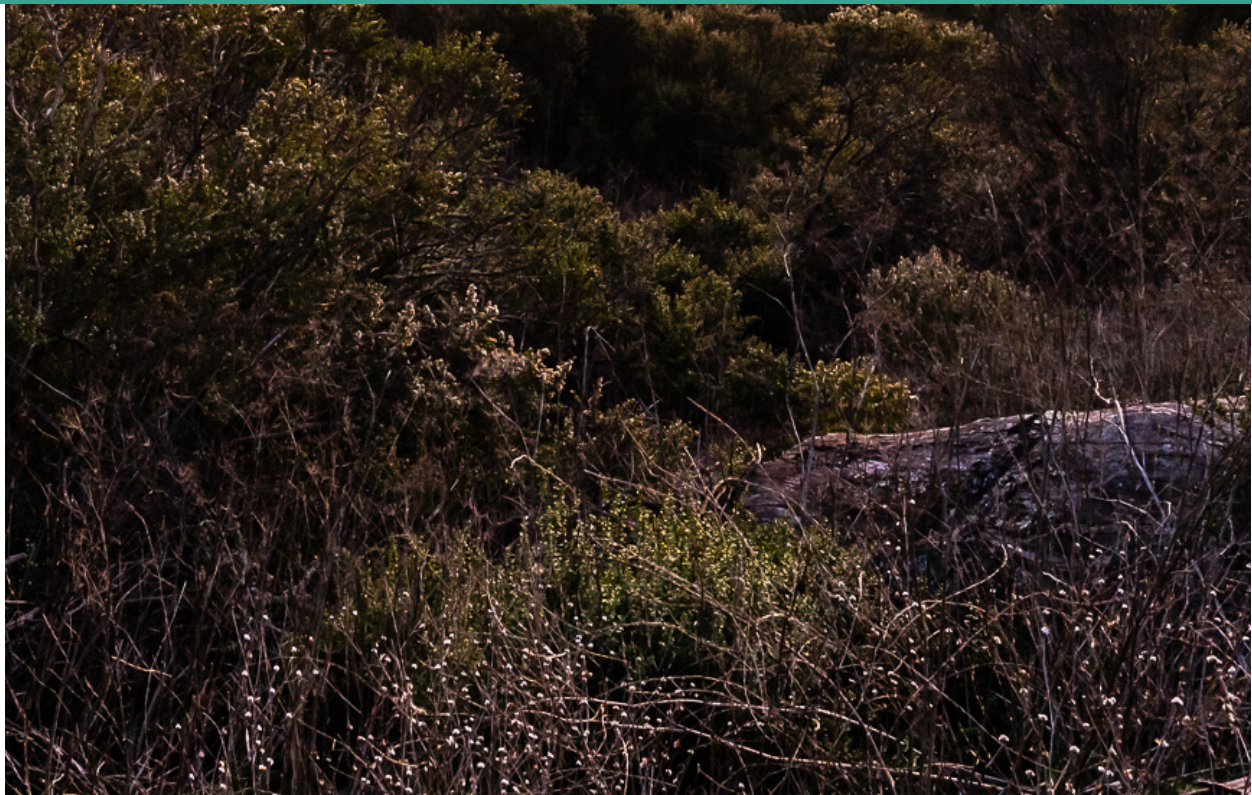




2022 Annual Report to the Joint Legislative
Budget Committee on Assembly Bill 32:
California Global Warming Solutions Act of 2006



2022 Annual Report to the Joint Legislative Budget Committee on Assembly Bill 32

(Nuñez and Pavley, Chapter 488, Statutes of 2006)
The California Global Warming Solutions Act of 2006

Contents

INTRODUCTION	1
SECTION 1: ANNUAL AB 32 PROGRAM UPDATES	3
I. SCOPING PLAN.....	3
II. GREENHOUSE GAS EMISSIONS AND REDUCTIONS	7
III. CARB GHG REDUCTION MEASURES & PROGRAM UPDATES.....	9
A. Cap-and-Trade Regulation.....	10
B. California Climate Investments: Cap-and-Trade Auction Proceeds	13
C. Low Carbon Fuel Standard.....	15
D. Advanced Clean Cars	16
E. Light-Duty Vehicle and Clean Transportation Equity Programs	19
F. Clean Heavy- and Medium-Duty Vehicle and Off-Road Equipment Regulations.....	21
G. Clean Heavy- and Medium-Duty Vehicle and Off-Road Equipment Incentive Programs	24
H. SB 375: Sustainable Communities and Climate Protection Program	26
I. Dairy and Livestock Methane, Hydrofluorocarbons, and Woodsmoke	29
J. Landfill Methane	33
K. Crude Oil and Natural Gas Production, Processing, and Storage	34
L. Electricity Programs.....	35
IV. COORDINATION WITH OTHER ENTITIES OUTSIDE OF CALIFORNIA.....	37
SECTION 2: ANNUAL AB 32 FISCAL AND RESOURCES REPORT.....	44
I. STRUCTURE AND FUNDING FOR REGULATORY ACTIVITIES	44
II. AB 32 COST OF IMPLEMENTATION FEE.....	45
III. CARB RESOURCES TO IMPLEMENT AB 32.....	48
SECTION 3: ANNUAL WESTERN CLIMATE INITIATIVE, INC. ACTIVITY UPDATES. 52	
I. WCI, INC. ACTIVITY UPDATES.....	52
II. WCI, INC. CORPORATE GOVERNANCE.....	53
III. PAYMENTS TO WCI, INC.	53
Appendix A: Acronyms and Abbreviations.....	54
Appendix B: Legislation and Other Orders, with References.....	56

This report has been reviewed by the staff of the California Air Resources Board (CARB) and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the California Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use. To aid in public review, lists of acronyms, legislation, and other orders used in the report are provided in Appendix A and B.

This report can be viewed on CARB's [Legislatively Mandated Reports webpage](#). To order a hard copy, please contact CARB's Office of Legislative Affairs by email at OLA@arb.ca.gov or by phone at (916) 322-2896.

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INTRODUCTION

[Assembly Bill \(AB\) 32](#) (Nuñez and Pavley, Chapter 488, Statutes of 2006), the California Global Warming Solutions Act of 2006, designated the California Air Resources Board (CARB or Board) as the State agency charged with monitoring and regulating sources of greenhouse gas (GHG) emissions. AB 32 required California to reduce GHG emissions to 1990 levels by 2020. The law tasked CARB with quantifying this goal, implementing a mandatory emissions reporting system, and adopting a [Scoping Plan](#) that describes the measures and other actions planned to achieve the target. [California achieved its 2020 GHG emissions reductions goal](#) four years early in 2016, and continues to show emissions reductions through 2019.

The successes of AB 32 and accompanying benefits to the State illustrate the need to maintain and continue GHG reductions beyond 2020. [Senate Bill \(SB\) 32](#) (Pavley, Chapter 249, Statutes of 2016) requires California greenhouse gas emissions to be reduced to 40% below the 1990 level by 2030. [AB 398](#) (Garcia, E., Chapter 135, Statutes of 2017) provided additional direction to CARB on the [Cap-and-Trade Program's](#) role in achieving the SB 32 target. [AB 617](#) (Garcia, C., Chapter 136, Statutes of 2017) was passed alongside [AB 398](#), to focus on reducing air pollution exposure in overburdened communities.¹ These legislative mandates establish California's long-term climate goals and provide additional direction to CARB on implementation of the State's climate and air quality programs.

This report provides an update to the Joint Legislative Budget Committee on CARB's climate programs in California and is responsive to a number of reporting requirements initiated by the California Legislature.² This report covers CARB's implementation of AB 32 and, for the most part, does not include the activities and resources of other State agencies that also implement AB 32.³

The first section of this report, "Section 1: Annual AB 32 Program Updates," includes updates on the AB 32 Climate Change Scoping Plan, CARB's GHG emissions inventory, and GHG emissions reductions programs implemented by CARB. The updates highlight recent AB 32 developments and implementation accomplished during FY 2020–21 and identify upcoming milestones for FY 2021–22.

The program updates focus on the high-profile regulations and supporting programs identified in the Supplemental Budget Report, as well as other major CARB programs that support AB 32 goals. These updates represent a majority of CARB's activities and resources that address climate change. AB 32-related CARB activities that include

¹ The majority of GHG co-pollutants comes from burning fossil fuels, which produces oxides of nitrogen (NO_x), fine particulate matter, and other toxic air contaminants. These co-pollutants enter the body through the lungs and negatively affect human health and life expectancy.

² [The Supplemental Report of the 2012 Budget Act, Item 39000010001](#), requires CARB to provide the Joint Legislative Budget Committee with multiple AB 32-related reports.

³ [The State Agency Greenhouse Gas Reduction Report Card](#) published by the California Environmental Protection Agency (CalEPA) contains GHG emissions reductions measures of each State agency and department.

research, air monitoring, and preparing the emissions inventory (including the [Mandatory Reporting Regulation](#)), as well as the development, implementation, and enforcement of a number of regulations that reduce GHGs, as a primary objective or as a co-benefit, are not covered in this report.

The next section of this report, “Section 2: Annual AB 32 Fiscal and Resources Report,” details the AB 32 Cost of Implementation Fee, as well as some other special funds, that are used to implement CARB’s AB 32 core and supporting programs.

The final section of the report, “Section 3: Annual Update on Western Climate Initiative, Inc. Activities,” contains WCI, Inc. activity updates as mandated by [SB 1018](#).

SECTION 1: ANNUAL AB 32 PROGRAM UPDATES

(July 2020–June 2021 and July 2021–June 2022)

I. SCOPING PLAN

A. Background

AB 32 requires CARB to develop a [Scoping Plan](#) to outline the State’s strategy for reducing GHGs and to update it at least every five years. The initial [2008 Scoping Plan](#) presented the first economy-wide approach to reducing emissions, and highlighted the value of combining both carbon pricing and other complementary command-and-control programs to achieve the most cost-effective GHG emissions reductions. The [2013 Scoping Plan Update](#) built upon the initial Scoping Plan with new strategies and recommendations, including the need to address [short-lived climate pollutants](#). The 2013 Scoping Plan Update also set a mid-term target to put California on a trajectory towards its long-term 2050 climate goals.

2017 Scoping Plan to Meet the 2030 Target. In December 2017, the Board adopted the [2017 Scoping Plan Update](#), which described an actionable, cost-effective, and technologically feasible path for achieving a 40 percent reduction in GHG emissions by 2030 as codified in [SB 32](#). During development of the 2017 Scoping Plan, [AB 398](#) was signed into law. This legislation provided direction on the role of a post-2020 [Cap-and-Trade Program](#) as part of the overall strategy. The 2017 Scoping Plan Update is a comprehensive document that includes and builds on major air quality and climate, plans and measures to create a balanced portfolio of actions to achieve the 2030 target.

Carbon Neutrality. [Board Resolution 17-46](#) directs CARB staff to continue to evaluate and explore opportunities to achieve significant cuts in GHG emissions from all sectors and sources. [Executive Order B-55-18](#) established a statewide goal for California to achieve carbon neutrality by 2045. To stabilize the climate, the carbon dioxide and other GHG emissions generated by sources such as vehicles, power plants, industrial processes, and natural and working lands must be less than or equal to the amount of carbon dioxide that is removed from the atmosphere. In 2019, CARB initiated a series of [sector-specific public workshops](#) to gather information and to facilitate dialogue on the potential role of each sector in achieving statewide carbon neutrality. The next [Scoping Plan Update](#), planned for 2022, will lay out the path to achieving carbon neutrality by mid-century.

Environmental Justice. To further assist CARB in its efforts to advance environmental justice, AB 32 mandates that CARB convene an [Environmental Justice Advisory Committee](#) (EJ Advisory Committee) to advise the Board in developing the Scoping Plan. They advise the Board during development of the Scoping Plan on pertinent environmental justice related issues, including community health and equity. AB 32 also requires that the EJ Advisory Committee be comprised of representatives from

communities in the State with the most significant exposure to air pollution, including, but not limited to, communities with minority populations or low-income populations, or both⁴. On January 25, 2007, the Board appointed the first EJ Advisory Committee to advise it on the Initial Scoping Plan and other climate change programs. CARB solicits nominations and reconvenes new committees to advise the Board on each subsequent AB 32 Scoping Plan update.

Natural and Working Lands. California's [natural and working lands](#) (NWL), including our forests, shrublands, rangelands, urban green spaces, wetlands, farms, and deserts are home to the most diverse sources of food, fiber, and renewable energy in the country. They underpin the State's water supply and support clean air, wildlife habitat, and local and regional economies. With their potential to sequester carbon, reduce GHG emissions, and increase the capacity for California to withstand inevitable climate impacts, our lands are a critical component of California's integrated climate change strategy and are critical to achieving carbon neutrality. However, it is increasingly clear that California's lands are deteriorating and that the critical ecosystem services they provide, including their ability to sequester carbon from the atmosphere, are at risk. CARB's [California Natural and Working Lands Inventory](#) shows that California's lands are losing carbon, with timber harvest and wildfire being the largest causes of carbon loss. To achieve the deep GHG emissions reductions needed to avoid the most catastrophic impacts of climate change, the State needs a concerted and ambitious effort to protect carbon stocks, increase carbon sequestration, and reduce GHG emissions on our lands to move California's lands towards becoming a resilient carbon sink.

B. Recent Developments—July 2020 through June 2021

2022 Scoping Plan Update to Achieve Carbon Neutrality by 2045.

- The 2022 Scoping Plan Update will assess progress towards achieving the 2030 GHG emissions reductions target, as well as a path to carbon neutrality no later than 2045. Achieving carbon neutrality will bring a number of changes to California including moving the State away from fossil fuel combustion in a manner that supports job retention and creation, as California makes a just transition towards a clean energy economy. Moreover, data show disadvantaged communities are disproportionately impacted by air pollution related to fossil fuel combustion. A phasing out of reliance on fossil fuels will deliver greater benefits in these communities compared to non-environmental justice communities in the State.
- CARB commenced development of the 2022 Scoping Plan Update with a series of [workshops](#) in June 2021. The workshops focused on Natural and Working Lands, Equity and Environmental Justice, Transportation, and Electricity.
- Staff presented an informational [update to the Board in June 2021](#) that outlined the structure, development process, and timeline for the 2022 Scoping Plan Update.

⁴ AB 32; Part 7. Miscellaneous Provisions Section 38591.

Carbon Neutrality.

- Staff presented an informational [update to the Board in November 2020](#) on preliminary findings for achieving statewide carbon neutrality by 2045. The findings were based on a series of carbon neutrality public workshops held during 2019 and 2020.
- Pursuant to [AB 74](#) (Ting, Chapter 23, Statutes of 2019), CalEPA published two [carbon neutrality studies](#), [Driving California's Transportation Emissions to Zero](#) on reducing transportation fossil fuel demand and emissions, and [Enhancing Equity While Eliminating Emissions in California's Supply of Transportation Fuels](#) on managing the decline in transportation fossil fuel supply. Both studies were published in early 2021.
 - The Institute of Transportation Studies at the University of California (UC) Davis identified strategies to significantly reduce transportation-related fossil fuel demand and emissions. These strategies included transitioning to zero emission vehicles, accelerating the use of alternative fuel sources, and reducing vehicle miles traveled (VMT).
 - UC Santa Barbara identified strategies to manage the decline of transportation-related fossil fuel supply strategically and responsibly
- CARB commissioned a study through Energy and Environmental Economics, Inc. The draft report [Achieving Carbon Neutrality in California](#) identified scenarios California could take to reduce emissions from the fossil energy and industrial sectors to help achieve carbon neutrality by 2045.

Environmental Justice.

- On May 20, 2021, the Board appointed eleven [EJ Advisory Committee](#) members; four were returning, and seven were first time members. They are advising the Board during the development of the 2022 Scoping Plan Update. At the same meeting, the Board also delegated authority for the selection and appointment of additional EJ Advisory Committee members as needed. The first EJ Advisory Committee meeting to discuss the 2022 Scoping Plan Update was held in June 2021. It was open to the public and provided a public comment period.

Natural and Working Lands.

- CARB staff continues to coordinate with CalEPA, the California Natural Resources Agency (CNRA), California Department of Food and Agriculture (CDFA), the Strategic Growth Council, and the Governor's Office of Planning and Research (OPR) on approaches to integrate California's lands into a framework for carbon neutrality, and the 2022 Scoping Plan Update. This is consistent with Governor Newsom's [Executive Order N-82-20](#), and ensures alignment of other State agency efforts such as CNRA's NWL Climate Smart Strategy, and the 30x30 Initiative, with the 2022 Scoping Plan Update.
- CARB has engaged at the local, state, and national levels through participation in workshops, symposia, and key public processes involving natural and working lands. These include the State's [Forest Management Task Force](#), the [U.S. Climate Alliance](#), stakeholder meetings, and [public workshops](#) as part of the development of the 2022 Scoping Plan Update.

Scoping Plan Litigation. There was activity in one court case against CARB. It was a challenge to content included in the 2017 Scoping Plan Update.

The Two Hundred, et al. v. California Air Resources Board:

In this writ action, filed in April 2018, The Two Hundred, “an unincorporated association of civil rights leaders,” requested that the court declare certain elements of the 2017 Scoping Plan Update to be unlawful, and invalidate them. The specific elements petitioners object to include discussion of potential future reductions of VMT, and future per capita GHG emissions reductions necessary to meet California’s future GHG emissions reductions target. The lawsuit argues that this non-binding discussion within the 2017 Scoping Plan creates new and unlawful mandates that will exacerbate California’s existing housing crisis, and disproportionately harm disadvantaged and minority communities, thus violating federal civil rights law, the California Environmental Quality Act (CEQA), and other laws. Throughout 2020 and the first half of 2021, CARB worked with petitioners on finalizing a CEQA litigation record.

C. Upcoming Milestones—July 2021 through June 2022

- CARB and other lead State agencies will continue to hold public workshops on the 2022 Scoping Plan Update, including EJ Advisory Committee meetings, and public community meetings.
- The 2022 Scoping Plan Update will reflect the pivotal function that natural and working lands have in protecting, restoring, and sustainably managing our lands. CARB will continue conduct technical work and hold public workshops on setting a target for natural and working lands in the 2022 Scoping Plan Update in support of carbon neutrality. This is in line with Governor Newsom’s [Executive Order N-82-20](#).
- As directed by the Governor, CARB will also evaluate how to phase out oil and gas extraction no later than 2045.
- CARB will continue to work with the [EJ Advisory Committee](#) and stakeholders through meetings and workshops to define and model different scenarios that will achieve carbon neutrality by no later than 2035⁵, and also by no later than 2045. CARB will release modeling results and the draft 2022 Scoping Plan Update in the first half of 2022.
- CARB will also conduct additional public workshops, including meetings of the EJ Advisory Committee, throughout 2022, who will provide recommendations related to equity, and the outcomes and technologies identified to achieve carbon neutrality in the 2022 Scoping Plan Update.
- CARB will host at least two Board meetings on the 2022 Scoping Plan Update during calendar year 2022.

⁵ As requested by Governor Newsom in a July 9, 2021 [letter to CARB Chair Randolph](#)

II. GREENHOUSE GAS EMISSIONS AND REDUCTIONS

CARB periodically updates estimates of GHG emissions in California, which change over time as the science advances, national and international accounting methodologies are updated, growth forecasts are revised, and California makes progress in reducing emissions. CARB and international climate change organizations use the scientifically established Global Warming Potential (GWP) values developed by the Intergovernmental Panel on Climate Change in its *Fourth Assessment Report*, which includes updated GWP values for GHGs. CARB expresses the emissions of all GHGs in terms of carbon dioxide equivalent, which factor in how long the GHG remains in the atmosphere and how strongly it absorbs energy relative to carbon dioxide.

CARB's [GHG emissions inventory](#) shows that California emissions have remained below the [2020 target](#) of 431 million metric tonnes of carbon dioxide equivalent (MMT CO_2e) since 2016. In 2019, [State emissions continued to decline](#), to 418 MMT CO_2e . Emissions vary from year-to-year depending on the weather and other factors. California continues to implement its GHG emissions reductions programs to ensure that the State remains on track to meet its climate targets in 2030 and beyond.

Over a decade of successful climate programs is already providing lower-carbon fuel, cleaner cars, trucks and buses, more renewable energy, and more efficient buildings and appliances. In addition, these emissions reductions are keeping California on track to meet the 2030 GHG emissions target of 260 MMT CO_2e while setting the State on a trajectory that supports the international effort to limit global temperature rise below 2 degrees Celsius in this century.

CARB currently estimates that GHG emissions in 2030 will be 389 MMT CO_2e in a business as usual (BAU) scenario without further State action to reduce GHG emissions. To meet the 2030 target of 260 MMT CO_2e , the climate programs must reduce emissions by 129 MMT CO_2e in 2030.

Table 1 shows the GHG emissions reductions expected to result from the 2017 Scoping Plan Update measures in order to meet the [SB 32](#) goal. The current economic fluctuations due to COVID-19 are not captured in the modeling conducted for the 2017 Scoping Plan Update. The values in Table 1 may change once there is updated modeling to support the 2022 Scoping Plan Update.

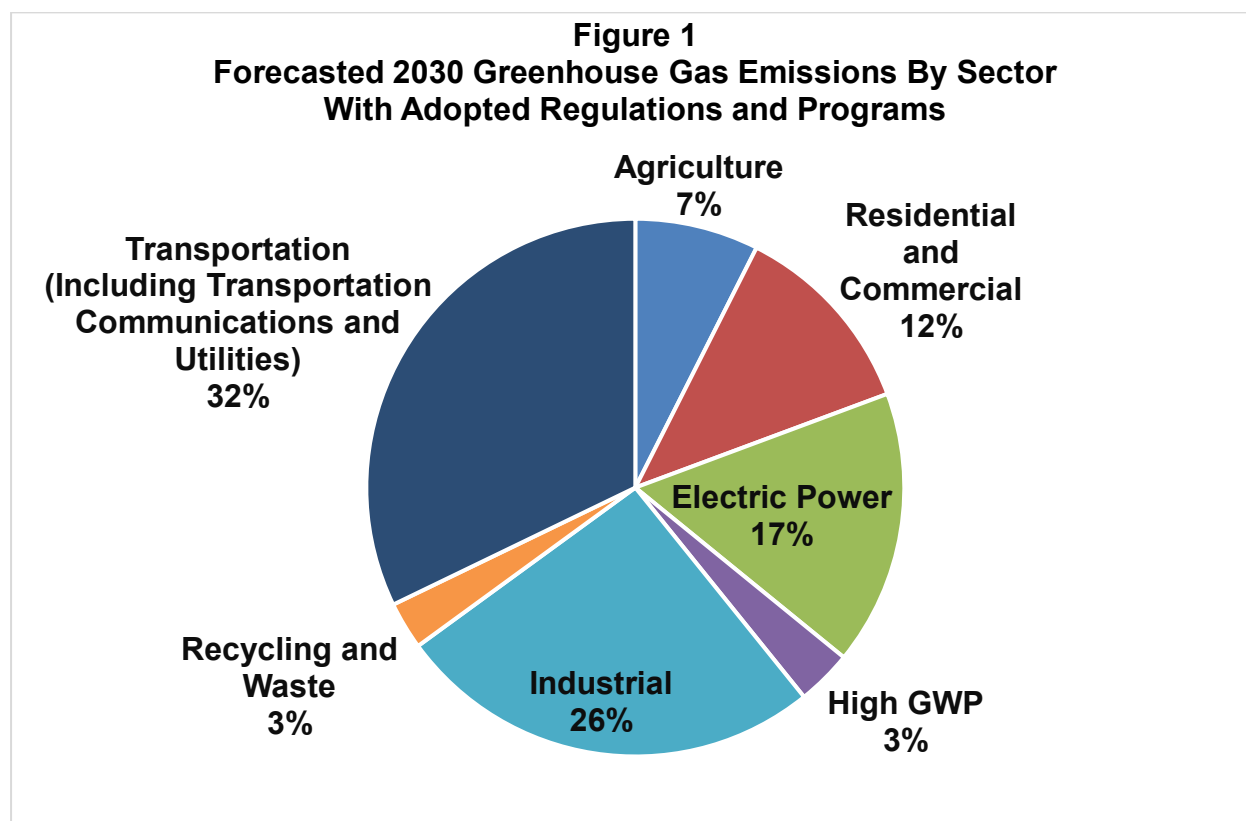
Table 1: Forecasted 2030 Emissions Reductions from Sector-Based Measures

Category	2030 GHG Emissions (MMTCO₂e)*
Agriculture	12
Residential and Commercial	3
Electric Power	9
High Global Warming Potential Gases	18
Industrial	6
Recycling and Waste	2
Transportation	19
Cap-and-Trade Program	60**
2030 Emissions Limit	260
SB 32 Baseline 2030 Forecast Emissions (2030 BAU)	389

* Based on forecast from 2017 Climate Change Scoping Plan Update.

** Cap-and-Trade Program emissions reductions depend on the emissions forecast.

Figure 1 shows forecasted 2030 GHG emissions by economic sector.⁶ This forecast assumes that the 2030 target is achieved.



In allocating resources to its GHG emissions reductions programs, CARB seeks to prioritize programs that achieve the greatest GHG emissions reductions and further improve air quality for disadvantaged communities, low-income communities, and low-income households, collectively referred to as “priority populations.”

III. CARB GHG REDUCTION MEASURES & PROGRAM UPDATES

This section focuses on the activities of major CARB regulatory programs to reduce GHG emissions: the [Cap-and-Trade Program](#), [Low Carbon Fuel Standard](#) and [Advanced Clean Cars](#), along with complementary incentive programs including [California Climate Investments](#), and Light Duty Vehicle and Clean Transportation Equity Programs. This section also describes efforts to implement a wide array of GHG reduction regulations, incentives, and policies to support cleaner and zero-emission heavy-duty and medium-duty vehicles, sustainable communities, reduce short-lived

⁶ The 2030 emissions by economic sector are projected based on the reductions expected from the measures described in the 2017 Climate Change Scoping Plan Update, using the model (PATHWAYS).

climate pollutants including high-GWP gases, black carbon, methane from landfills and the oil and gas industry, and transform the State’s electricity generation.

CARB has a few regulations not covered in this report that also reduce GHG emissions as a primary objective or co-benefit. These include regulations related to [heavy-duty truck trailers](#), [small off-road engines](#), sulfur hexafluoride in [semi-conductor manufacturing](#) and other applications, as well as high global-warming potential gases in [consumer products](#), among others.

A. Cap-and-Trade Regulation

1. *Background*

The [Cap-and-Trade Program](#) covers the major sources of GHG emissions in the State, including refineries and power plants, industrial facilities, imported electricity, and natural gas and transportation fuels. The Cap-and-Trade Program covers approximately 80 percent of the State’s GHG emissions and imposes an emissions cap that began in 2013 and declines annually to ensure the State meets its GHG emissions targets. The State distributes allowances, which are tradable permits equivalent to one metric ton of carbon dioxide equivalent, equal to the cap. In the early stage of the Cap-and-Trade Program, most allowances were distributed for free to utilities for ratepayer protection, or to facilities covered by the Cap-and-Trade Program. This allowed utilities to provide a smooth transition into the Cap-and-Trade Program, and allowed those facilities to focus on investing in emissions reductions and cleaner technologies, limiting concerns about competitiveness and emissions leakage. Any allowances remaining after allocation for these and other uses are sold at quarterly auctions with the monies going to the Greenhouse Gas Reduction Fund (GGRF). Approximately half of allowances are now made available at these quarterly auctions.

Under the Cap-and-Trade Program, CARB-issued compliance offset credits can be used by covered entities to meet a limited portion of their compliance obligation. An offset credit represents a reduction of one metric ton of carbon dioxide equivalent from an activity, following a Board-adopted protocol for sectors not covered by the Cap-and-Trade Program. All offset credit emissions reductions must be quantifiable, verifiable, enforceable, real, permanent, and additional, meaning beyond any regulation and beyond what would otherwise occur. For emissions years 2013–2020, covered entities could utilize offsets to meet up to 8 percent of their compliance obligation, and this limit dropped to 4 percent starting with 2021 emissions.

Covered sources under the cap need to turn in allowances and offset credits—collectively referred to as compliance instruments—equal to their emissions for each multi-year compliance period. The covered sources must annually report GHG emissions and have them verified by an accredited third-party verifier. Sources that reduce their emissions may trade any surplus allowances to firms that find it more expensive to reduce their emissions.

In addition to helping the State achieve its 2020 target early, the cap decline in the Cap-and-Trade Program doubled in stringency beginning in 2021 to help the State

achieve the SB 32 target. [Cap-and-Trade Regulation Instructional Guidance](#) can be viewed for additional information.

2. Recent Developments—July 2020 through June 2021

- CARB’s activities to support the [Cap-and-Trade Program](#) during this period included ongoing [quarterly joint allowance auctions with Québec](#), [issuance of compliance offset credits](#), [free allocation of allowances](#), and an annual compliance event.
- In Fiscal Year 2020–21, the auctions raised about \$2.62 billion from the sale of State-owned allowances. The sale of State-owned allowances at the 35 auctions held through May 19, 2021 have cumulatively raised about \$15.80 billion, which have been deposited into the GGRF. The California Climate Investments section of this report provides more information on the use of Cap-and-Trade Program auction proceeds.
- CARB has posted a [summary of vintage 2021 allowance allocation](#) to covered industrial facilities, electrical distribution utilities, natural gas suppliers, and other facilities covered by the Cap-and-Trade Program.
- CARB continued to coordinate Cap-and-Trade Program implementation with its linkage partner, Québec. CARB continued to share its experiences on the development of California’s cost-effective portfolio of emission-reducing policies through bilateral discussions and multilateral platforms, including the International Carbon Action Partnership, which CARB co-chaired during FY 2020–21.
- The Offset Protocol Task Force was established pursuant to [AB 398](#) to provide guidance to CARB in establishing new offset protocols for the Cap-and-Trade Program with direct environmental benefits in the State while prioritizing disadvantaged communities, Native American or tribal lands, and rural and agricultural regions. The Board adopted [Resolution 20-5](#) on January 23, 2020 formally approving the Task Force membership and Charter. After three public meetings and a draft report, the Task Force delivered its final recommendations on March 2, 2021. CARB staff is evaluating the recommendations.

Cap-and-Trade Litigation. There was activity in two existing court cases involving CARB regarding the [Cap-and-Trade Program](#) and one new lawsuit was filed that relates to the Cap-and-Trade Program.

Sowinski v. California Air Resources Board, et al.:

The plaintiff in the federal *Sowinski v. California Air Resources Board, et al.* case alleged, among other things, that the Cap-and-Trade Program’s auction platform infringes on a patent Dr. Sowinski obtained in 2003. A federal district court dismissed the suit with prejudice in 2016, which the Federal Circuit Court of Appeals (Federal Circuit) affirmed in 2017. Despite this final judgment, the plaintiff refiled essentially the same suit against CARB, which another federal District Court dismissed in 2018 and the Federal Circuit affirmed in 2020. The plaintiff filed a petition for rehearing on September 21, 2020, which the Federal Circuit rejected. On March 22, 2021, the plaintiff filed a petition for a writ of certiorari with the U.S. Supreme Court. However,

the parties subsequently agreed to voluntarily dismiss the petition. On June 10, 2021, the U.S. Supreme Court dismissed the petition. The Federal Circuit decision is final.

United States v. California Air Resources Board, et al.:

On October 23, 2019, the United States of America filed a complaint against the State of California, CARB, and other parties (collectively, the Defendants) challenging the linkage of the California [Cap-and-Trade Program](#) and [Québec's cap-and-trade system](#) in federal District Court in Sacramento. The complaint asserted that the following violate the U.S. Constitution: an agreement between California and Québec regarding linkage; an agreement between California and WCI, Inc.; and certain provisions of State law that pertain to linkage. Specifically, the United States asserted that these agreements and provisions violate the Treaty Clause, Compact Clause, Foreign Affairs Doctrine, and Foreign Commerce Clause. The U.S. moved to dismiss its Foreign Commerce Clause claim, and the federal District Court granted CARB's motions for summary judgment on the other claims. On September 14, 2020, the U.S. filed a notice of appeal to the Ninth Circuit Court of Appeals regarding the District Court orders. Appellant United States filed its opening brief on December 23, 2020, appealing the District Court's judgment only with respect to two claims. However, on April 21, 2021, all parties stipulated to dismiss the appeal. The court granted the stipulation and dismissed the appeal on April 22, 2021. This case is now over, with favorable decisions at the district court.

W.O. Stinson & Son LTD. v. Western Climate Initiative, Inc.:

On June 8, 2020, W.O. Stinson & Son LTD (Stinson) filed a statement of claim in Ontario Canada Superior Court against the State of California through CARB, WCI, Inc., and the Province of Québec (collectively, the Defendants.) Stinson—a regulated entity under the Province of Ontario's now-defunct cap-and-trade system—asserts that, in June 2018, the Defendants “froze” the allowances in Stinson's Ontario account and prevented Stinson from selling such allowances, causing a financial loss. Parties negotiated a stipulation to waive service and established a briefing schedule for dispositive motions. CARB filed its motion to dismiss on June 14, 2021. Plaintiff will submit responding evidence in fall 2021.

3. Upcoming Milestones—July 2021 through June 2022

- CARB will continue to implement the Cap-and-Trade Regulation, including provisions adopted by the Board pursuant to AB 398 that went into effect in January 2021:
 - New price ceiling and price containment points, including a mechanism for offering additional metric tons at the price ceiling if reductions are needed for compliance;
 - New quantitative usage limits for the use of offset credits to satisfy compliance obligations (4 percent for emissions from 2021–2025 and 6 percent for emissions from 2026–2030);

- A new requirement that no more than one-half of the quantitative usage limit may be sourced from projects that do not provide “direct environmental benefits in the State”; and
- Assistance factors used in calculating free [allowance allocation to all industrial covered entities](#) set at 100 percent.
- CARB will continue to allocate allowances to industrial facilities to minimize emissions leakage and to electrical distribution utilities and natural gas suppliers for the benefit of their ratepayers, consistent with the goals of AB 32.
- CARB will continue to issue offset credits.
- CARB will continue to hold quarterly joint auctions with Québec as scheduled in the Regulation (August 2021, November 2021, February 2022, and May 2022).
- The third Full Compliance Period Compliance Event occurs on November 1, 2021 for emissions from calendar years 2018, 2019, and 2020.

B. California Climate Investments: Cap-and-Trade Auction Proceeds

1. *Background*

The Legislature and Governor approve the expenditure of the [State’s portion⁷ of the Cap-and-Trade Program auction proceeds](#) to invest in programs that support the goals of AB 32. As of May 31, 2021, these programs, collectively referred to as [California Climate Investments \(CCI\)](#), have received appropriations totaling over \$15.1 billion since 2013 to further AB 32 implementation, including support of long-term, transformative efforts to reduce GHG emissions, improve public and environmental health, and develop a clean energy economy—particularly for California’s overburdened communities. More than 20 State agencies are involved in program development, project selection, and implementation of 71 CCI programs that focus on reducing climate pollution across numerous sectors of California’s economy, from transportation and affordable housing to forest health and fire prevention.

CARB is responsible for the fiscal management of GGRF and has a variety of responsibilities related to the administration of [CCI programs](#) including:

- Developing guidance for administering agencies including funding guidelines, quantification methodologies, and methods to determine benefits to priority populations,
- Consulting with administering agencies on program implementation,
- Providing coordinated CCI awareness outreach and directing interested parties to administering agencies for program assistance,
- Compiling data from administering agencies and coordinating with the Department of Finance to prepare the Annual Report to the Legislature, and
- Maintaining a [public website](#) and [map](#) that provides project information on all CCI projects.

⁷ This amount does not include proceeds from Québec-owned allowances or allowances consigned to auction by utilities.

The effects of climate change and the continued use of fossil fuels present an ongoing challenge for the State, particularly for California’s disadvantaged and low-income residents. In 2012, [SB 535](#) (De León, Chapter 830, Statutes of 2012), set minimum investments for [CCI projects](#) that benefit disadvantaged communities and projects that are located within Disadvantaged Communities, as defined in SB 535. In 2016, [AB 1550](#) (Gomez, Chapter 369, Statutes of 2016) amended the investment minimums for Disadvantaged Communities and set a requirement for a minimum percentage of projects to be located within, and to provide a benefit to, disadvantaged communities. It also established new investment minimums for low-income communities and low-income households. Under AB 1550, at least 35 percent of CCI projects must be allocated to these priority populations. CARB helps to ensure that CCI programs collectively satisfy the minimum investment requirements set by AB 1550 by setting priority populations investment targets for individual programs. More information on the framework for assessing benefits to priority populations can be found in the [Funding Guidelines for Agencies that Administer California Climate Investments](#).

2. Recent Developments—July 2020 through June 2021

- The Department of Finance submitted the [2021 Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds](#). Developed by CARB, the report describes the status of funded programs, estimates of the GHG emissions reductions expected from project investments, and key statistics on benefits to priority populations.
- In August, CARB released a mid-year data update, including updates to an online project map and project list to provide information to the public on the status and outcomes of implemented CCI projects. CARB has also released [an interactive data dashboard](#) that enables users to easily explore CCI data.
- As of May 31, 2021, CCI had invested over \$9.0 billion in over 542,000 individual implemented projects that reduce GHG emissions and provide other important environmental, economic, and public health benefits to California’s communities, with over \$728 million in new funding implemented in the first half of 2021 alone. Implemented projects are expected to reduce GHG emissions by more than 70 MMTCO_{2e}.^{8,9} Additional information and summary statistics on outcomes are also available on the [CCI Data Dashboard webpage](#).

⁸ This figure does not include estimated GHG emissions reductions from the California High-Speed Rail project, which is estimated to be 102 MMTCO_{2e} over its first 50 years of operating life, as detailed in the [2020 California High-Speed Rail Sustainability Report](#).

⁹ The values presented in this section of the document include data reported through May 31, 2021 by CARB’s GGRF-funded projects, including those implemented by the Community Air Protection Program, Fluorinated Gases Emission Reduction Incentives, Low Carbon Transportation Program, Funding Agricultural Replacement Measures for Emission Reductions program, Prescribed Fire and Smoke Monitoring program, and Woodsmoke Reduction program. Values reported in subsequent sections of this document pertaining to GGRF-funded projects and programs should not be considered additional to the values reported here.

- In the Budget Act of 2020 and subsequent bills, the Legislature provided baseline state operations funding for State agencies to continue to develop and administer the broad portfolio of [CCI programs](#), as well as appropriations to programs related to wildfire prevention. Programs receiving continuous appropriations continued to receive a portion of the State’s cap-and-trade auction proceeds on an ongoing basis.

3. Upcoming Milestones—July 2021 through June 2022

- CARB staff will continue to collect information from administering agencies on the status and outcomes of [CCI projects](#). The information is released publicly through an online project map, data dashboard, and project list.
- CARB will compile data collected from agencies to develop the *2022 Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds*, scheduled for release in April 2022.
- CARB staff will work with the Department of Finance to develop the fourth triennial Investment Plan, which is due to the Legislature in January 2022.
- CARB staff will continue to work with administering agencies, outside experts, and academic partners to develop and/or update project-level-quantification methodologies to capture additional information on environmental, public health, and economic benefits of the CCI projects.
- CARB staff will continue to work with contractors and administering agencies to expand and enhance outreach activities across the State. The outreach emphasis will be on priority populations, particularly those impacted by COVID-19 and wildfires. CARB staff will also explore creative ways to display information on the State’s housing, climate, and equity goals.

C. Low Carbon Fuel Standard

1. Background

The [Low Carbon Fuel Standard \(LCFS\) Program](#) is designed to reduce the average carbon intensity (CI) of California’s transportation fuel pool and provide an increasing range of low-carbon and renewable alternatives. This reduces petroleum dependency and achieves air quality benefits. The LCFS achieves a reduction in transportation-related emissions by setting annually declining CI benchmarks. Petroleum-based fuels (with CI values higher than the benchmark) generate deficits in the LCFS Program while alternative fuels (with CI values lower than the benchmark) earn credits. Credits can also be generated by implementing innovative emissions reductions projects at oil fields and petroleum refineries. Providers of high-carbon fuel must retire credits equivalent to their deficits every year, which they can generate themselves or purchase from alternative fuel providers.

CARB approved the [LCFS Regulation](#) in 2009 with a goal of achieving a 10 percent reduction in the CI of transportation fuels used in California by 2020. In September 2018, CARB approved several amendments to the LCFS, which included strengthening and smoothing the declining annual targets to achieve at least a 20 percent CI reduction by 2030, which is in-line with meeting California’s 2030 GHG target enacted

through SB 32. In addition, new crediting opportunities were included to promote on-road and off-road zero emission vehicles (ZEV), alternative jet fuel, carbon capture and sequestration, and other advanced technologies to achieve deep decarbonization in the transportation sector. The goal to achieve a 20 percent CI reduction by 2030 is on track, and to date 18 billion gallons of petroleum fuel have been displaced by low-carbon alternative fuels supported by the LCFS. In 2020 alone, alternative fuels supported by the [LCFS Program](#) are estimated to have reduced GHG emissions by over 17 MMTCO_{2e} relative to the fossil fuels they displaced.

2. Recent Developments—July 2020 through June 2021

- CARB held [LCFS verifier accreditation training in October 2020](#), with self-paced on-line recorded lectures and weekly live remote question-and-answer sessions. In total, 31 verification bodies and 209 individual verifiers have been accredited by CARB for the LCFS Program. In addition to prospective verifiers, interested government representatives from outside California continue to attend CARB's verifier training sessions to enhance implementation of their own LCFS programs.
- Validation of LCFS fuel pathway applications by CARB-accredited third-party verifiers began in 2020. CARB updated the published list of CARB-accredited verification bodies and individual verifiers in mid-2021.
- Annual verification of LCFS data reports began in April 2021 by CARB-accredited third-party verifiers.
- Starting in November 2020, the [California Clean Fuel Reward \(CFR\)](#) became available as a point of purchase rebate of up to \$1,500 for qualifying new battery electric (BEV) or plug-in hybrid (PHEV) vehicles. The program is funded by a portion of the LCFS credits received by utilities for residential electric vehicle charging and is available to anyone who resides in California. By July 2021, 87,000 BEV or PHEV customers were awarded \$124 million in CFR rewards.
- [Zero-Emission Vehicle Infrastructure Crediting within the LCFS](#) incentivizes initial build-out of ZEV refueling infrastructure by providing LCFS credits when fuel demand is low in early years for hydrogen refueling infrastructure, and for electric vehicle direct current (DC) fast-charging infrastructure. It is envisioned that a broad network of fueling stations should increase ZEV adoption. As of July 1, 2021, 59 hydrogen fueling stations and 997 DC fast chargers at 149 sites were approved for ZEV infrastructure crediting.

3. Upcoming Milestones—July 2021 through June 2022

- CARB will continue to provide LCFS verifier accreditation training.
- In line with Governor Newsom's [Executive Order N-79-20](#), CARB will continue to evaluate how to continue the State's current efforts to reduce the carbon intensity of fuels beyond 2030, with consideration of the full carbon life cycle.

D. Advanced Clean Cars

1. Background

The [Advanced Clean Cars \(ACC\) Program](#) establishes stringent GHG emissions standards, tighter criteria pollutant standards, and increased ZEV production

requirements for passenger cars and light-duty trucks through the 2025 model year (MY). The ACC Program includes both ZEV and GHG light-duty vehicle regulations that support California's near- and long-term climate goals, as well as attainment of ambient air quality standards.

Zero-Emission Vehicle Regulation. The timing and stringency of the [ZEV Regulation](#) were adjusted numerous times during the last three decades since it was first adopted in 1990. Under the current rule, adopted by the Board in 2012, manufacturers are required to make a minimum percentage of advanced technology vehicles, including battery electric or fuel cell ZEVs. Manufacturers have an option of partially complying by offering plug-in hybrid electric vehicles. Other flexible compliance options allow manufacturers to offset sales from one year to the next, and trade for sales by other manufacturers through a credit-trading system. If not for the federal actions revoking authority for this rule, the regulation would call for the equivalent of nearly 10 percent of new vehicle sales in California by 2025 to be ZEVs and PHEVs.

Light-Duty Vehicle GHG Standards. Since the 2009 MY, CARB has limited GHG emissions from light-duty vehicles per [AB 1493](#) (Pavley, Chapter 200, Statutes 2002). As an option since the 2012 MY, CARB accepted compliance with federal GHG emission standards, which all manufacturers elected to follow. In 2018, CARB amended its regulations to clarify that it would only accept compliance with the federal standards as they existed at the time, in response to the [Safer Affordable Fuel-Efficient Vehicles \(SAFE\) Rule Part One: One National Program](#) proposal from the Trump administration to hold the federal GHG standards at the 2020 MY level (along with preempting California's ZEV and GHG light-duty vehicle regulations).¹⁰

2. Recent Developments—July 2020 through June 2021

- At this time, the ZEV and GHG emissions standards are not enforceable because of the [SAFE Rule Part One](#) action by the U.S. Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA). CARB led a broad coalition of states and local governments in opposing this illegal move.¹¹ President Biden, on his first day in office, issued an Executive Order directing U.S. EPA and NHTSA to reconsider the SAFE Rule Part One and the related actions the agencies took to relax federal greenhouse gas emission and fuel economy standards.¹² U.S. EPA and NHTSA issued proposals in spring 2021 to restore California's authority¹³ Final action on these proposals is expected in early fall 2021.

¹⁰ The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule, 83 Fed. Reg. 42,986 (Aug. 24, 2018).

¹¹ See *California v. Wheeler, et al.*, United States Court of Appeals, District of Columbia Circuit, Case No. 19-1239, consolidated under No. 19-1230 along with Nos. 19-1241, 19-1242, 19-1243, 19-1245, 19-1246, and 19-1249 (Challenge to SAFE Part 1), held in abeyance.

¹² Executive Order 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, 86 Fed. Reg. 7,037, Jan. 25, 2021.

¹³ 86 Fed. Reg. 22,421 (April 28, 2021), 86 Fed. Reg. 25,980 (May 12, 2021).

- CARB staff began implementing the [Electric Vehicle Supply Equipment Standards Regulation](#), making plug-in electric vehicle charging at public stations more accessible to consumers regardless of membership status to a charging network.
- CARB staff developed the [Clean Miles Standard](#) to reduce emissions from transportation network companies. This standard includes an electrification target measured in percent electric VMT, and a GHG emissions target measured in metric grams CO₂ per passenger miles travelled. The Board adopted the regulation in May 2021.
- The federal government proposed to remedy the [SAFE Vehicles Rule](#), which reduced the stringency of the federal GHG emissions and fuel economy standards for light-duty vehicles from annually improving by about 4.5 percent, to 1.5 percent.¹⁴ CARB (again leading a broad coalition of state and local governments) challenged the Final SAFE Rule in federal court. That litigation also remains pending and is stayed.¹⁵
- CARB staff is developing amendments to the ZEV Regulation for the 2026 model year and beyond, as part of its [Advanced Clean Cars II \(ACC II\)](#) proceeding. This rulemaking will seek to fulfill Governor Newsom's [Executive Order N-79-20](#), that directed CARB to develop and propose regulations and strategies to reach the goal of all new passenger car and truck sales to be zero-emission by 2035, among other requirements. Additionally, the ACC II Program will aim to ensure that ZEVs are full replacement vehicles for all drivers, for both new and used markets, by adding ZEV assurance measures, such as useful life and minimum warranty requirements for ZEVs.
- For [ACC II](#), CARB is also considering setting the GWP limit for refrigerants in motor vehicle air conditioning (MVAC) systems of newly manufactured light-duty vehicles post-MY 2025. This measure would ensure a complete transition from the high-GWP refrigerant HFC-134a (tetrafluoroethane), to low-GWP alternatives for this sector. The ongoing transition has been fostered by credit incentives under CARB and U.S. EPA vehicle GHG emission standards.
- CARB staff presented regulatory proposals at two workshops on September 16, 2020 and May 6, 2021, as part of its ACC II proceeding.
- California's GHG emissions standards for vehicles and engines remain in place at this time, subject to restoration of their authority, while CARB staff collaborates with U.S. EPA on standards for future model years.
- CARB continues researching ways to reduce transportation emissions. Innovation by industry, available data, and the latest research continue to demonstrate that emissions can and must be reduced to protect public health, restore the environment, and stabilize the climate, and that doing so is cost-effective and will have many co-benefits.

¹⁴ 85 Fed. Reg. 24, 174 (April 30, 2020).

¹⁵ See *California v. Wheeler, et al.*, *United States Court of Appeals*, District of Columbia Circuit, Case No. 20-1167, consolidated with Nos. 20-1145, 20-1168, 20-1169, 20-1173, 20-1174, 20-1176, and 20-1177 (Challenge to the SAFE Part 2 Rule).

3. **Upcoming Milestones—July 2021 through June 2022**

- The proposal by U.S. EPA to revise its greenhouse gas emission regulations, issued in August 2021, would increase their stringency by 10 percent in model year 2023, then by another 5 percent in model years 2024, 2025, and 2026.¹⁶ This would come close to restoring the trajectory of the 2012 National Program standards that were weakened by the [SAFE Vehicles Rule](#). It relies, in part, on the [agreements CARB and automakers entered](#) to reduce GHG emissions and sell more ZEVs in the country than would otherwise be required by the federal SAFE Rules.
- CARB staff will finalize minor modifications to the new [Clean Miles Standard \(CMS\)](#) regulation to transition transportation network companies (e.g., Uber and Lyft) to zero-emission technologies. The California Public Utilities Commission (CPUC) will begin proceedings to determine mechanisms to implement CMS which will start in 2023.
- CARB staff plan to propose regulations for Board consideration in June 2022 for its [ACC II Program](#) to reduce criteria pollutant and GHG emissions from light-duty vehicles and increase sales of ZEVs for MYs beyond 2025, to reach the [Executive Order N-79-20](#) goal of 100 percent of new passenger car and light truck sales by 2035.
- CARB staff will continue to develop the regulatory proposal for MVAC refrigerant GWP limit as part of the ACC II rulemaking. Staff plans to bring the rulemaking to the Board for its consideration in June 2022.

E. Light-Duty Vehicle and Clean Transportation Equity Programs

1. Background

As a part of California Climate Investments, the [Low Carbon Transportation Program](#), [Clean Vehicle Rebate Project \(CVRP\)](#) and [Light-Duty Vehicle and Clean Transportation Equity Programs](#) complement the ZEV regulations by increasing the number of ZEVs on California’s roads, and help the market reach sustainability. CARB’s current Clean Transportation Equity Programs include the Enhanced Fleet Modernization Program/[Clean Cars 4 All](#), Financing Assistance for Lower-Income Consumers (Financing Assistance), and Clean Mobility Options (CMO), [Sustainable Transportation Equity Project \(STEP\)](#), and Access Clean California. These programs also support the long-term transformation of California’s fleets while meeting policy and statutory goals and requirements. These incentive programs provide direct benefits to targeted priority populations including reduced GHG, criteria pollutant, and toxics emissions and are a result of multiple key legislative drivers.¹⁷ These programs also produce critical co-benefits such as improving public health from reduced pollution exposure, transportation cost-savings, increased household economic stability, increased connectivity to destinations, reduced traffic congestion, and increased environmental

¹⁶ 86 Fed. Reg. 43,726 (Aug. 10, 2021).

¹⁷ [SB 1275](#) (De León, Chapter 530, Statutes of 2014), [SB 535](#) (De León, Chapter 830, Statutes of 2012), [AB 1550](#) (Gomez, Chapter 369, Statutes of 2016), [SB 350](#) (De León, Chapter 547, Statutes of 2015), [SB 375](#) (Steinberg, Chapter 728, Statutes of 2008), and [SB 150](#) (Allen, Chapter 646, Statutes of 2017).

sustainability. More information on these programs can be accessed at the [Low Carbon Transportation Investments and Air Quality Improvement Program \(AQIP\)](#) and [Low Carbon Transportation Investments and AQIP Funding Plans](#) webpages.

2. Recent Developments—July 2020 through June 2021

- Due to a surge in purchases of new electric vehicles toward the end of 2020 and early 2021, [CVRP](#) exhausted the remaining FY 2019–20 funding available by mid-May 2021. At that point staff started a waiting list for rebates that can be funded from a new appropriation made by the Legislature for FY 2021–22.
- The first [STEP](#) solicitation closed in August 2020 and CARB awarded three Implementation Grants and eight Planning and Capacity Building Grants to priority populations across the State. All projects began implementation in June 2021.
- The [CMO Voucher Pilot Program](#) opened the application window for community transportation needs assessment vouchers in June 2020; and in October 2020, the application window opened for entities to apply for mobility project vouchers. In addition, an interagency agreement was signed with the California Energy Commission (CEC) to expand program eligibility and funding for the next application window.
- The statewide Financing Assistance Program, or [Clean Vehicle Assistance Program](#), exhausted all allocated funds and closed on April 14, 2021.
- In early 2020, the Sacramento Metropolitan Air Quality Management District launched Clean Cars 4 All, making it the fifth air district to do so.
- In fall 2020, the One-Stop-Shop Pilot Project was renamed as a part of the project's communications strategy and is now known as [Access Clean California](#).
- In mid-2021, a streamlined application was released through Access Clean California to connect lower-income consumers with clean energy and transportation incentives. In addition, an accompanying web platform was also completed to host the application and serve as a resource hub for outreach partners and community-based organizations. Access Clean California's case management system also completed the initial pilot of CARB's centralized income verification system.

3. Upcoming Milestones—July 2021 through June 2022

- CARB is working to fulfill the Clean Vehicle Rebate Project waiting list and develop a three-year plan for the program based on the FY 2021–22 budget allocation which will be included in the FY 2021–22 Funding Plan for Clean Transportation Incentives.
- CARB anticipates awarding additional [Sustainable Transportation Equity Project](#) Implementation Grants in early 2022 based on proposals received in the first solicitation.
- The Clean Mobility Options Voucher Pilot Program opens the application window for outreach and capacity building in fall 2021 and anticipates opening the application window for community transportation needs assessment and mobility project vouchers in early 2022.

- The Clean Vehicle Assistance Program is expected to reopen with additional funds and program changes in early 2022.
- CARB anticipates Clean Cars 4 All will expand to the San Diego Air Pollution Control District in late 2021.
- In a public process, CARB staff is amending the [Clean Cars 4 All Program Guidelines](#) to allow for statewide expansion of the program in FY 2022–23.
- CARB plans to support continued growth of [Access Clean California](#), including scaling-up use of the streamlined application and web platform in priority populations, and inclusion of additional incentive programs.

F. Clean Heavy- and Medium-Duty Vehicle and Off-Road Equipment Regulations

1. *Background*

Achieving California’s long-term air quality, climate, and public health goals will require a transition from conventional combustion technologies to zero-emissions everywhere feasible and near-zero-emissions powered by clean, low-carbon renewable fuels everywhere else. Guided by the [2016 Mobile Source Strategy](#), CARB is continuing to develop regulations and supporting programs to accelerate this transition. The goals of these regulations and supporting programs are to achieve criteria pollutant, toxic air contaminant, and GHG emissions reductions through advanced clean technology, and to increase the penetration of zero-emissions heavy-duty and off-road technologies into applications that are well suited to their use. In 2020, Governor Newsom’s [Executive Order N-79-20](#) set a goal to transition all drayage trucks to zero-emission by 2035, all off-road equipment to zero-emission where feasible by 2035, and the remainder of medium- and heavy-duty vehicles to zero-emission where feasible by 2045. CARB is addressing these targets through a suite of regulations and incentive programs. This includes regulations, discussed in this section, and incentive programs, discussed in the next section.

The [Advanced Clean Trucks \(ACT\) Regulation](#), approved by the Board in June 2020, is a first of its kind in the world. The rule requires truck manufacturers to produce and sell zero-emission trucks, vans, and buses beginning in 2024, as an increasing percentage of their sales. The regulation is expected to result in the deployment of roughly 100,000 zero-emission trucks by 2030, and 300,000 by 2035. This helps to establish the California fleet of medium- and heavy-duty ZEVs. This rule will help achieve a 100 percent zero-emission drayage fleet by 2035 and zero-emission trucks and buses everywhere feasible by 2045. The regulation also includes a one-time fleet reporting requirement in 2021 for large employers including government, retailers, manufacturers, brokers, about how they use their vehicles. This information will be used to inform future recommendations and policy decisions on how to make a complete transition to zero emission vehicles.

CARB is currently developing the [Advanced Clean Fleets \(ACF\) Regulation](#), a medium- and heavy-duty zero-emission fleet regulation that also contributes to the goal of achieving a zero-emission truck and bus fleet in California by 2045, where feasible. For certain market segments such as drayage applications, these timelines are significantly

earlier. The initial focus is on drayage trucks, public fleets and other high-priority fleets, and the types of vehicles that are most suitable for electrification.

The combined ACT and ACF regulations achieve the primary goal of accelerating the market for zero-emission trucks and buses that are well suited for electrification. Promoting the development and use of zero-emission trucks will help CARB achieve its emissions reductions strategies as outlined in the [State Implementation Plan](#), [Sustainable Freight Action Plan](#), and AB 32 Scoping Plan. Additional freight regulations being considered include rules for commercial harbor craft, cargo handling equipment, transport refrigeration units (TRU), and locomotives to transition those sources to zero or near-zero emissions operation.

The [In-Use Off-Road Diesel-Fueled Fleets Regulation](#) adopted in 2008, applies to self-propelled off-road diesel vehicles, and has an implementation period that runs through 2028. The [Large Spark-Ignition Fleet Requirements Regulation](#), adopted in 2006 and fully implemented in 2013, applies to operators of forklifts, sweeper/scrubbers, industrial tow tractors, and airport ground support equipment that are equipped with a large spark-ignition engine. Both of these regulations require operators to transition to and maintain cleaner equipment. The regulations also provide a credit for using zero-emission technology. The credit can be applied to a fleet-average calculation for the operator.

Other clean heavy-duty vehicle regulations CARB has recently developed include the [Zero-Emission Airport Shuttles Regulation](#) and the [Zero-Emission Powertrain Certification Regulation](#). The Zero-Emissions Airport Shuttles Regulation requires airport shuttles operating at regulated airports to begin converting to ZEVs beginning in 2027, and be 100 percent zero-emissions by 2035. The Zero-Emission Powertrain Certification Regulation will help reduce variability in the quality and reliability of heavy-duty zero-emission vehicles in support of California's zero-emission fleet measures. CARB is also developing regulations to address [high-GWP refrigerant usage in TRUs](#) and in heavy- and medium-duty vehicle MVAC systems.

2. Recent Developments—July 2020 through June 2021

- Staff developed the [2020 Mobile Source Strategy](#), which focuses on medium and heavy duty vehicle goals through mid-century, as required by [SB 44](#) (Skinner, Chapter 297, Statutes of 2019).
- In March 2021, the Office of Administrative Law adopted the Advanced Clean Trucks regulation into the California Code of Regulations. CARB staff continued to hold public meetings and engage with stakeholders on the Advanced Clean Fleets regulation.
- CARB staff coordinated efforts amongst the State energy, business, transportation, and environmental agencies to implement the actions identified in the [California Sustainable Freight Action Plan](#).
- The Board approved the new [Ocean-Going Vessels At Berth Regulation](#) that will further reduce emissions and protect communities near California seaports. Many of these seaport communities are environmental justice communities such as Wilmington, Vallejo, West Oakland, Stockton, and San Diego.

- CARB staff released [updated regulatory concepts for commercial harbor craft](#) that will reduce emissions through the use of cleaner equipment, categorized by tier. Other operational control strategies are also included in the updated regulatory concepts.
- CARB staff released [updated regulatory concepts](#) that will transition the TRU sector to zero-emission technologies and to lower-GWP refrigerants.
- CARB began certifying MVAC systems pursuant to the refrigerant leakage standards as part of [CARB's heavy-duty vehicle GHG "Phase 2" regulation](#) certification.

3. Upcoming Milestones—July 2021 through June 2022

- CARB staff will continue to implement steps to support Governor Newsom's [Executive Order N-79-20](#), which promotes zero-emission vehicles and equipment that utilize renewable energy.
- CARB staff will identify ongoing needs for zero-emission medium- and heavy-duty vehicle and off-road equipment infrastructure. They will also begin implementing actions internally and externally that will help support deployment of innovative zero-emission technologies.
- CARB staff will continue developing the new Advanced Clean Fleets Regulation, which will transition California's trucking fleets to zero-emissions technologies.
- CARB staff plan to propose amendments to the current [TRU Regulation](#) for [Board consideration](#) in September 2021 that will transition the TRU sector to zero-emission technologies and usage of lower GWP refrigerants.
- CARB staff plan to propose amendments for Board consideration to the [Commercial Harbor Craft Regulation](#) that will protect the communities near seaports and reduce exposure to criteria pollutants and toxic air contaminants, and reduce GHG emissions.
- CARB staff plan to propose a regulation for Board consideration for [In-Use Locomotive Regulation](#) to reduce criteria pollutants, toxic air contaminants, and GHG emissions for locomotives in-use. This regulation is intended to be implemented statewide, and provide an opportunity for the railroads to better address regional pollution and long-standing environmental justice concerns with communities near railyards.
- CARB staff will continue the regulatory development process to update the [In-Use Off-Road Diesel-Fueled Fleets Regulation](#) to require further retirement of high-emitting off-road equipment.
- CARB staff will continue the development of the [Zero-Emission Forklift Regulation](#) to further increase the usage of zero-emission technology in forklifts.
- Under the [Zero-Emission Airport Shuttles Regulation](#), airport shuttle fleets are required to submit annual reports to CARB beginning March of 2022.

G. Clean Heavy- and Medium-Duty Vehicle and Off-Road Equipment Incentive Programs

1. *Background*

CARB's suite of incentive programs complement the heavy-duty and off-road regulations. This supports the transformation of both, on-road and off-road fleets, to zero-emission wherever feasible. This will help California meet its ambitious air quality and climate change goals. These incentive programs also provide direct benefits to targeted priority populations and support GHG, criteria pollutant, and toxic air contaminant emissions reductions and are a result of multiple key legislative drivers¹⁸.

As a part California Climate Investments, CARB's Low Carbon Transportation Program includes the [Hybrid and Zero-Emission Truck and Bus Voucher Project \(HVIP\)](#), [Heavy-Duty Vehicle Demonstration and Pilot Projects](#), and the [Clean Off-Road Equipment Voucher Incentive Project \(CORE\)](#). CCI incentives also provide for the [Funding Agricultural Replacement Measures for Emission Reductions \(FARMER\)](#) Program.

Project 800 is a CARB initiative that aims to support [incentives for 800 zero-emission drayage truck orders](#) to be placed in California in 2021. These 800 advanced Class 8 trucks will serve California seaports and represent a first cut in a transformational period for zero-emission drayage truck technologies, aligned with Governor Newsom's [Executive Order N-79-20](#).

The [Volkswagen \(VW\) Environmental Mitigation Trust \(Trust\)](#) fund is intended to mitigate excess NO_x pollution emissions caused by VW's use of illegal emissions testing defeat devices in certain VW diesel vehicles. The VW Trust is a component of partial settlements with VW and is enumerated in the first Partial Consent Decree as Appendix D. The VW Trust provides funding opportunities for specified eligible actions that are focused mostly on "scrap-and-replace" projects for the heavy-duty sector.

Additionally, CARB's incentive [Funding for Cleaner Freight Equipment](#) programs that have accelerated the transition from older freight equipment and vehicles to cleaner options include the VW Trust, [Proposition 1B](#), Low Carbon Transportation, Air Quality Improvement, and [Carl Moyer](#) programs.

2. *Recent Developments—July 2020 through June 2021*

- In January 2021, CARB launched the [Project 800](#) initiative.
- [HVIP](#) reopened the first of two application periods in June 2021 after an 18-month closure. The first funding allocation quickly ran out due to overwhelming demand however, voucher requests continued to be processed for drayage trucks to continue to support Project 800, and for vehicles purchased by public fleets.

¹⁸ [SB 1204](#) (Lara, Chapter 524, Statutes of 2014), [SB 1403](#) (Lara, Chapter 370, Statutes of 2018), and [AB 2285](#) (Committee on Transportation, Chapter 100, Statutes of 2020).

- Three projects were selected from the CARB and CEC joint solicitation for the [Zero-Emission Drayage Truck and Infrastructure Pilot Project](#). CARB anticipates these three projects will result in the deployment of 250 battery-electric and 30 fuel cell heavy-duty trucks.
- The [Goodwill Industries Electric Delivery Vehicle Pilot Project](#) deployed ten zero-emission Class 6 delivery trucks and one zero-emission Class 8 refuse truck (with charging infrastructure) in spring 2020. San Francisco Goodwill took ownership of the trucks and continued to operate them after the project ended in fall 2020.
- As part of the VW Trust funded Zero-Emission Transit, School, and Shuttle Bus Program, the statewide administrator, San Joaquin Valley Air Pollution Control District funded 104 zero-emission bus replacements including school, transit, and shuttle buses.
- Bay Area Air Quality Management District (AQMD) reopened the VW Trust statewide Zero-Emission Freight and Marine Program in May 2021 as a first come, first serve program. Also, in April 2021 Bay Area AQMD launched the statewide Light-Duty Zero-Emission Vehicle Infrastructure Program for charging station installations.
- South Coast AQMD reopened the VW Trust statewide Combustion Freight and Marine Program as a first come, first serve program in June 2021, and also launched the first installment of the statewide Zero-Emission Class 8 Freight and Port Drayage Program.

3. Upcoming Milestones—July 2021 through June 2022

- The second wave of [HVIP](#) funding opened on August 10, 2021 and was fully subscribed within 12 minutes after opening, so the program reclosed. CARB reopens HVIP in fall of 2021 and plans to expand in early 2022 to include the first year of set-asides to support deployment of 1,000 zero-emission drayage trucks, 1,000 zero-emission transit buses, and 1,000 zero-emission school buses.
- For the Fast-Track Fuel Cell Truck Project, the fifth truck (with an advanced fuel cell) is being deployed in fall 2021.
- The Zero Emissions for California Ports project is deploying two hybrid plug-in fuel cell yard trucks at the Port of Los Angeles in fall 2021.
- The VW Trust program will continue to execute contracts. CARB will review program progress and make any necessary changes prior to the second installment of the mitigation funds being released in late 2022.
- Consistent with [CORE](#)'s substantial interest, staff will maximize effectiveness and consider expanding eligible equipment types to include zero-emission construction equipment, agriculture equipment, and small off-road equipment, such as portable generators and commercial landscaping equipment, as well as additional zero-emission freight equipment types.
- CARB staff will continue to utilize its incentive funding sources to accelerate the deployment of cleaner off-road and heavy-duty equipment throughout California, including through the [FARMER](#) program, among others.

H. SB 375: Sustainable Communities and Climate Protection Program

1. **Background**

CARB's [Sustainable Communities and Climate Protection Program](#) (referred to as the "SB 375 Program") encourages regional planning that integrates transportation and land use via [SB 375](#) (Steinberg, Chapter 728, Statutes of 2008) to reduce GHG emissions from passenger vehicles. California's metropolitan planning organizations (MPO) develop regional Sustainable Communities Strategies (SCS) containing land use, housing, and transportation strategies that can meet per capita passenger vehicle GHG emissions reductions targets set by CARB for 2020 and 2035. An SCS coordinates land use and transportation planning to shift development toward transit-accessible places, reduce VMT, and foster healthier and more sustainable and resilient communities. Pursuant to SB 375, CARB reviews an SCS to determine whether the SCS, when implemented, would meet the GHG emissions reductions targets. CARB's SCS Evaluation Guidelines focus on tracking implementation; assessing the strategies, key actions, and investments committed to in the SCS; reporting on the region's incremental progress from one SCS to the next; and highlighting how a region identifies and analyzes accessibility, health, and environmental impacts of its plan with respect to environmental justice areas, disadvantaged communities, and other communities of concern.

Compared to 2005 levels, the program is estimated to reduce per capita passenger vehicle GHG emissions 10 percent by 2020 and 19 percent by 2035. The full statewide per capita GHG emissions reductions needed to achieve SB 32's 2035 target is approximately 25 percent, which implementation of the [SB 375 Program](#) alone will not provide. Bridging the gap will require a combination of new State and local VMT reduction actions, including leveraging of clean transportation incentive programs.

2. **Recent Developments—July 2020 through June 2021**

- In July, CARB staff published documentation guiding the data needed from MPOs as part of the SCS Submittal for CARB staff to complete the third-round of SCS Evaluations.
- CARB staff developed and published SCS technical evaluations for the following MPOs: Kern Council of Governments, Tulare County Association of Governments, San Joaquin Council of Governments, Stanislaus Council of Governments, San Luis Obispo Council of Governments, Shasta Regional Transportation Agency, Madera County Transportation Commission, Sacramento Area Council of Governments, Southern California Association of Governments, and Kings County Association of Governments.
- All MPOs are in or past their third SCS cycle and are thus subject to the 2018 GHG reduction targets.
- CARB invested in clean transportation and mobility options in California's most impacted communities as part of the Low Carbon Transportation Program. These investments provide communities with alternatives to owning personal vehicles that are tailored to their specific needs, consistent with CARB's Senate Bill 350 Low-

Income Barriers Study¹⁹ findings and equity principles²⁰. These projects build upon the lessons learned²¹ from CARB’s broader suite of equity investments and incentive programs and help address some of the most critical community barriers to accessing cleaner mobility options, such as outreach, access to information, exposure to new technologies, affordability, and safety. Projects closely tie to the goals of the SB 375 Program, including providing first-last mile connections to transit, reducing GHG emissions, and reducing personal miles traveled. They also consider and provide guidance for displacement, workforce training and development, and community inclusion and engagement, and make ties, where applicable, to affordable housing and land-use policies. Example projects include:

- BlueLA Car Share
- Statewide Clean Mobility Options Voucher Pilot
- [Sustainable Transportation Equity Project](#)
- CARB staff continued work with other State agencies on plans, policies, and guidelines related to transportation, housing, and land use as part of its role in reviewing and providing input on program guidelines and project selection criteria for other agencies’ incentive programs. A few examples include:
 - Participation in policy working groups and steering committees for the Affordable Housing and Sustainable Communities, Transformative Climate Communities, and Sustainable Agricultural Lands Conservation programs administered by the Strategic Growth Council (SGC).
 - Coordination with the California State Transportation Agency on development of the 2020 Transit and Intercity Rail Capital Program cycle guidelines to incentivize transit investments that serve existing and future housing and facilitate future infill and affordable housing development, which support VMT reduction.
- CARB collaborated with the California Transportation Commission and the California Department of Housing and Community Development on three joint meetings, which included discussions on policies that jointly affect transportation, housing, climate, and air quality. These meetings included agenda topics related to equitable, sustainable communities and they featured guest speakers who provided recommendations on how State agencies can incorporate equity more deeply into State programs and policies. Speakers also included staff from the California State Transportation Agency who joined two of the meetings to obtain input on the [Climate Action Plan for Transportation Infrastructure](#), which contains key actions to help reduce VMT and other strategies to align transportation investments with the objectives of the AB 32 Scoping Plan.

¹⁹ Senate Bill 350 Low-Income Barriers Report Part B: Overcoming Barriers to Clean Transportation Access for Low-Income Residents, [Draft SB 350 Clean Transportation Access Guidance Document](#)

²⁰ The Greenlining Institute, [Greenlined Economy Guidebook, 6 Standards for Equitable Community Investment](#)

²¹ The Greenlining Institute, [Clean Mobility Equity: Playbook – Lessons from California’s Clean Transportation Programs](#)

- CARB supported housing near jobs, transit, and other high-opportunity locations by providing information and support to other agencies as they craft plans and guidance that shape land use and transportation. This included:
 - Interagency work with the California Department of Transportation (Caltrans) and OPR under [SB 743](#) (Steinberg, Chapter 386, Statutes of 2013) to change transportation impact analysis under CEQA for new construction (including housing).
 - Providing input to the Department of Housing and Community Development on its development of guidelines for its “prohousing” designations. These guidelines will encourage local government actions to support housing that helps to reduce VMT and GHG emissions.
 - Participating on both the technical and policy advisory committees for Caltrans’ development of its [California Transportation Plan 2050](#).
 - Ongoing work to evaluate research needs and pursue projects with the goal of informing State and local efforts—including policies, strategies, and technologies—that bring California closer to achieving climate, housing, transportation, and equity goals.
- CARB expanded its work supporting housing policy development and implementation, recognizing that where and how new housing is built has significant impacts on the State’s ability to achieve VMT and GHG emissions reductions goals as well as on the health and equity of California communities. This work relies on collaboration with housing and other State agency partners.
- In April, CARB staff published its [2020 Mobile Source Strategy Revised Draft](#) identifying a suite of new actions CARB could potentially undertake under its existing authority, within the next several years, to reduce passenger VMT and help meet State air quality and climate goals.

3. Upcoming Milestones—July 2021 through June 2022

- As each MPO adopts a new SCS, CARB staff evaluates the plan to determine whether the SCS, when fully implemented, would achieve the GHG emissions reductions targets. In 2021 and through June 2022, multiple MPOs plan to adopt their third SCSs, including Tahoe Metropolitan Planning Organization, Metropolitan Transportation Commission/Association of Bay Area Governments, Santa Barbara County Association of Governments, San Diego Association of Governments, Association of Monterey Bay Area Governments, and San Joaquin Council of Governments. CARB staff will review all SCSs for approval after the MPOs provide complete submittals.
- CARB will collaborate with the California Transportation Commission and the California Department of Housing and Community Development on two joint meetings.
- CARB staff will continue to engage with the California State Transportation Agency, OPR, California Business, Consumer Services and Housing Agency, California Department of Housing and Community Development, California Transportation Commission, Caltrans, and SGC, on transportation and housing funding, and GGRF revenues appropriated for SCS program implementation. One

example of this work includes providing support for development of an analytical framework tied to the Regional Early Action Planning Grant Program, in consultation with the California Department of Housing and Community Development, SGC, and OPR, to prioritize funding for projects that advance applicable SCSs, support VMT reduction, align with the objectives of the Scoping Plan, and advance equity.

- CARB staff will continue to support housing near jobs, transit and other high-opportunity locations by providing information and support to other agencies as they craft plans and guidance that shape land use and transportation, including continuing interagency work with Caltrans on SB 743 implementation.
- CARB staff will continue implementing clean transportation and mobility projects, including incorporating critical lessons, refining strategies to increase access, reporting the socioeconomic benefits of these investments, analyzing current demand and projecting the need for future investments, and refining equity principles to maximize benefits and promote community sustainability.
- CARB staff will continue to evaluate research needs and pursue projects that inform State and local efforts—including policies, strategies, and technologies—to bring California closer to achieving climate, housing, transportation, and equity goals.
- CARB staff will initiate and advance work on the Progress Report to the Legislature required by SB 150 on implementation of SB 375. Staff will work with MPOs and other parties to assemble data-driven metrics, implementation challenges and best practices, and impacts of changes to State funding and policies for the report.

I. **Dairy and Livestock Methane, Hydrofluorocarbons, and Woodsmoke**

1. ***Background***

[Short-lived climate pollutants \(SLCP\)](#) are powerful climate forcers that have relatively short atmospheric lifetimes, and include methane, black carbon, and some fluorinated gases (including hydrofluorocarbons or HFCs). CARB, in coordination with other State agencies, developed a [Short-Lived Climate Pollutant Reduction Strategy](#) (SLCP Strategy) pursuant to [SB 605](#) (Lara, Chapter 523, Statutes of 2014) and [SB 1383](#) (Lara, Chapter 395, Statutes of 2016). The SLCP Strategy identifies current State measures to reduce SLCP emissions, as well as additional measures needed to meet the targets required by SB 1383. These targets include a 40 percent reduction in methane and HFC emissions and a 50 percent reduction in anthropogenic black carbon emissions, all relative to 2013 levels, by 2030. SB 1383 also provides specific direction for emissions reductions from dairy and livestock operations and from landfills (the latter via diversion of organic materials).

Dairy and Livestock Sector Methane Emissions. SB 1383 requires CARB, in consultation with CDFR, to develop regulations to reduce manure methane emissions from the dairy and livestock sector to 40 percent below 2013 levels by 2030. These regulations may take effect on or after January 1, 2024. Prior to adopting any regulations, SB 1383 requires CARB to work with stakeholders to identify technical, market, regulatory, and other barriers to methane emissions reductions projects, provide a forum for public

engagement, conduct or consider relevant research, and consider developing emissions reductions protocols. CARB took steps to meet these requirements including convening a [Dairy and Livestock GHG Emissions Working Group](#) to make [recommendations](#) on overcoming barriers to methane emissions reductions projects and [research priorities](#), funding research on methane emissions reductions strategies from manure management practices and enteric fermentation, and completing an analysis of the progress the sector has made toward the reduction goal set by SB 1383. CARB also administers the [Cap-and-Trade Program](#) and [Low Carbon Fuel Standard Program](#), both of which facilitate methane emissions reductions from dairy and livestock anaerobic digestion projects.

Hydrofluorocarbons. HFCs are potent SLCPs with GWPs that are hundreds to thousands of times greater than CO₂. HFCs are most commonly used as refrigerants in refrigeration and air-conditioning (AC) systems, and to a lesser extent, as aerosol propellants, foam blowing agents, solvents and fire suppressants. CARB has been acting to reduce HFC emissions since the early 2000s. CARB initiated an effort to reduce HFCs from mobile AC sources in its first light-duty vehicle GHG emissions standard, adopted by the Board in 2004. In 2009, the Board adopted an AB 32 early action measure creating the [Refrigerant Management Program \(RMP\)](#).²² In 2017, key federal HFC prohibitions were partially vacated in court.²³ California took action and backstopped key HFC prohibitions by adopting a new regulation²⁴ and through new legislation, [SB 1013](#) (Lara, Chapter 375, Statutes of 2018.)

In 2016, global action to control HFC refrigerant use resulted in the Kigali Amendment to the Montreal Protocol. In 2020, Congress enacted the [American Innovation and Manufacturing \(AIM\) Act](#)²⁵ to accomplish a Kigali-style HFC phasedown in the United States.²⁶ The phasedown under the AIM Act will reduce national HFC production and consumption to 15 percent of 2011–13 baseline levels by 2036.

However, despite recent national action, CARB staff analysis has determined a more rapid reduction in HFC use is required than specified in the Kigali Amendment and the AIM Act in order to reach the SB 1383 target. In 2020, CARB approved amendments to the [HFC regulation](#) that adopted stringent GWP limits for new refrigeration and AC equipment. Additionally, under the amended regulation, large HFC emitters such as supermarkets and grocery stores will be required to cut their emissions in half by 2030. CARB also approved a unique program to enhance the use of reclaimed refrigerant. The [Refrigerant Recovery, Reclaim and Reuse \(R4\) program](#) will require AC manufacturers to use reclaimed refrigerant either in new equipment or for servicing existing equipment from 2023 to 2026. The R4 program could become a vehicle for

²² Cal. Code Regs., tit. 17, § 95380 et seq.

²³ *Mexichem v. U.S. EPA* (D.C. Cir. 2017) 866 F. 3d 451

²⁴ Cal. Code Regs., tit. 17, § 95371 et seq.

²⁵ 42 U.S.C. § 7675; see also [U.S. EPA's Protecting Our Climate by Reducing Use of HFCs](#).

²⁶ Although the U.S. is a signatory, it has not ratified the Kigali Amendment (as of June 2021).

future reclamation requirements as CARB further restricts the use of high-GWP HFCs in the State.

Building electrification is a key part of the State's decarbonization strategy which, while significantly reducing fossil fuel GHG emissions, may potentially increase HFC emissions as electric refrigerant-containing appliances replace natural gas appliances. CARB is analyzing potential actions which will prevent an inadvertent rise in HFC emissions and help preserve the emission benefits expected from building electrification.

Woodsmoke Reduction Program. During the winter, biomass burning from home heating is one of the largest sources of anthropogenic black carbon. The [Woodsmoke Reduction Program](#) provides CCI-funded incentives for households to replace uncertified wood stoves, wood inserts, or fireplaces with cleaner burning and more energy efficient home heating devices. Higher incentives, up to the full cost of device and installation, are available for low-income households and households located in disadvantaged and low-income communities. CARB operates the program in partnership with the [California Air Pollution Control Officers Association \(CAPCOA\)](#) and local air districts who administer the funding.

2. Recent Developments—July 2020 through June 2021

- CARB, in consultation with CDFA, developed a draft of its [Analysis of Progress toward Achieving the 2030 Dairy and Livestock Sector Methane Emissions Target](#) for public comment. The analysis, released in June 2021 includes an evaluation of the progress made in overcoming technical and market barriers to sector methane emissions reductions projects.
- In December 2020, CARB approved amendments to the [HFC regulation](#), which include: 1) GWP limits on the refrigerants used in new refrigeration and air-conditioning equipment, 2) company-wide HFC reduction requirements for retail food facilities like supermarkets and grocery stores, and 3) the [R4 program](#) which requires AC manufacturers to use reclaimed refrigerant in new equipment and for servicing existing equipment. All these HFC reduction measures are the first of their kind in the nation.
- CARB staff worked with the Car Care Council, designated by the manufacturers of small containers of automotive refrigerant, to implement another year of media strategies to develop the [Enhanced Education Program](#) in major regions of California. Starting in 2020, the program added funds for investments in other GHG reduction projects, leading to emissions reductions in areas that historically had been excluded.
- CARB expanded the [RMP](#) online reporting tool, called the [Refrigerant Registration and Reporting System](#). These updates added quality of life improvements to facilitate reporting based on feedback CARB staff received through extensive outreach to the regulated community.
- CARB staff designed and launched the CCI-funded [Fluorinated Gas Reduction Incentive Program \(FRIP\)](#) to promote the adoption of low-GWP refrigerant technologies, particularly in low-income and disadvantaged communities.

- In FY 2020–21, CARB awarded a total of \$1 million to incentivize the installation of ultra-low-GWP (i.e., GWP less than 10) refrigeration systems in 13 supermarkets and refrigerant replacements in two locations. CARB awarded approximately 50 percent of these funds to stores located in low-income or disadvantaged communities.
- CARB worked closely with CEC to incorporate HFC emissions in baseline building emissions and building emissions reductions scenarios and strategies for the [AB 3232](#) (Friedman, Chapter 373, Statutes of 2018) assessment report, bringing HFCs to the forefront of building decarbonization discussions.
- CARB coordinated with CEC to incorporate HFCs in the [2022 California Building Energy Efficiency Standards \(Part 6 Energy Code\)](#). This enables a more accurate accounting of GHG emissions from refrigerant-containing heat pump appliances and may incentivize the installation of low-GWP appliances.
- CARB allocated \$2 million in CCI incentives from the FY 2018–19 funding for the [Woodsmoke Reduction Program](#) to replace uncertified wood burning devices with cleaner burning and more energy efficient home heating alternatives in approximately 600 households.

3. Upcoming Milestones—July 2021 through June 2022

- CARB will publish a final report for the *Analysis of Progress toward Achieving the 2030 Dairy and Livestock Sector Methane Emissions Target*.
- CARB will finalize updates to the [HFC regulation](#).
- CARB will evaluate and consider development of additional HFC mitigation measures needed to meet the legislatively mandated targets, which may include a ban on sales of virgin high-GWP refrigerants in California and GWP limits on heat pump water heaters and other heat pump technologies.
- CARB will continue discussions with air districts to coordinate enforcement cooperation on [RMP](#) and on CARB’s other HFC regulations. CARB plans to amend RMP, as the program requires updates to better guarantee emissions reductions as well as to clarify parts of the initial rule.
- CARB will expand the [Refrigerant Registration and Reporting System](#) to provide a new reporting page for new amendments to the HFC regulation which require company-wide HFC reduction requirements for retail food facilities like supermarkets and grocery stores.
- CARB staff will continue to work with the Car Care Council to evaluate the effectiveness of the [Enhanced Education Program](#), and modify media strategies for improved can return rates, as well as other GHG emissions reductions projects.
- CARB will continue to work closely with CEC, CPUC, other State agencies and public utilities to increase wide-scale adoption of low-carbon cooling and heating technologies that will become increasingly important for building decarbonization.
- CARB will continue to work with air districts to implement the remaining \$1 million in FY 2018–19 CCI funding for the [Woodsmoke Reduction Program](#).

J. Landfill Methane

1. **Background**

The [Landfill Methane Regulation](#) is an AB 32 discrete early action measure adopted by CARB that became effective in 2010. The regulation requires owners and operators of certain uncontrolled municipal solid waste landfills to install gas collection and control systems, and it requires existing and newly installed gas collection and control systems to operate in an optimal manner. These provisions reduce methane emissions from the State's landfills. The regulation allows local air districts to voluntarily enter into memoranda of understanding (MOU) with CARB to implement and enforce the regulation and to assess fees to cover costs. To date, CARB and 23 air districts have entered into MOUs to enable the districts to implement and enforce the regulation.

U.S. EPA promulgated updates to the [Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills](#), 40 CFR, Part 60, Subpart Cf (Emission Guidelines), which became effective on October 28, 2016. CARB submitted its State Plan to U.S. EPA in 2017 to demonstrate that CARB's Landfill Methane Regulation is equivalent to, or more stringent than, the Emission Guidelines. U.S. EPA published rules delaying deadlines for state and federal plans. CARB and multiple states sued U.S. EPA. U.S. EPA [partially approved and partially disapproved](#) California's [State Plan](#) on January 9, 2020.²⁷ The partial disapproval relates to minor provisions dealing primarily with well-head monitoring, reporting, and other provisions.

2. **Recent Developments—July 2020 through June 2021**

- CARB continued to partner with local air districts to ensure successful implementation and enforcement of the regulation, monitor compliance at landfills located in districts that have not signed an MOU, and conduct audits through inspections and document reviews.
- On March 4, 2021, U.S. EPA filed a motion for voluntary vacatur, and the court granted this motion on April 5, 2021. The delay rule is no longer in force and the original Emission Guidelines are back in place. U.S. EPA issued a [Federal Plan](#) on May 21, 2021.²⁸
- CARB continues to work with U.S. EPA regarding the partial approval/disapproval of the submitted state plan for compliance with the Emission Guidelines.

3. **Upcoming Milestones—July 2021 through June 2022**

- CARB will continue to partner with local air districts to ensure successful implementation and enforcement of the [Landfill Methane Regulation](#), monitor compliance with landfills located in air districts that have not signed an MOU, and conduct audits through inspections and document reviews.
- CARB plans to work with U.S. EPA to achieve a full approval of the [State Plan](#).

²⁷ 85 Fed. Reg. 1121 (Jan. 9, 2020)

²⁸ 86 Fed. Reg. 27756 (May 21, 2021)

K. Crude Oil and Natural Gas Production, Processing, and Storage

1. **Background**

The 2008 Scoping Plan proposed the development of a measure that reduces venting²⁹ and fugitive³⁰ GHG (methane) emissions associated with oil and gas production, processing, and storage. In 2009, CARB undertook a survey of the industry to improve the emissions inventory for this sector. The survey results showed that about 1.3 MMTCO₂e per year come from vented and fugitive methane emissions in the oil and natural gas production, processing, and storage sector. These emissions come from various sources, such as storage tanks, compressor seals, and leaking components including valves, flanges, and connectors. The Board approved the [Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities \(Oil and Gas Methane Regulation\)](#) in 2017. More information is available on the [Oil and Natural Gas Production, Processing, and Storage program webpage](#).

2. **Recent Developments—July 2020 through June 2021**

- CARB received required updates on annual reported data.
- CARB published and posted its [Oil and Gas Methane Regulation 2018 Annual LDAR Summary](#).
- CARB distributed \$1 million from the AB 32 Cost of Implementation Fee Account among the air districts according to a distribution allotment approved by CAPCOA, to assist with regulation implementation.
- CARB staff worked with a contractor to add district user capabilities to the web-based reporting tool and continued to implement the detection equipment loan-out program to air district staff.

3. **Upcoming Milestones—July 2021 through June 2022**

- Under the requirements of the [Oil and Gas Methane Regulation](#), CARB will continue to receive updates on equipment reporting, new tank flash testing data, leak detection and repair inspection reports, reciprocating and centrifugal natural gas compressor flow rates, low-bleed pneumatic device flow rates, vented gas volumes from liquids unloading of natural gas wells, and well casing vent emission flow rates.
- Monitoring of ambient methane concentrations at underground storage facilities of natural gas will continue.
- CARB will continue to distribute allocated AB 32 Cost of Implementation Fee funds among the air districts according to a distribution allotment approved by CAPCOA, to assist with regulation implementation.
- CARB staff will continue to implement the detection equipment loan-out program to air district staff. If COVID-19 safety conditions allow, CARB will arrange multiple

²⁹ Intentional release of gases into the atmosphere.

³⁰ Unintentional release of gases into the atmosphere.

training sessions throughout the State for air district staff on how to use leak detection equipment.

L. Electricity Programs

1. *Background*

Measures aimed at reducing emissions from the electricity sector provide important contributions towards reducing emissions of criteria pollutants, toxic air contaminants, and GHGs. Updates to the State's Climate Change Scoping Plan, development, and implementation of regulations in targeted areas of the electricity sector, and partnerships with multiple State agencies demonstrate how CARB plays a significant role in evaluating and proposing statewide policies and programs, to achieve a clean electricity system. These policies and programs will reduce sulfur hexafluoride (SF₆) emissions from electricity transmission and distribution equipment, and also establish GHG planning targets for electricity providers.

SF₆ is a highly potent GHG that is tens of thousands of times more effective at trapping heat in the atmosphere than an equivalent amount of carbon dioxide. The most common use for SF₆ is as an electrical insulator in electricity transmission and distribution equipment. SF₆ can escape from gas-insulated equipment through seals, and can also be released during equipment installation and servicing. Due to its high GWP, CARB adopted the [Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear \(SF₆ Regulation\)](#) in 2010 as an AB 32 early action measure.

Building on the State's climate leadership, [SB 350](#) established 2030 targets for energy efficiency and the Renewables Portfolio Standard (RPS) Program. The RPS program promotes renewable energy adoption in California by requiring that increasing percentages of electricity come from renewable energy. [SB 100](#) (De León, Chapter 312, Statutes of 2018) increased the RPS requirement from 50 percent to 60 percent by the year 2030. CEC and CPUC work collaboratively to implement RPS. CEC is responsible for determining any publicly owned utility's (POU) compliance violations and referring the violations to CARB. CARB is responsible for assessing financial penalties on POUs that fail to meet program requirements.

[SB 100](#) also established a landmark California policy that 100 percent of retail sales of electricity to end-use customers come from renewable and zero-carbon resources by 2045. [SB 100](#) requires CEC, CPUC, and CARB to prepare a [Joint Agency Report to the Legislature \(SB 100 Report\)](#) every four years, starting with the initial report due in 2021. The [SB 100 Report](#) is required to evaluate options for achieving the 100 percent zero-carbon electricity policy, while ensuring that the path forward maintains safe, reliable power grid operation; prevents unreasonable impacts to customer rates; and incorporates environmental and equity considerations.

To ensure that GHG emissions reductions are realized, [SB 350](#) requires large electricity providers to develop and submit Integrated Resource Plans (IRP) that outline the actions utilities will take to meet customers' electricity needs and achieve California's long-term GHG emissions reductions goals, while considering cost effectiveness, reliability, impacts on disadvantaged communities, as well as statutory mandates such

as the RPS. To facilitate this planning, SB 350 requires CARB, in coordination with CPUC and CEC, to set GHG emissions reductions planning targets for the electricity sector and for individual electricity providers. CARB originally established 2030 GHG planning target ranges for electricity providers' use in IRPs in 2018 and revised these ranges in 2021. CARB staff, in coordination with CPUC and CEC, periodically revises the 2030 GHG emissions targets to accommodate shifts in load-share between electricity providers.

2. Recent Developments—July 2020 through June 2021

- CARB proposed amendments to the SF₆ Regulation to further reduce SF₆ emissions, increase flexibility in complying with the standards, and address other issues. In September, CARB's Board approved amendments (with modifications) to the SF₆ Regulation.
- In March 2021, CARB finalized updates to the 2030 GHG planning target ranges for certain electricity providers in its report: [Senate Bill 350 Integrated Resource Planning Electricity Sector Greenhouse Gas Planning Targets: 2020 Update](#).
- As part of the [SB 100 Report](#) development process, which kicked off in September 2019, CEC, CPUC, and CARB held a technical workshop in late summer 2020 to present draft modeling results for various exploratory scenarios to inform the path to zero-carbon electricity by 2045. The agencies released a draft SB 100 Report in fall 2020 for public review. The final [2021 SB 100 Joint Agency Report](#) was released in March 2021. The initial modeling results highlight the need for expanding clean generation and energy storage at record-setting rates, the value of diversity in energy resources in lowering costs, and the role increased energy storage and technology advancements can play in reducing natural gas power needs during the transition. It is one of the foundational reports that will inform the development of the 2022 Scoping Plan Update.

3. Upcoming Milestones—July 2021 through June 2022

- The amendments to the SF₆ Regulation are currently under review by the Office of Administrative Law and are anticipated to go into effect in 2022.
- On July 30, Governor Newsom signed an [Energy Emergency Proclamation](#) to address the energy shortfall and directs CEC to streamline processes to expand battery storage systems of 20 MW or more that can deliver net peak energy by October 2022. While deployment of clean resources remains a priority, the proclamation also directs CEC to expedite processes that increase capacity at existing facilities and add temporary power generators by October 2021 due to the declared climate emergency. To help offset the additional emissions from existing and temporary generators, the proclamation directs CARB to develop a [state-funded plan](#) by November 2021 to mitigate the additional emissions from implementation of the proclamation in affected communities.
- As required by the emergency proclamation, CEC, CPUC, the California Independent System Operator, and CARB will provide a [report to the Governor](#) by the end of September 2021 that highlights agency actions and plans that support

the 2021 SB 100 Report recommendations. The report will include priority actions towards reliability and renewable and integration resource deployment that will help accelerate the transition to carbon-free energy.

- In line with Governor Newsom’s [Executive Order N-79-20](#), CARB will work together with CEC, CPUC, and other relevant State agencies to accelerate deployment of affordable fueling and charging options for zero-emission vehicles, in ways that serve all communities and in particular low-income and disadvantaged communities, consistent with State and federal law.

IV. COORDINATION WITH OTHER ENTITIES OUTSIDE OF CALIFORNIA

A. Background

AB 32 requires CARB to:

“...consult with other states, the federal government, and other nations to identify the most effective strategies and methods to reduce greenhouse gases, manage greenhouse gas control programs, and to facilitate the development of integrated and cost-effective regional, national, and international greenhouse gas reduction programs.”

Pursuant to this requirement, CARB engages with interested jurisdictions outside of California at the local, State, regional, national, and international levels to guarantee that the rigorous standards established by California are understood, and to encourage participation from other jurisdictions. Where other states and nations develop or implement their own GHG emissions reductions programs, CARB seeks committed partners to expand cost-effective actions that tackle global climate change together. By sharing California’s programs, policies, and best practices, other entities can design programs that complement California’s efforts.

One focus of CARB’s efforts is to work with partner jurisdictions to expand cost-effective emissions reductions opportunities. These efforts have included developing the administrative support activities managed by WCI, Inc. Another example is the linkage between California’s [Cap-and-Trade Program](#) and the Canadian province of Québec’s program. Like California, Québec has enacted legislative requirements to reduce economy wide GHG emissions. Each jurisdiction has adopted GHG emissions reductions targets and is implementing a portfolio of programs, including a comprehensive Cap-and-Trade Program, to meet those targets. Since linkage in 2014, California and Québec have implemented successful Cap-and-Trade Programs. Linkage enables compliance instruments to be traded and used interchangeably across the linked programs; expands the market; enhances compliance flexibility for program participants; and allows for centralizing administrative functions, which improves efficiencies and offers the potential to reduce governmental costs.

B. Federal and State Governments

This section discusses CARB’s activities with federal and state governments outside of California. CARB coordinates with state and federal entities that develop similar

climate-related programs to ensure that important provisions are as consistent as possible, and to facilitate broadening of policies to other jurisdictions. CARB works closely with federal agencies including U.S. EPA, the U.S. Department of State, the U.S. Agency for International Development, the Commodity Futures Trading Commission (CFTC), and the Federal Energy Regulatory Commission (FERC) on climate change issues.

Federal Government. CARB works with the federal government on multiple efforts, some of which are described here. Accomplishments include California's mandatory GHG emissions reporting regulation, which is modeled on and periodically updated to maintain consistency with U.S. EPA's GHG emissions reporting rule. The Compliance Instrument Tracking System Service (the market compliance tracking software for California's Cap-and-Trade Program) was built in cooperation with U.S. EPA and modeled on the framework used in other emissions trading systems (ETS), including the federal Acid Rain Program and the Northeast states' Regional Greenhouse Gas Initiative. CARB also coordinates with CFTC and FERC to strengthen carbon and related energy market monitoring, oversight, and enforcement.

CARB is also involved in federal regulation of GHG emissions. For instance, in 2019, U.S. EPA finalized the [Affordable Clean Energy \(ACE\) Rule](#), which repealed the Clean Power Plan. Promulgated under the federal Clean Air Act, the Clean Power Plan would have driven emissions reductions by looking broadly at the ability of power plants to shift generation from higher-emitting to lower-emitting plants. In contrast, the ACE Rule would not have achieved significant GHG emissions reductions from existing power plants, and may even have led to emissions increases. CARB, along with a group of states, power companies, and public health organizations, challenged the ACE Rule in federal court. The Court of Appeals for the District of Columbia Circuit vacated the ACE Rule on January 19, 2021.

CARB has also filed litigation for other programs, as appropriate, to support timely and effective federal action on climate change. CARB has litigated to ensure that federal methane rules for oil and gas sources remain in force, and has filed extensive comments supporting the continuation of rigorous federal programs for stationary and mobile sources. U.S. EPA and CARB routinely coordinate on advanced transportation and fuels as well, including coordinating the complementary relationship between the federal Renewable Fuels Standard and the California LCFS.

Other State and Provincial Governments. Some of CARB's work with other state and provincial governments includes sharing insights gained from developing and implementing California's [Cap-and-Trade Program](#) and [LCFS](#). CARB has also provided ongoing technical expertise and assistance to the [U.S. Climate Alliance](#) on reducing GHG emissions.

For HFCs, after the rollback of federal rules that occurred in 2017, CARB developed a model rule which was used by several other Alliance states to adopt the federal HFC prohibitions at the State level. So far, at least ten states have adopted or are in the process of adopting HFC regulations, including California, Washington, Vermont, Maryland, New York, New Jersey, Virginia, Delaware, Massachusetts, and Colorado.

Further, CARB helped design a tool for states to develop their own bottom-up statewide inventories for SLCPs. More recently, there has been positive action on HFCs at the federal level with the passage of the [AIM Act](#), as described earlier in subsection I. (on HFCs) of this report. On July 15, 2021, CARB and several of the U.S. Climate Alliance states submitted a petition to the U.S. EPA urging them to consider adopting CARB's recent groundbreaking HFC regulations nationally and to readopt some of the HFC rules that were previously rolled back.

In spring 2021, the State of Washington enacted legislation establishing both a clean fuels program and a cap-and-invest program. CARB staff have shared implementation best-practices and lesson-learned with Washington program staff. According to Washington's legislation, these programs must be operational by 2023. CARB staff also continues to collaborate with staff in British Columbia and Oregon on their low carbon fuel standard programs. CARB staff and Executive Office members met several times in 2020 and participated in multiple conference calls with their counterparts within the [Pacific Coast Collaborative](#) to discuss the design elements and challenges of a low carbon fuel standard. Staff is also providing input, when solicited, to other prospective state-level clean fuels programs, including a consortium of states in the U.S. Midwest, New York, and Colorado. Staff anticipates further collaboration with other state and provincial governments in 2021 as more jurisdictions pursue clean fuels policies like the LCFS.

In July 2020, [15 states and the District of Columbia announced a joint MOU](#), committing to work collaboratively to advance and accelerate the market for electric medium- and heavy-duty vehicles, including large pickup trucks and vans, delivery trucks, box trucks, school and transit buses, and long-haul delivery trucks. The goal is to ensure that 100 percent of all new medium- and heavy-duty vehicle sales be zero-emission vehicles by 2050 with an interim target of 30 percent zero-emission vehicle sales by 2030. The MOU will advance the goals of reducing harmful diesel emissions and cutting carbon pollution.

C. International

Pursuant to AB 32, California consults with other governments and international coalitions to identify the most effective strategies and methods to reduce GHG emissions, manage GHG emissions control programs, and to facilitate the development of integrated and cost-effective regional, national, and international GHG reduction programs. In collaboration with the Governor's Office, CalEPA, CEC, and other State agencies, CARB conducts activities in support of these strategies, including:

- Development of an economy-wide portfolio of emissions-reducing policies that can serve as a model for federal and international policy;
- Direct consultation with other jurisdictions to provide technical assistance on the development of their programs; and
- Analysis to support federal and international policy regimes that build on California's program.

California shares its experiences through multilateral platforms and over 50 declarations. The most prominent results of our bilateral engagement have been through MOU and Declarations of Intent with China, Mexico, the European Union (EU), and subnational governments signed on to the Under2 Coalition. CARB also participates in several international initiatives and multilateral coalitions to support and motivate climate action, including the 38-member Governors' Climate and Forest Task Force, the International Zero-Emission Vehicle Alliance (ZEV Alliance), the World Bank's Partnership for Market Readiness, the International Carbon Action Partnership, the Transport Decarbonization Alliance, and more.

In addition to these efforts, CARB hosts delegations from around the world typically at its facilities in Sacramento and El Monte. Amid the pandemic throughout the 2020–21 fiscal year, CARB hosted seven delegations virtually and provided climate and air quality expertise through approximately 100 virtual speaking engagements, workshops, and other formal exchanges with international jurisdictions. This section outlines CARB's international partnerships and initiatives to reduce GHG emissions, and strengthen California's ability to compete in the global economy.

Under2 Coalition. The [Under2 Coalition](#) is a global community of state and regional governments publicly committed to ambitious climate action and long-term deep decarbonization. The coalition brings together signatories of the Subnational Global Climate Leadership Memorandum of Understanding, or "Under2 MOU." CARB provides technical expertise to other agencies through knowledge exchanges facilitated by the Under2 Coalition. CARB also participates in the Under2 Coalition by maintaining a dialogue with the Under2 Secretariat about California's GHG reduction measures, strategies, and accomplishments, reviewing and commenting on Under2's policy commitment campaigns and strategies, through annually filing the [Climate Group's Under2 Ambition Tracker](#), and through providing updates to the [Climate Disclosure Project](#).

México. California has engaged with Mexico to provide cooperation on climate change, air quality, and the environment through several MOUs over the last decade. CARB has and continues to provide technical expertise, capacity building, and knowledge sharing across climate change, air quality, wildfires, and clean vehicles.

CARB continues to engage with México on climate change, particularly through bi-weekly calls of a Climate Change Working Group. This group also includes expert staff from Québec. To support the development of México's national ETS, the group continued to dedicate time on topics that are critical to designing a robust ETS. The Mexican Secretariat for Environment and Natural Resources published final ETS regulations in October 2019 and began implementing a pilot phase. The pilot will not pose an economic impact on regulated entities, but will serve to familiarize them with ETS requirements and test the system. The pilot will run through 2022 and the group continues to discuss topics that are of relevance to a broader, first phase of the ETS after 2022.

CARB also continued to engage with the [Mexican National Forestry Commission](#) (CONAFOR) on México's National Strategy to Reduce Emissions from Deforestation

and Forest Degradation. CONAFOR has been an integral part of the Climate Change Working Group discussions and a driving force in advancing the role of forests and indigenous engagement related to climate change. In 2021, CARB continued to regularly coordinate with Mexico and focus on approaches and requirements to effectively structure subnational programs within the national climate policy framework.

China. CARB and other agencies including CalEPA and CEC have also been working with several entities in China to advance efforts to reduce GHG emissions and combat air pollution. China has become the world's leading emitter of GHG emissions and, as such, is a critical partner in addressing global climate change. At the same time, many cities in China are suffering from hazardous air pollution, some of which drifts across the Pacific Ocean to California. Sharing California's leading expertise on reducing air pollution can provide benefits to China, California, and the global climate.

In July 2021, China launched a national online GHG ETS after launching local ETS programs in seven cities and provinces in 2011. CARB has participated in many meetings to discuss ETS and international carbon markets. CARB has also continued to support the goals of California's MOUs with China for clean air collaboration. California's clean car and truck policies, including ZEVs, are having a significant positive influence on China's policies. At the national level, China is looking to California for cutting-edge requirements for car diagnostics and policies that promote ZEVs similar to California's ZEV plans. At the provincial level, Beijing has moved its programs even closer to those in California by adopting our vehicle emissions standards and a number of other progressive environmental regulations. CARB continues to provide technical assistance to our counterparts in China, covering a wide range of issues, including emissions reductions measures and trading systems, ZEVs, and a policy framework for mitigating pollution.

The European Union ETS. The [EU ETS](#) covers approximately 45 percent of EU GHG emissions in some 31 countries, has been in operation since 2005, and is set to deliver a reduction of 43 percent in EU emissions from the covered sectors by 2030. In September 2018, California and the EU confirmed their view that greater alignment of carbon markets is in the interests of both. Aligning carbon markets could maximize and leverage climate action for economic transformation while ensuring real progress on reducing GHG emissions. In addition, both emphasized the need to engage other jurisdictions with similar and emerging programs to foster broader dialogue.

India. CARB continues to pursue a strong bilateral relationship with India, focusing on air quality and clean transportation. The "Track II Dialogue" working group CARB participates in is committed to advancing collective understanding of the key policy and resource factors influencing the development and advancement of electric vehicle manufacturing sectors in India and the United States. The Dialogue offers a platform for partners from the U.S. and India to exchange views and identify areas of collaboration on critical issues related to climate. California plays an important role in demonstrating to India and other national governments that Americans remain committed, and California is a ready and willing partner in tackling the climate crisis

together. CARB has partnered with India's Central Air Pollution Board in the past and both parties are interested in reviving collaboration.

Governors' Climate and Forests Task Force. The [Governors' Climate and Forests \(GCF\) Task Force](#) is a subnational partnership aimed at designing jurisdiction-wide programs that reduce deforestation, benefit local communities, and protect the climate. The GCF Task Force commenced in 2008, and now includes 38 states and provinces from around the world including those from Brazil, Colombia, Ecuador, Indonesia, Ivory Coast, México, Nigeria, Peru, Spain, and the United States. A majority of its members are also signatories of the Under2 MOU. Due to COVID-19, the GCF Task Force held virtual meetings of its members throughout FY 2020–21. The annual, in-person GCF Task Force meetings that had been planned for 2020 and 2021 were postponed and the GCF Task Force plans to reconvene its annual meeting in 2022.

Following years of engagement with the GCF Task Force, CARB developed a [California Tropical Forest Standard](#) to provide a rigorous methodology for assessing jurisdiction-scale programs that reduce deforestation and to incentivize responsible action and investment. The Board endorsed the Standard in 2019. Endorsement of the Standard does not result in any regulatory changes in California or any linkage with any jurisdiction, nor does it allow any tropical forest offset credits into the California [Cap-and-Trade Program](#). GCF Task Force partners participated in the development process of the Standard and testified in support of the Standard. The Standard provides a strong signal to value the preservation of tropical forests over continued destructive activities such as oil exploration and extraction, and ensures rigorous social and environmental safeguards for indigenous peoples and local communities. Pursuant to Board direction, CARB has continued to engage with GCF Task Force partners on the use of the Standard throughout FY 2020–21 and will continue to do so in FY 2021–22.

Partnership for Market Readiness. CARB has also participated in meetings of the [Partnership for Market Readiness \(PMR\)](#), a multilateral World Bank initiative that brings together more than 30 developed and developing countries to share experience and build capacity for climate change mitigation efforts, particularly those implemented using market instruments. CARB became a Technical Partner of PMR in November 2014 and has continued to participate and support the activities organized by PMR.

International Carbon Action Partnership. Recognizing that many efforts around the world are underway to use market forces to motivate GHG emissions reductions, California worked with more than 15 other government leaders to establish the [International Carbon Action Partnership \(ICAP\)](#) in 2007. ICAP provides a forum for sharing experiences and knowledge among jurisdictions that have already implemented or are actively pursuing market based GHG programs. CARB began serving as a co-chair of ICAP in 2019 along with the European Union Commission and continued in that role this year.

International Zero-Emission Vehicle Alliance. In August 2015, California launched the [ZEV Alliance](#) with the Netherlands and Québec to accelerate global adoption of ZEVs.

By January 2020, the alliance had grown to include 18 members.³¹ In conjunction with Conference of Parties 21 in Paris, the ZEV Alliance announced a goal to make all passenger vehicle sales in their jurisdictions ZEVs as quickly as possible and no later than 2050. Each year, the ZEV Alliance selects several focus areas for in-depth exchange, webinars, and best practices reports. CARB plays a key role in the ZEV Alliance on policy and technical matters, and serves as the State of California's jurisdiction coordinator alongside experts from CEC, California Governor's Office of Business and Economic Development, and CPUC.

Low Carbon Fuels. CARB staff continued to engage with the government of Canada and U.S. EPA to share lessons learned from implementation of the [LCFS](#) provisions, and to inform and support development and implementation of their own federal clean and renewable fuels program. Staff also engaged with representatives from Japan and the European Commission, each of which were seeking information on California's approach to incentivizing use of low carbon fuels. Staff anticipates continued international collaboration in 2021 as the California LCFS remains strong and continues to serve as a global model.

Climate and Clean Air Coalition. California became the first subnational jurisdiction (state) to join the [Climate and Clean Air Coalition \(CCAC\)](#) in 2018. CCAC is the United Nations body that tackles SLCPs. Given California's leadership and effective programs on SLCPs, CARB continues to engage with CCAC partners, addressing methane, black carbon, and HFC emissions.

³¹ ZEV Alliance members include Baden-Wurttemberg, British Columbia, Canada, Germany, Netherlands, Norway, Québec, United Kingdom, and the states of California, Connecticut, Maryland, Massachusetts, New Jersey, New York, Oregon, Rhode Island, Vermont, and Washington.

SECTION 2: ANNUAL AB 32 FISCAL AND RESOURCES REPORT

Current reporting year (FY 2020–21), prospectively (FY 2021–22),
and retrospectively (FY 2019–20)

This report is required annually by the Supplemental Report of the 2012–13 Budget to quantify the major revenues and expenses for CARB to implement AB 32 programs for the current reporting year (FY 2020–21), prospectively (FY 2021–22), and retrospectively (FY 2019–20). This report quantifies AB 32 Cost of Implementation Fee appropriations and expenditure adjustments, overall CARB resources required to implement AB 32 separated by program and contract costs, and breakdowns by major program area. For information on Cap-and-Trade Auction Proceeds, see the California Climate Investments section of this document.

I. STRUCTURE AND FUNDING FOR REGULATORY ACTIVITIES

The resources estimated in this section of the report are used to support all activities that provide a climate benefit, whether as the primary objective or as a co-benefit. CARB's resources to support the climate program exceed the amount budgeted exclusively for AB 32 activities that are funded by the AB 32 Cost of Implementation Fee. CARB relies on other funding sources, and the specific source is related to the activity for two reasons.

First, CARB has several measures and program areas that were originally designed to achieve other air quality goals and rely on different funding sources, but nonetheless provide a climate co-benefit by simultaneously reducing GHG emissions. Although the GHG emissions reductions associated with these other measures are counted towards the State's AB 32 targets and considered as part of the climate program, those activities may not necessarily be solely funded by the AB 32 Cost of Implementation Fee. For example, the At-Berth Regulation was initiated to reduce the community health risk from ship pollution, but the rule also provides substantial GHG co-benefits associated with using shore-based electrical power rather than burning fuel in onboard engines when the ships are in port.

Second, CARB's regulatory program has grown and evolved to address the agency's responsibilities under State and federal law to improve air quality at the local, regional, and global levels. CARB adopts, implements, and enforces regulations focused on meeting several different objectives:

- Reducing criteria pollutants such as ozone and particulate matter to meet health-based air quality standards in each region;
- Reducing the localized health risk from air toxics (e.g., benzene, hexavalent chromium, and diesel particulate matter); and
- Reducing GHG and SLCP emissions that contribute to global climate change.

Although the statutory foundation for each of these regulatory programs is distinct, to the extent feasible, CARB looks to develop regulations and comprehensive programs that meet two or more of these objectives simultaneously. This approach enables CARB to use resources most efficiently and benefits industry by providing a consolidated set of requirements.

Historically, CARB has tracked AB 32 programs and activities to implement AB 32 in totality, not at the level of individual regulations. To comply with all mandates (State laws, regulations, and policies on fiscal programs), CARB uses the Financial Information System for California (FI\$Cal), which is the State's accounting system.

In response to requests by the Legislature to see more detailed information regarding the costs to implement AB 32, CARB committed to track and report on AB 32 expenditures for personnel, operations, and contracts for the major elements of the climate program. Therefore, CARB reports on the Climate Change Program (Fund 3510), of which the majority is appropriated from the Cost of Implementation Account (Fund 3237) but also includes appropriations from other funds that support climate change activities. These include the Air Pollution Control Fund (0115), Public Utilities Commission Utilities Reimbursement Account (Fund 0462), and Oil, Gas, and Geothermal Administrative Fund (Fund 3046). Climate change programs may also receive funding from other sources that target criteria and toxic air pollutants and also reduce GHGs and non-GHG SLCPs.

II. AB 32 COST OF IMPLEMENTATION FEE

Table 2 displays the Cost of Implementation Fee adjusted expenditures retrospectively (FY 2019–20) and for the current reporting fiscal year (FY 2020–21), as well as appropriations prospectively (FY 2021–22) for State agencies authorized to use the AB 32 Cost of Implementation Account. The expenditure of funds that support AB 32 programs at multiple agencies is established in the California Budget Act, and is referred to in the AB 32 Cost of Implementation Regulation as “required revenue.” Pro rata charges are a form of overhead and are defined in the State Administrative Manual (SAM) 8754 as “the sharing of central service costs by funds other than the General Fund and the Central Service Cost Recovery Fund.” SAM 8753 defines central service costs as “amounts expended by central service departments and the Legislature for overall administration of state government and for providing centralized services to state departments.” Supplemental pension payments are a California Public Employees’ Retirement fund contribution enacted under [SB 84](#) (Committee on Budget and Fiscal Review, Chapter 50, Statutes of 2017).

Table 2 includes budget year appropriations, expenditure adjustments and Legislature-approved budget change proposals for both the current reporting year and retrospectively. In FY 2019–20, the Legislature approved two budget change proposals for six permanent positions and approximately \$1.0 million for CEC to implement SB 100 and AB 3232. In FY 2020–21, the Legislature approved one budget change proposal for \$21.1 million in contract costs to WCI, Inc. in order to modernize CARB’s Cap-and-Trade Auction and Registry Databases. In FY 2021–22, the Legislature approved two climate related budget change proposals included in

Table 2, notably the [Zero Emission Vehicle Package](#) and [Organic Waste Reduction Implementation](#).

Table 2: AB 32 Cost of Implementation Adjusted Expenditures and Appropriations

Department	Number of Positions	FY 2019–20	FY 2020–21	FY 2021–22
California Air Resources Board	213.1*	\$56,435,000	\$57,776,000	\$62,230,000
Department of Food and Agriculture	9	\$1,858,000	\$2,150,000	\$2,169,000
Department of Forestry and Fire Protection	3	\$127,000	\$387,000	\$399,000
Department of Housing and Community Development	1	\$139,000	\$233,000	\$245,000
Department of Public Health	1	\$344,000	\$373,000	\$386,000
Department of Resources Recycling and Recovery (CalRecycle)	17*	\$1,550,000	\$1,410,000	\$2,322,000
Department of Water Resources	3	\$340,000	\$396,000	\$439,000
Energy Commission	45.5	\$18,142,000	\$19,232,000	\$20,915,000
Financial Information Systems for California (State Controller)	N/A	\$(2,000)	-	-
Governor’s Office of Business and Economic Development	5	\$746,000	\$1,038,000	\$1,038,000
Office of Environmental Health Hazard Assessment	4.5	\$927,000	\$1,015,000	\$1,096,000

Department	Number of Positions	FY 2019–20	FY 2020–21	FY 2021–22
Secretary for Environmental Protection	4	\$1,233,000	\$691,000	\$747,000
Secretary of the Natural Resources Agency	1	\$103,000	\$311,000	\$318,000
State Water Resources Control Board	2	\$461,000	\$435,000	\$466,000
Statewide General Administrative (Pro Rata)	N/A	\$3,874,000	\$3,752,000	\$4,380,000
Supplemental Pension Payments	N/A	\$1,298,000	\$1,298,000	\$1,298,000
Total Adjusted Expenditures and Appropriations	309.1	\$87,575,000	\$90,497,000	\$98,448,000

Explanations: All dollars are rounded to the nearest thousand. Funding amount includes all personnel costs including travel, healthcare, etc., as well as contracts and operations. Please note, the actual number of positions filled at each agency may vary.

*The number of authorized positions is the same for each fiscal year except in FY 2018–19 when CARB had 211.1 positions and CalRecycle had 12 positions. Source: [Enacted Budget for FY21-22, 3237 Cost of Implementation Account, Air Pollution Control Fund](#). Budget change proposals are from [Department of Finance by budget year and agency](#).

Expenditure adjustments account for any excess or shortfall in collections from the previous fiscal years. Adjustments include discrepancies between agency positions and funding amount which could range from a shortfall due to differences in the timing of payments to contractors and salary adjustments made after the total required revenue is determined, to an excess due to unfilled positions. Other adjustments include refunds or additional fees collected that occur for various reasons including, but not limited to, late discovery of misreporting of fee-covered emissions or billing errors. FY 2021–22 reflects adjustments due to a surplus from the previous fiscal year due to reduced program-related expenditure associated with COVID-19. CARB corrects for these adjustments in subsequent year invoices by adding the excess or shortfall to the required revenue to obtain the total required revenue. As shown in Table 3, the excess amount results in fee payer cost savings.

Table 3 shows the total department expenditures for Fund 3237 (required revenue) along with updated information on total adjustments, and total required revenue.

Table 3: AB 32 Cost of Implementation Fee Appropriations, Adjustments, and Revenue for All Agencies

Fee Expenses and Revenue	FY 2019–20	FY 2020–21	FY 2021–22
Total department appropriations (required revenue)	\$88,796,000	\$96,619,000	\$98,448,000
Total adjustments	(\$1,445,000)	\$2,874,000	(\$10,980,000)
Total required revenue	\$87,351,000	\$99,493,000	\$87,468,000

Explanations: All dollars are rounded to the nearest thousand. As of September 1, 2021, there were \$87,664,000 in outstanding fees from FY 2019–20 through FY 2021–22, most were from FY 2021–22. This amount outstanding is typical since a substantial amount is collected during the fourth quarter of each calendar year.

Sources: CARB relied on internal accounting records for total required revenue and outstanding fees (current as of September 1, 2021). Prospective (FY 2021–22) total department appropriations are provided in Table 2. Current reporting year (FY 2020–21) total department appropriations are provided in [Enacted Budget for FY20–21, 3237 Cost of Implementation Account, Air Pollution Control Fund](#). Retrospective (FY 2019–20) total department appropriations are provided in [Enacted Budget for FY19–20, 3237 Cost of Implementation Account, Air Pollution Control Fund](#).

III. CARB RESOURCES TO IMPLEMENT AB 32

Table 4 provides the total CARB-only resources to implement AB 32 separated by personnel and operations, then contract expenditures.

Table 4: Overall Resources to Implement AB 32 for CARB Only

Category	FY 2019–20 Funding	FY 2020–21 Funding	FY 2021–22 Funding
Personnel and operations expenditures	\$51,983,000	\$48,196,000	\$50,271,000*
Contract expenditures (includes encumbered funds)	\$16,509,000	\$18,932,000	\$16,449,000**
Total	\$68,492,000	\$67,128,000	\$66,720,000

Explanations: All dollars are rounded to the nearest thousand. Personnel expenses include salary, benefits, overhead, equipment, travel, and training. FY 2019–20, FY 2020–21, and FY 2021–22 contract funding refers to monies that may not have been encumbered during the fiscal year but may be expended through the end of the fiscal year in 2022, 2023, and 2024, respectively. Additional funding sources besides the AB 32 Cost of Implementation Account (3237) that was used to support AB 32 activities include approximately \$1.8 million for FY 2019–20 and \$1.9 million for FY 2020–21. Table 5 has additional detail on these funding sources.

Source: Personnel and operations expenses are obtained from manual monthly tracking reports submitted by CARB staff.

*Funding is estimated from CARB staff monthly tracking reports from the previous fiscal year adjusted to include a legislatively approved budget change expenditure for FY 2021–22.

**FY 2021–22 planned contract funding is current as of November 19, 2021.

Table 5 provides a breakdown by major program area of resources for personnel and operations and contract expenditures for all CARB activities that provide a climate benefit.

Table 5. Detailed CARB Expenditures by AB 32 Program Area

AB 32 Program Area	FY 2019–20 Personnel & Operations Expended	FY 2019–20 Contract Dollars Expended	FY 2020–21 Personnel & Operations Expenses	FY 2020–21 Contract Dollars Expended	FY 2021–22 Personnel & Operations Expenses**	FY 2021–22 Contract Dollars Expended
Advanced Clean Trucks	-	-	-	-	\$212,000	-
Air Quality Data Analysis/Emission Source Data Review (AB 197)	-	\$6,000	\$754,000	-	\$754,000	-
Ambient Air Quality Monitoring	\$2,883,000	\$479,000	\$2,779,000	\$406,000	\$2,888,000	\$10,000
Cap-and-Trade Program	\$4,510,000	\$139,000	\$4,019,000	\$42,000	\$4,177,000	-
Economic Analysis	\$207,000	-	\$115,000	\$366,000	\$120,000	\$298,000
Emissions Testing	\$479,000	\$225,000	\$404,000	\$365,000	\$420,000	-
Emission Inventory	\$949,000	\$8,000	\$938,000	-	\$975,000	-
Enforcement	-	-	\$930,000	\$250,000	\$967,000	-
Industry and Electricity	-	-	\$643,000	-	\$668,000	-
Laboratory Analysis*	\$202,000	\$88,000	\$222,000	-	\$231,000	-
Landfill Methane	\$398,000	\$1,240,000	\$259,000	\$1,246,000	\$269,000	-
Low Carbon Fuel Standard (LCFS), including Enforcement	\$4,851,000	\$972,000	\$4,675,000	\$294,000	\$4,859,000	-

AB 32 Program Area	FY 2019–20 Personnel & Operations Expended	FY 2019–20 Contract Dollars Expended	FY 2020–21 Personnel & Operations Expenses	FY 2020–21 Contract Dollars Expended	FY 2021–22 Personnel & Operations Expenses**	FY 2021–22 Contract Dollars Expended
Mandatory Reporting Regulation (MRR)	\$924,000	\$305,000	\$942,000	\$452,000	\$979,000	\$11,000
MRR & LCFS Data Certification and Verification	\$927,000	\$207,000	\$703,000	\$205,000	\$731,000	-
Neighborhood Air Monitoring Near Oil/Gas Operations*	\$999,000	\$97,000	\$902,000	\$20,000	\$937,000	-
Other AB 32 Activities	\$3,633,000	\$2,271,000	\$3,826,000	\$4,368,000	\$3,976,000	\$298,000
Reimbursement—Energy Commission	\$2,797,000	\$2,524,000	-	\$3,000	-	-
Reimbursement—Light-Duty Zero Emission Vehicle Infrastructure*	\$1,974,000	-	-	-	-	-
Research	-	-	\$1,632,000	\$3,046,000	\$1,696,000	\$125,000
SB 1371 (Leno, Chapter 525, Statutes of 2014) (Natural Gas Leakage)*	\$222,000	\$6,000	\$119,000	\$3,000	\$124,000	-
SB 375 (Sustainable Communities)	\$1,214,000	\$312,000	\$1,357,000	\$64,000	\$1,410,000	-
Scoping Plan	\$224,000	-	\$199,000	-	\$207,000	-
Short-Lived Climate Pollutants*	\$1,753,000	\$701,000	\$1,503,000	\$292,000	\$1,562,000	-

AB 32 Program Area	FY 2019–20 Personnel & Operations Expended	FY 2019–20 Contract Dollars Expended	FY 2020–21 Personnel & Operations Expenses	FY 2020–21 Contract Dollars Expended	FY 2021–22 Personnel & Operations Expenses**	FY 2021–22 Contract Dollars Expended
Systems Development and Support & Operations*	\$21,991,000	\$2,729,000	\$21,187,000	\$766,000	\$22,019,000	-
Western Climate Initiative, Inc.	\$846,000	\$4,200,000	\$87,000	\$6,747,000	\$90,000	\$3,679,000
Total	\$51,983,000	\$16,509,000	\$48,195,000	\$18,935,000	\$50,059,000	\$4,421,000

Explanations: All dollars are rounded to the nearest thousand. Other AB 32 support activities include environmental justice and AB 32 Fee Regulation. Allocated costs, including those for overhead, are included in the line item—Systems Development and Support & Operations. For contract expenses, CARB relied on its records of actual and encumbered expenditures under the Climate Change Program (Fund 3510). Contract dollars expended refers to monies that may not have been encumbered during FY 2019–20, FY 2020–21, and FY 2021–22, but may be expended through the end of the fiscal year in 2022, 2023, and 2024, respectively.

Note: In previous year’s AB 32 Fiscal and Resources Reports, allocated costs were included with each program personnel line-item expense rather than having a separate line item.

Source: Personnel and operations expenses are obtained from manual monthly tracking reports submitted by CARB staff under the Climate Change Program (3510).

*Funding sources other than the AB 32 Cost of Implementation Account (3237) were used to support AB 32 activities; these include: Public Utilities Commission Utilities Reimbursement Account General Fund (0462); Oil, Gas, and Geothermal Administrative Fund (3046); and Air Pollution Control Fund (0115). These funding sources included approximately \$1.8 million for FY 2019–20 and \$1.9 million for FY 2020–21.

**Projected expenses are from CARB staff monthly tracking reports from the previous fiscal year, adjusted to include a legislatively approved budget change expenditure for FY 2021–22.

***FY 2021–22 contract expenditures are current as of 9/14/2021. Additional contract costs shown as planned in Table 4 will be expended by specific CARB programs and shown in this table for next year’s report.

SECTION 3: ANNUAL WESTERN CLIMATE INITIATIVE, INC. ACTIVITY UPDATES

(July 2020–June 2021, and July 2021–June 2022)

This report is required by the provisions of [SB 1018](#) that require advance notice of any CARB payments to WCI, Inc., over \$150,000, and semi-annual updates on the actions proposed by WCI, Inc. that affect California government or entities. This report provides updates on WCI, Inc. activities for Fiscal Year 2020–2021 and upcoming milestones for Fiscal Year 2021–2022. This update focuses on recent WCI, Inc. actions. CARB provides separate notices to the Joint Legislative Budget Committee prior to any transfer or expenditure to WCI, Inc. over \$150,000.

I. WCI, INC. ACTIVITY UPDATES

This report provides updates on WCI, Inc. activities for FY 2020–21 and upcoming milestones for FY 2021–22.

- The WCI, Inc. Board of Directors adopted the budget for calendar year 2020 on November 7, 2019 and the budget for calendar year 2021 on October 21, 2020.
- CARB, Québec, and Nova Scotia provided 2020 and 2021 funding for WCI, Inc. The share of funding provided by each is determined in three parts:
 - The cost of managing WCI, Inc. (personnel and operating costs) is divided equally among CARB, Québec, and Nova Scotia;
 - The cost of the cap-and-trade service contracts is divided based on the total emissions covered by each jurisdiction’s trading program, and whether a jurisdiction uses a given service; and
 - The cost of jurisdiction-specific administrative support is assigned fully to each jurisdiction.
- WCI, Inc. entered into agreements with Harbinger Systems and Impact QA in FY 2019–20 following an evaluation of proposals received after a request for proposals process for development of auction platform services. Auction platform development continued throughout FY 2020–21. The new WCI, Inc. Auction Platform was released in July, 2021, and the Joint Auctions #28 and #29 were held on August 18 and November 17, 2021, respectively.
- In late 2021, The WCI, Inc. Board of Directors is expected to review a funding agreement with CARB for services after 2021. Fully executed participating jurisdiction funding agreements are available on the [WCI, Inc. Jurisdiction Agreements webpage](#).
- WCI, Inc. anticipates release of a Registry Project scope of work and selection of contractors in late 2021.

II. WCI, INC. CORPORATE GOVERNANCE

WCI, Inc. is governed by a Board of Directors according to its bylaws and the policies adopted by the WCI, Inc. Board. The current bylaws and policies are posted on the [WCI, Inc. website](#). In FY 2020–21, the directors from California included:

- Secretary for Environmental Protection, Jared Blumenfeld;
- Chair of the California Air Resources Board, Mary Nichols;³²
- Chair of the California Air Resources Board, Liane Randolph;
- Assembly member Richard Bloom, appointed by the Speaker of the Assembly (nonvoting director); and
- Mr. Kip Lipper, appointed by the Senate Rules Committee (nonvoting director).

The [Board officers](#) were selected at the October 21, 2020 annual Board meeting.

III. PAYMENTS TO WCI, INC.

Payments by CARB to WCI, Inc. during FY 2020–21 are presented in Table 6.

Table 6: Fiscal Year 2020–21 Payments from CARB to WCI, Inc.

Payments	Invoice Dates	Amount
2020 Q3 Payment #1	7/2/2020	\$443,663
2020 Q3 Payment #2	10/1/2020	\$1,330,988
2020 Q4 Payment #1	10/1/2020	\$443,663
2020 Q4 Payment #2	1/1/2021	\$1,330,988
2021 Q1 Payment #1	1/1/2021	\$459,926
2021 Q1 Payment #2	4/1/2021	\$1,379,777
2021 Q2 Payment	4/1/2021	\$459,926

³² In 2021, the new Chair of the California Air Resources Board, Liane Randolph, replaced Mary Nichols.

Appendix A: Acronyms and Abbreviations

AB:	Assembly Bill
AC	air conditioning
ACC:	Advanced Clean Cars
ACC II:	Advanced Clean Cars II
ACE:	Affordable Clean Energy
AQIP:	Air Quality Improvement Program
BAU:	business as usual
BEV	battery electric vehicle
Board:	governing body of the California Air Resources Board
CAPCOA:	California Air Pollution Control Officers Association
CARB:	California Air Resources Board
CCI:	California Climate Investments
CDFA:	California Department of Food and Agriculture
Caltrans:	California Department of Transportation
CEC:	California Energy Commission
CalEPA:	California Environmental Protection Agency
CCAC:	Climate and Clean Air Coalition
CEQA:	California Environmental Quality Act
CFTC:	Commodity Futures Trading Commission
CI:	carbon intensity
CNRA:	California Natural Resources Agency
CO ₂ :	carbon dioxide
CONAFOR:	Mexican National Forestry Commission
CPUC:	California Public Utilities Commission
CVRP:	Clean Vehicle Rebate Project
DC	direct current
ETS:	emissions trading system
EJ Advisory Committee:	Environmental Justice Advisory Committee
EU:	European Union
FERC:	Federal Energy Regulatory Commission
FI\$Cal:	Financial Information System for California
FY:	fiscal year
FRIP:	Fluorinated-Gas Reduction Incentive Program
GCF:	Governors' Climate and Forests
GWP:	global warming potential
GGRF:	Greenhouse Gas Reduction Fund

GHG:	greenhouse gas
HFC:	hydrofluorocarbon
HVIP:	Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project
ICAP:	International Carbon Action Partnership
IRP:	Integrated Resource Plan
LCFS:	Low Carbon Fuel Standard
MW:	megawatt
MMTCO _{2e} :	million metric tons of carbon dioxide equivalent
MOU:	memorandum of understanding
MPO:	metropolitan planning organization
MRR:	Mandatory Reporting Regulation
MVAC:	motor vehicle air conditioning
MY:	model year
NO _x :	oxides of nitrogen
OPR:	Governor's Office of Planning and Research
PHEV:	plug-in hybrid electric vehicles
PMR:	Partnership for Market Readiness
POU:	publicly owned utility
R4:	Refrigerant Recovery, Reclaim and Reuse
RMP:	Refrigerant Management Program
RPS:	Renewables Portfolio Standard
SAFE:	Safer Affordable Fuel-Efficient Vehicles
SAM:	State Administrative Manual
SB:	Senate Bill
SCS:	Sustainable Communities Strategy
SGC:	Strategic Growth Council
SF ₆ :	sulfur hexafluoride
SIP:	State Implementation Plan
SLCP:	short-lived climate pollutants
TRU:	transport refrigeration unit
UC:	University of California
U.S. EPA:	United States Environmental Protection Agency
VMT:	vehicle miles traveled
VW:	Volkswagen
WCI, Inc.	Western Climate Initiative, Incorporated
ZEV:	zero emission vehicle
ZEV Alliance:	International Zero-Emission Vehicle Alliance

Appendix B: Legislation and Other Orders, with References

- AB 32** (Nuñez and Pavley, Chapter 488, Statutes of 2006),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=200520060AB32
- AB 74** (Ting, Chapter 23, Statutes of 2019),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB74
- AB 398** (Garcia, E., Chapter 135, Statutes of 2017),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB398
- AB 617** (Garcia, C., Chapter 136, Statutes of 2017),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB617
- AB 1493** (Pavley, Chapter 200, Statutes 2002),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=200120020AB1493
- AB 1550** (Gomez, Chapter 369, Statutes of 2016),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160AB1550
- AB 3232** (Friedman, Chapter 373, Statutes of 2018),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB3232
- EO B-55-18**, <https://www.ca.gov/archive/gov39/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf>
- EO N-82-20**, <https://www.gov.ca.gov/wp-content/uploads/2020/10/10.07.2020-EO-N-82-20-signed.pdf>
- EO N-79-20**, <https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf>
- CARB Board Resolution 17-46**, <https://ww3.arb.ca.gov/board/res/2017/res17-46.pdf>
- CARB Board Resolution 20-5**, <https://ww3.arb.ca.gov/board/res/2020/res20-5.pdf>
- Governor’s Energy Emergency Proclamation**,
<https://www.gov.ca.gov/2021/07/30/governor-newsom-signs-emergency-proclamation-to-expedite-clean-energy-projects-and-relieve-demand-on-the-electrical-grid-during-extreme-weather-events-this-summer-as-climate-crisis-threatens-western-s/>
- SB 32** (Pavley, Chapter 249, Statutes of 2016),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160SB32
- SB 44** (Skinner, Chapter 297, Statutes of 2019),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200SB44
- SB 84** (Committee on Budget and Fiscal Review, Chapter 50, Statutes of 2017),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160SB84
- SB 100** (De León, Chapter 312, Statutes of 2018),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB100

SB 150 (Allen, Chapter 646, Statutes of 2017),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB150

SB 350 (De León, Chapter 547, Statutes of 2015),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160SB350

SB 375 (Steinberg, Chapter 728, Statutes of 2008),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=200720080SB375

SB 535 (De León, Chapter 830, Statutes of 2012),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201120120SB535

SB 605 (Lara, Chapter 523, Statutes of 2014),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201320140SB605

SB 743 (Steinberg, Chapter 386, Statutes of 2013),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201320140SB743

SB 1013 (Lara, Chapter 375, Statutes of 2018),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB1013

SB 1018 (Committee on Budget and Fiscal Review, Chapter 39, Statutes of 2012),
http://www.leginfo.ca.gov/pub/11-12/bill/sen/sb_1001-1050/sb_1018_bill_20120627_chaptered.html

SB 1275 (De León, Chapter 530, Statutes of 2014),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201320140SB1275

SB 1371 (Leno, Chapter 525, Statutes of 2014),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201320140SB1371

SB 1383 (Lara, Chapter 395, Statutes of 2016),
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160SB1383