California Air Resources Board
Zero Emission Vehicle
2022
Action Plan

Introduction

The California Air Resources Board (CARB) is focused on the transition to zero emission vehicles (ZEVs) and low carbon transportation in all of its work, with a strong focus on equitably reducing community exposure to vehicular air pollution using a broad portfolio of regulatory, incentive, and planning strategies. These strategies embrace both upstream and downstream portions of the sector, from fuels production to vehicle design, and are implemented in partnership with the federal government, other states, CARB works to develop, promote, and support new clean technologies and to make them broadly accessible to Californians. California agencies, local governments, and communities. The subset of activities identified in this report focus on near-term, concrete, actions anticipated in 2022, but inform this larger strategy.

At the same time, CARB continues to develop and implement cross-cutting strategies, Key themes include:

- A strong emphasis on partnerships. For instance, CARB works to support national, state, and local regulators who are advancing ZEVs and low carbon transportation planning. These efforts include, for instance, working with US EPA to forward regulations in its jurisdiction that can cut pollution or promote ZEVs, supporting other federal efforts (both regulatory and incentive-based), collaborating with other states that seek to advance these policies, and working with regulators in California. Within California, these collaborations include ongoing work with energy, transportation, and housing regulators to ensure the transportation system continues to evolve towards an affordable, equitable, new state that reduces dependence on single-occupancy vehicles and provides more transportation choices.

- Recognizing important connections between sectors and working to decarbonize the economy as a whole. CARB's many fuels and power sector programs and collaborations work to reduce the carbon intensity of fuels, drop electricity sector emissions, and support economy-wide transitions – including development of needed infrastructure for a zero emission economy. CARB works to plan and develop these programs in tandem with vehicle programs. CARB is also focused on collaborating with other agencies to ensure continuing charging and fueling infrastructure buildout occurs comprehensively and equitably, with reliable access for all.

- A deep focus on equity. CARB is committed to eliminating class- and race-based disparities in vehicular pollution exposure, opening up transportation opportunities for all, including in its incentive and regulatory programs. CARB looks to set priorities and develop programs in close collaboration with communities. CARB is working to develop clear metrics that assess for racial equity in its programs, with metrics in varying stages of development by program -- this includes identifying and documenting inequities, examining the root causes of inequities, and working with stakeholders and

communities to understand potential adverse impacts and advance equitable alternatives and improvements where possible.

- Anticipating future needs across categories. As the zero emission vehicle sector continues to develop, for instance, CARB recognizes that it is important to consider materials demand and disposal for batteries as part of its zero emission vehicle rollout, and is developing regulations that help to ensure the durability of these technologies as a result.

These themes, along with emerging priorities in this evolving space, continue to inform CARB's work, along with the specific priorities described below.

Pillars				Objectives
Vehicles	Infrastructure	End User	Workforce	
D	D	I		**1. Analysis**. Maintain shared analytical understanding of the role of transportation in air quality/toxic and climate emissions. SIP and climate goals.
D	I	I	I	**2. Regulation**. Develop and implement regulations to require investment into production, sale and use of zero-emission vehicles/transportation and mobility, freight, and off-road equipment considering needs identified by communities most impacted by poor air quality. Propose building standards that prepare California for a 100% ZEV fleet (coordinate with BSC, HCD, CEC, CPUC, GO-Biz).
D	I	D		**3. Incentives**. Create and implement incentive systems that build awareness and market demand, facilitate market expansion — with a focus on meeting unique community transportation and mobility needs, and share lessons learned to replicate or expand creative projects and approaches where feasible. Ensure that all incentives support state's high-road workforce goals as well and encourage high-road market expansion and improved job quality for CA workers.
		D		**4. Community Engagement.** Community engagement with feedback that informs program development and implementation. Explicit programs that develop partnerships and relationships that facilitate collaboration with our ZEV programs.
D	D	D	D	**5. CA ZEV Market Development**. Expand new and used markets and programs, consumer education and awareness, and increase access to clean mobility. Lead H2 infrastructure analysis and station confirmation testing, support EVSE analysis (in collaboration with CEC, CPUC and GO-Biz) and pursue the development of EV charging infrastructure building standards in the CALGreen Code (in collaboration with BSC, HCD, CEC, CPUC, and GO-Biz).
D	D	D	I	**6. Mobility and Technology Advancement**. Invest in research, development, and demonstration to advance clean mobility and ZEV technology, including opening/enabling new markets.
D	D	D		**7. External Market Development**. Leadership/collaboration with other states, nations, federal government, local government and community-based organizations, etc.
		D	D	**8. and 9. Consumer and Worker Awareness**. Strengthen and expand ZEV related education and outreach, and tailor to unique needs of impacted communities, to ensure all Californians understand how to transition to cleaner mobility options.

1. Analysis

1.1 State SIP Strategy

The 2022 State SIP Strategy (SSS) will include measures and commitments to reduce emissions to support attainment of the 70 ppb 8 -hour ozone standard in all nonattainment areas across California. SSS measures encompass actions to establish requirements for cleaner technologies (both zero-emissions and near zero-emissions), deployment of these technologies into the fleet, accelerating the deployment of cleaner technologies through incentives and reducing vehicle miles travelled (VMT). There are many Zero Emission Vehicle (ZEV)-focused measures in the SSS. Examples include on-road measures like Advanced Clean Fleets, Zero-Emission Truck Measure, and Advanced Clean Cars II, as well as off-road measures such as the Off-Road Zero-Emission Targeted Manufacturer Rule. A streamlined infrastructure build-out is necessary to support zero emission vehicles and equipment from these measures. As part of the SSS, CARB worked with the California Energy Commission (CEC) and California Public Utilities Commission (CPUC) on an infrastructure assessment that presents CEC's updated projection of infrastructure demands for ZEV focused regulations in SSS, investigates key barriers and opportunities for meeting this demand, and highlights CPUC's various utility programs to support transportation electrification.

Website: https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy

Key Collaborators California Energy Commissions (CEC) and California Public Utilities Commission (CPUC)

Key Actions and Expected Results:

1. Release Draft 2022 State SIP Strategy – January 2022
2. Release Proposed 2022 State SIP Strategy – Summer 2022
3. Board Consideration – Summer 2022

2022 Outcomes

1. *Released Draft 2022 State SIP Strategy – January 2022*
2. *Release Proposed 2022 State SIP Strategy –August 2022*
3. *Board Adoption–September 2022*

1.2 SB 350 Low-income Barriers Study, Part B, and SB 350 Outreach Strategic Roadmap

CARB's Barriers Study identifies affordability, funding for clean transportation solutions and a lack of awareness of clean transportation options as barriers, and discusses community-specific barriers, such as safety, convenience, and access. The report outlines key recommendations to overcome barriers and increase access for low-income residents, including: support for community transportation needs assessments, regional one-stop-shops including a streamlined application tool, grants and solicitation guidance, increased workforce training and development, expanded technical assistance and capacity-building, and an outreach plan. The SB 350 Outreach Strategic Roadmap identifies strategies to coordinate clean

transportation outreach and improve community engagement; implementation activities to support this effort are ongoing.

Website: https://ww2.arb.ca.gov/resources/documents/carb-barriers-report-final-guidance-document

Key Collaborators CEC; CPUC; GO-Biz; SGC; CWDB; CalTrans; Local and Regional Government; Federal and Tribal Governments; Non-Governmental Organizations; Communities

Key Actions and Expected Results:

1. Implementation efforts are ongoing to support equity and climate goals specific to clean transportation and mobility access, including community transportation needs assessments, technical assistance and capacity building
2. Outreach Roadmap measures will be further coordinated with state government and local agencies
3. Consider key lessons and outcomes from projects to inform potential changes to clean transportation and other incentive projects and develop relevant grants and solicitation guidance
4. Establish Access Clean California as a portal for priority community streamlined access to incentives

2022 Outcomes:

1. Provided technical assistance and additional funding opportunities to communities for transportation needs assessments and project planning.
2. Began coordination with the California Energy Commission in late 2022 to explore outreach and dedicated funding opportunities for tribes.
3. Continued assessment of pilot projects, based on ongoing feedback and lessons learned, to identify improvements to clean transportation incentives (see below).
4. Continued implementation of Access Clean California and workforce training and development opportunities.

2. Regulation

2.1 Advanced Clean Cars 2

In addition to continuing standards for criteria emissions, the Advanced Clean Cars 2 regulation will set ZEV requirements with a goal of reaching 100% ZEV and PHEV sales by 2035, with implementation beginning with the 2026 model year. Stakeholder engagement began in 2020, with public workshops. New ZEV requirements will include consumer assurance provisions to increase consumer confidence in ZEVs throughout their life, including in the used car market.

Website: ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program

Key Collaborators CEC; CPUC; Vehicle and Supply Chain Manufacturers; Non-Governmental Organizations; Communities; Local and Regional Government; Federal and Tribal Governments; Other State Governments

Key Actions and Expected Results:

1. Staff report with proposed regulation order posted for 45-day public comment period in April 2022
2. First of two public Board hearings in June 2022

2022 Outcomes:

1. Successfully completed the public review process and the Board adopted the Advanced Clean Cars II regulations in August 2022.
2. Obtained approval from the Office of Administrative Law. The effective date of the regulations is November 30, 2022.

2.2 Electric Vehicle Supply Equipment (EVSE) Standards Regulation

Implement and track compliance with CARB's EVSE Standards Regulation, adopted in 2019 pursuant to Senate Bill 454 (Corbett). The Regulation establishes requirements that electric vehicle service providers (EVSPs) must meet with the goal of enabling drivers to confidently and reliably access public charging infrastructure. In implementing the Regulation, CARB continues to evaluate barriers to access and the extent to which the Regulation is adequately addressing those barriers.

As part of that effort, staff conducted a Technology Review, including surveys of drivers' experiences accessing public charging stations and evaluated the availability and use of different payment methods to understand whether the requirements of the Regulation remain appropriate.

Website: ww2.arb.ca.gov/our-work/programs/electric-vehicle-supply-equipment-evse-standards

Key Collaborators EVSE providers, EVSE manufacturers, Electricity Providers; Non-Governmental Organizations; CEC; GO-Biz

Key Actions and Expected Results:

1. The draft Technology Review has been published for public review and comment in February 2022 with a public workshop in mid-February
2. There will be an informational update to the CARB Board on the Technology Review in April 2022

CARB will also explore ways to integrate Cal-Integrated Transportation Planning (ITP) standards within CARB's incentive programs such as Low Carbon Transit Operation Program (LCTOP) and regulations such as EVSE Standards Regulation

2022 Outcomes:

1. Successfully completed an informational update to the Board. Committed to update the Board in 2023.
2. Implemented the direct current fast charging (DCFC) payment hardware requirement for new installations, that began January 1, 2022.

2.3 The Clean Miles Standard

The Clean Miles Standard is a regulation to increase zero-emission miles and reduce greenhouse gas emissions from passenger ride-hailing services offered through transportation network companies like Uber and Lyft. The regulation requires, by 2030, that 90% of vehicle miles traveled in ride-hailing fleets be zero-emission miles and that ride-hailing fleets reduce their greenhouse gas emissions to 0 grams CO2 per passenger mile traveled. CARB adopted the Clean Miles Standard regulation in May 2021, and pursuant to Senate Bill 1014 (Skinner), CPUC begins proceedings to implement the standards.

Website: ww2.arb.ca.gov/our-work/programs/clean-miles-standard

Key Collaborators CPUC; CEC; Local and Regional Government; Grid Operators, Electricity and Hydrogen Providers; Fleets; Non-Governmental Organizations; Organized Labor; TNC Drivers.

Key Actions and Expected Results:

1. Support CPUC in their proceedings to adopt the implementation of the regulation

2022 Outcomes:

1. CARB received approval for the Clean Miles Standard from the Office of Administrative Law in August 2022, with an effective date of October 1, 2022.
2. CPUC staff held a public workshop, drafted a scoping memo, and held driver focus groups on their rulemaking 21-11-014 for implementation of the Clean Miles Standard.
3. CPUC staff issued a draft proposal for Phase 1 of their proceeding in November 2022 and held a public workshop in December 2022.

2.4 Advanced Clean Trucks

The Advanced Clean Trucks (ACT) regulation, approved in 2020, requires manufacturers produce and sell zero-emission medium- and heavy-duty trucks as an increasing portion of their sales from 2024 to 2035. The regulation is anticipated to result in about 100,000 zero-emission trucks by 2030 and 300,000 by 2035.

Website: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks

Key Collaborators Vehicle Manufacturers and Supply Chain; Fleets; Grid Operators, Electricity and Hydrogen Providers; Local and Regional Government; Federal and

Tribal Governments; CEC; CPUC, Caltrans; CTC; Organized Labor, Non-Governmental Organizations

Key Actions and Expected Results:

1. Manufacturers must produce and deliver for sale ZEVs starting with the 2024 model year
2. Manufacturers begin reporting vehicle sales information after the 2021 model year in early 2022

CARB will provide a summary of aggregated data collected through the Advanced Clean Trucks Large Entity Reporting requirement for public release

2022 Outcomes:

1. Manufacturers submitted Advanced Clean Trucks 2021 model year sales information.
2. CARB posted results of the Advanced Clean Trucks Large Entity Reporting online in aggregate and air basin formats.
3. CARB is finalizing online reporting system for upcoming ACT manufacturer reporting for California and other states
4. The number of states which have adopted ACT increases to seven including California, Washington, Oregon, New York, New Jersey, Massachusetts, and Vermont.

2.5 Advanced Clean Fleets

The primary goal of the ACF regulation is to accelerate the market for zero-emission trucks and buses by requiring fleets that are well suited for electrification to transition to ZEVs where feasible. The regulation would contribute to the goal of achieving the Governor's Executive Order N-79-20 to reach 100 percent ZE drayage trucks by 2035 and 100 percent ZE medium and heavy-duty vehicles by 2045, where feasible. The proposed regulation would end the sale of combustion-powered trucks in California by 2036. The proposed regulation complements the Advanced Clean Trucks regulation. The two regulations are expected to result in 520,000 ZEVs by 2035 and 1,250,000 ZEVs by 2045 together.

Website: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets

Key Collaborators Fleets; Vehicle Manufacturers and Supply Chain; Fleets; Grid Operators; Electricity and Hydrogen Providers; Local and Regional Government; Caltrans; CEC, CPUC, Non-Governmental Organizations, Organized Labor

Key Actions and Expected Results:

1. Draft proposal released March 2021 which sets requirement on public fleets, drayage trucks, and high priority fleets meaning fleets who have 50 vehicles under common ownership and control or have greater than $50 million in annual revenue
2. First of two board hearings for regulatory adoption, October 2022
3. Proposal expanded to set 100 percent manufacturer sales requirement by 2040

2022 Outcomes:

1. Over the course of 2022, CARB held Eight public meetings to discuss concepts for the proposed Advanced Clean Fleets regulation.
2. On October 27, 2022, the CARB Board heard the proposed Advanced Clean Fleets regulation.
3. Staff held a workgroup meeting focused on draft provisions for Waste and Waste Water fleets.

2.6 Innovative Clean Transit

The Innovative Clean Transit regulation requires all public transit agencies to gradually transition to a 100% zero-emission bus fleet by 2040 and encourages them to provide innovative first- and last-mile connectivity and improved mobility for transit riders.

Website: https://ww2.arb.ca.gov/our-work/programs/innovative-clean-transit/program-update

Key Collaborators: GoBiz, California Energy Commission, California Public Utilities Commission, California Transportation Commission, Caltrans, CalSTA, DGS, HCD, Air Districts, Local and Regional Governments, Metropolitan Planning Organizations, transportation planning agencies, Federal Government, Electricity and Hydrogen Providers, Infrastructure Providers, Fleets, Academia, Vehicle Manufacturers and Supply Chain; Technology Providers; Grid Operators, Workforce Training and Development Institutions; Labor and Workforce Development; Non-Governmental Organizations; International Relationships

Key Actions and Expected Results:

1. Zero-emission bus rollout plans: all large transit agency plans are posted online
2. Reporting: all transit agencies are required to annually report their fleet inventories and relevant bus and fuel purchases starting March 2021
3. Comprehensive review: major data collection and analytical work was conducted in 2021 and the results for 40' standard buses will be presented in 2022

Ongoing: outreach to transit agencies and zero-emission bus manufacturers to further understand market barriers and develop solutions

2022 Outcomes:

1. All large transit agency plans are currently posted at the ICT website (https://ww2.arb.ca.gov/our-work/programs/innovative-clean-transit/ict-rollout-plans)
2. As of December 31, 2021, 510 zero-emission buses are deployed, 424 are on order. In 2022, additional 700+ zero-emission buses were awarded by various federal and state funding programs. To date, the total number of deployed, ordered, and awarded zero-emission buses is around 1680, which exceeds ICT's 2027 regulatory anticipation.

3. The Comprehensive Review concluded that California transit industry is well positioned to proceed with the 2023 requirement of 25% of new bus purchases being ZEBs for large transit agencies. Reporting results are available at ICT Program Update website at https://ww2.arb.ca.gov/our-work/programs/innovative-clean-transit/program-update

2.7 Heavy-duty Phase 3 GHG Standards

There have been several phases of progressively more stringent greenhouse gas standards for medium- and heavy-duty engines and vehicles. The Phase 1 GHG standards, based on off-the-shelf technologies and applicable to 2014 and later model year medium- and heavy-duty engines and vehicles, were adopted by U.S. EPA in 2011 and by CARB in 2013. The Phase 2 GHG standards, adopted by U.S. EPA in 2016 and CARB in 2018, were more technology-forcing than Phase 1. The requirements begin with model year 2021 for medium- and heavy-duty engines and vehicles and will be fully implemented by model year 2027. California is encouraging U.S. EPA to adopt Phase 3 GHG standards more ambitious and stricter than previous regulations with significant penetration of heavy-duty ZEVs and maximized carbon dioxide benefits.

Key Collaborators Vehicle Manufacturers and Supply Chain; Fleets; Grid Operators, Electricity and Hydrogen Providers; Local and Regional Government; Federal and Tribal Governments; CEC; Caltrans; CalSTA; CTC; Organized Labor

Key Actions and Expected Results:

1. Encourage U.S. EPA to move quickly and aggressively to adopt stricter standards based on significant penetration of ZEVs. The importance of U.S. EPA action on Heavy-duty Phase 3 GHG standards is being called out in CARB's 2022 State SIP Strategy.

2022 Outcomes:

1. In March 2022, the U.S. EPA released and requested for comments on the proposed rule, Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards, known as the Clean Trucks Plan (CTP). U.S. EPA's proposed Phase 2 amendments, as part of the proposed CTP, missed the opportunity to maximize GHG reductions through high HD-ZEV penetration rates that can provide early climate benefit and achieve carbon neutrality. CARB staff reviewed the proposal and provided comments.
2. In December 2022, U.S. EPA published the CTP final rule (or CTP NOx rule) that sets stronger emissions standards to further reduce nitrogen oxide (NOx) emissions from the heavy-duty vehicles and engines starting in 2027 model year. The final rule does not include final action regarding the proposed Phase 2 amendments.
2. U.S. EPA intends to consider these amendments as part of the Heavy-Duty Phase 3 GHG rulemaking.

2.8 Zero-emission Forklifts
CARB will propose a measure to accelerate the deployment of zero-emission forklifts with a focus on those for which commercial options are readily available.

Website: https://ww2.arb.ca.gov/our-work/programs/zero-emission-forklifts

Key Collaborators Vehicle Manufacturers and Supply Chain; Fleets; Grid Operators, Electricity and Hydrogen Providers; Local and Regional Government; Non-Governmental Organizations; Caltrans; CEC; CPUC

Key Actions Expected Results:

1. Develop regulatory proposal for Board consideration
2. Conduct stakeholder and community outreach via public workshops leading up to the hearing. To enable broader stakeholder outreach, the timeframe for this rulemaking has been extended. Staff is now working to develop a regulatory proposal for Board consideration in 2023.

2022 Outcomes:

1. In 2022, in addition to many individual meetings with fleets, utilities, and industry groups, staff conducted one public meeting and released two working drafts of regulatory proposal language.
2. Staff conducted outreach, including mailing over 400,000 post cards to businesses that may own forklifts, and continued to work with stakeholders to refine staff's draft regulatory proposal.
3. Staff is on track to present the proposed regulation to the Board in September 2023.

2.9 Zero-emission Airport Shuttle
Airport shuttle operators must begin adding zero-emission shuttles to their fleets in 2027 and complete the transition to ZEVs by the end of 2035.

Website: https://ww2.arb.ca.gov/our-work/programs/zero-emission-airport-shuttle

Key Collaborators Vehicle Manufacturers and Supply Chain; Fleets; Grid Operators, Electricity and Hydrogen Providers; Local and Regional Government; CEC; CA Airport Council; Non-Governmental Organizations

Key Actions and Expected Results:

1. The regulation applies to airport shuttle operators who own, operate, or lease vehicles at 13 California airports.
2. Reporting and record keeping requirements. as specified by the regulation must be reported to CARB no later than March 1, 2022.

3. All fleet owners must review and update the information submitted annually by March 1 of each subsequent reporting year through TRUCRS. Implementation is underway, no changes

2022 Outcomes:

1. *Airport shuttles (internal combustion engine or motor) are to be submitted with the appropriate information into their fleet's TRUCRS account, among other required information by March 1, 2022 for their fleet's vehicles as they were on December 31, 2021.*
2. *As of November 2022, about 40% of the estimated number of vehicles operating at regulated California airports (per the Initial Statement of Reason) were reported into TRUCRS (includes shuttles with internal combustion engines and motors).*
3. *Open reporting period is open until March 1, 2023 for fleets to update and submit fleet information as they were on December 31, 2022.*

2.10 Locomotives

By 2022, propose an In-Use Locomotive Regulation that requires payment for locomotive emissions emitted in California (CA). Funds would be used to mitigate emissions through use and development of cleaner technologies, including zero-emissions equipment and infrastructure. Additionally, starting in 2030, the regulation would require new Switch, Industrial and Passenger locomotives to operate in a zero emission configuration in CA, and starting in 2035, new Line Haul locomotives would need to operate in a zero emission in CA.

Website: https://ww2.arb.ca.gov/our-work/programs/reducing-rail-emissions-california

Key Collaborators Locomotive, Battery, Fuel Cell Manufacturers; Railroads; Grid Operators, Electricity and Hydrogen Providers; Local and Regional Government; Federal and Tribal Governments; CEC; Caltrans; CalSTA; CTC; Organized Labor; Communities

Key Actions and Expected Results:

1. Outreach via stakeholder meetings leading up to the Board hearing
2. Proposal for Board consideration by the end of 2022
3. The proposed concepts would result in emission reductions from locomotives operating across the state, including those operating in lower-income and disadvantaged communities

2022 Outcomes:

1. Staff conducted outreach by holding 90 meetings with industry representatives, federal and state agencies, and community members.
2. Staff presented the proposed regulation to the CARB Board on November 18, 2022.

2.11 Transport Refrigeration Units
In 2022, propose amendments to existing TRU rule for all truck TRUs to be zero emissions by 2030. By end of 2022, release a draft technology assessment on zero-emission technology for non-truck TRUs. By end of 2024, develop new rule to transition non-truck TRUs to zero emissions.

Website: https://ww2.arb.ca.gov/resources/fact-sheets/proposed-amendments-tru-atcm

Key Collaborators TRU, Engine, Battery, Fuel Cell Manufacturers; Infrastructure Providers; Fleets; Grid Operators, Electricity and Fuel Providers; CEC; Organized Labor; Freight Facilities; Communities

Key Actions and Expected Results:
1. Outreach via stakeholder meetings leading up to Board hearing
2. Final proposal for Board consideration in early 2022
3. The proposed amendments would result in emission reductions from TRUs across the state, including those operating in lower-income and disadvantaged communities
4. Release of a draft zero-emission technology assessment in 2022

2022 Outcomes:
1. CARB adopted amendments to the existing TRU rule in February 2022 to transition truck TRUs to zero-emission. The Office of Administrative law approved the amendments on July 18, 2022, with an effective date of October 1, 2022.
2. Staff released the Draft 2022 TRU Technology Assessment for non-truck TRUs (trailer TRUs, domestic shipping container TRUs, railcar TRUs, and TRU generator sets) for public comment in May 2022 and held a workshop to seek stakeholder input on May 17, 2022. The final 2022 TRU Technology Assessment was posted on October 14, 2022.

2.12 Commercial Harbor Craft
In 2022, amendments to the existing CHC regulation are expected to be finalized that staff anticipates may result in up to 100 vessels in California being zero-emissions capable by 2035 (short-run ferries, tugs, pilot vessels, workboats, and new excursion vessels); and cleaner combustion requirements for vessels where zero emissions is not feasible.

Website: https://ww2.arb.ca.gov/our-work/programs/commercial-harbor-craft

Key Collaborators Vessel Owners and Operators, Vessel Builders, Engine Manufacturers; Grid Operators, Electricity and Fuel Providers; CPUC; CDFW; Local and Regional Government; US Coast Guard; Communities

Key Actions and Expected Results:

1. Outreach via stakeholder meetings leading up to Board hearing
2. Final proposal for Board consideration in early 2022
3. Proposal will achieve emission reductions in all communities statewide and provide compliance extensions for business owners meeting technology feasibility and financial need criteria with additional stringency for vessels operating in disadvantaged communities

2022 Outcomes:

1. Staff held numerous meetings with stakeholders leading up to the March 2022 board hearing, including a public workshop on January 12, 2022.
2. The Board approved amendments to the Commercial Harbor Craft Regulation on March 24, 2022.
3. Staff made additional changes to the amendments in response to Board direction and released for a 15-day public comment period in May-June 2022. In response to comments from the Office of Administrative Law, additional changes were made to the amendments with a second 15-day public comment period in October 2022.
4. The amendments were approved by the Office of Administrative Law on December 30, 2022, with an immediate effective date.

2.13 Cargo Handling Equipment

In 2022, staff will start development on a regulatory concept that will transition cargo handling equipment (CHC) to zero-emission by 2037.

Website: https://ww2.arb.ca.gov/resources/documents/cargo-handling-equipment-regulation-transition-zero-emissions

Key Collaborators Engine, Battery, Fuel Cell Manufacturers; Infrastructure Providers; CHE Owners and Operators; Grid Operators, Electricity and Fuel Providers; CEC; Organized Labor; Freight Facilities; CMA, CITT, Communities; Local and Regional Government; Port Authorities; Pacific Merchant Shipping Association (PMSA)

Key Actions and Expected Results:

1. Initiate development of new CHE regulation – Late-2022

2022 Outcomes:

In order to prioritize achieving additional emissions reductions from ocean-going vessels (OGV), staff shifted from promulgating a zero-emission CHE rulemaking to the exploration of measures to achieve additional reductions from OGVs. This staff recommendation was included in the At Berth Interim Evaluation Report, published on CARB's website on December 1, 2022, as part of the Control Measure for Ocean-Going Vessels (At Berth Regulation). As such, staff has delayed the start of the development for the zero-emission CHE regulation. While this shift would potentially delay a rulemaking to advance efforts to require zero-emissions CHE at California

ports and railyards, additional reductions from CHE could be achieved through incentives and other early zero-emissions efforts at these facilities.

2.14 Small Off-Road Engines

By the end of 2022, finalize measure to transition production of small off-road engines (SORE) to zero-emission equipment (ZEE). Begin implementation of the measure.

Website: https://ww2.arb.ca.gov/our-work/programs/small-off-road-engines-sore

Key Collaborators SORE Manufacturers and Trade Associations; State and Local Government; Neighborhood Coalitions; Environmental Organizations; Landscapers; Air Districts

Key Actions and Expected Results:

1. Develop and release modified regulatory text for 15-day public comment period, respond to public comments and finalize amendments to the regulations. Expect to release text in Spring 2022 and receive Office of Administrative Law approval of regulations in Fall 2022, with updated regulations becoming effective January 1, 2023
2. Form a workgroup with landscapers to discuss the updated rules, the availability of incentives for purchasing ZEE, and landscapers' questions. Expect to invite interested parties to join the workgroup Spring 2022 and hold the first meeting in Early Summer 2022, hope to get help from small engine dealers to get the word out
3. Conduct outreach to residents and businesses who are likely to be impacted by the updated rules. Develop fact sheets when rules are finalized, collaborate with air districts, communities, and others to ensure users are aware of incentives and know how to take advantage of them; continue demonstration projects including the ZEE Roadshow

2022 Outcomes:

1. Made modifications to the regulatory text to give more time for larger pressure washers to transition to zero emissions because they have high power demands and are used for cleaning and sanitization, often in locations where grid power is not available. Amendments to the SORE regulations were finalized in 2022 and became effective January 1, 2023. The amendments will bring about the expected transition from SORE to ZEE.
2. Updated fact sheets and continued outreach to affected users at landscape expositions and demonstrations. Incentives for professional landscaping equipment through the CORE program were launched, as described in section 3.11 of this progress report.

3. Incentives

The Administration proposed $6.1 billion in new zero-emission transportation investments over the next four years to increase access to clean transportation, reduce air pollution, and support disadvantaged and low-income communities, including tribal communities. Of these investments, $2.2 billion will go to the California Air Resources Board to support the expansion of our zero-emission vehicle incentive programs targeted for heavy-duty zero-emission technology advancement, to expand investments in passenger vehicle incentives and infrastructure, and, ultimately, to amplify the key priorities identified in the 2021Budget Act: delivering both equity and scale.

Building on the $3.9 billion approved in the 2021 Budget Act and combined with $383 million Federal Funds through the California State Transportation Agency and $1.5 billion Proposition 98 General Fund through the California Department of Education, these investments deliver a combined $10 billion in the critical window between 2021 and 2026 to accelerate the equitable transition to zero-emission transportation opportunities for all Californians.

3.1 Clean Vehicle Rebate Project

The Clean Vehicle Rebate Project supports increasing the number of ZEVs on California's roadways to meet deployment goals and achieve large-scale transformation of the fleet while also providing support to increase ZEV uptake in priority communities. CVRP provides consumers with vehicle rebates on a first-come, first-served basis for new battery-electric, fuel cell electric and plug-in hybrid vehicles, and zero-emission motorcycles. CARB tracks the number of consumers who participate, their income level and residency location, costs and types of vehicles purchased, and rebate essentiality (consumer surveys).

Website: https://cleanvehiclerebate.org/eng

Key Collaborators Local and Regional Government; Federal and Tribal Governments; DOF; Treasurer's Office; Non-Governmental Organizations; Vehicle Manufacturers and Supply Chain; Fleets, Grid Operators, Electricity and Hydrogen Providers

Key Actions and Expected Results:

1. Outreach and education, particularly to priority communities; due to the ongoing health and economic crisis, in-person outreach will continue to be very limited. A majority of outreach will be through virtual meetings and various multimedia efforts. A majority of in-person outreach will be accomplished through CVRP's Community Partner Network, a statewide coalition of a growing number of community-based organizations (CBOs) that have a common goal of ensuring clean air for all Californians. CVRP works with CBOs and their

respective communities by breaking down barriers to ZEV ownership and providing information on available incentives.
2. Ongoing: track and collect metrics on program use
3. Updated program information regarding rebate statistics, various analyses, survey data, and outreach statistics will continue to be provided on the CVRP website, https://cleanvehiclerebate.org/eng.
4. In line with the requirements of the Budget Act of 2021, program changes for CVRP will be implemented over the course of the next three fiscal years in order to ramp down the incentive while still offering critical support to the ZEV market. The first phase of changes will be implemented no earlier than February 2022 and will include, a decrease in the income cap for standard rebates, a reduction in the MSRP cap, and base the MSRP cap on EPA vehicle class (e.g., cars and large vehicles). More information can be found in the FY 2021-22 Funding Plan for Clean Transportation Incentives.

2022 Outcomes:

1. CVRP at a glance (data from program inception through November 2022)
    - Over $1.1 billion in rebates issued
    - About 32 percent of funding benefits priority communities
    - 501,000+ vehicles funded
    - 42,000+ increased rebates issued to low- and moderate-income consumers
    - 46+ million gallons of fuel use avoided
    - 6.7+ million tons of CO_2 equivalent (GHG emissions) reduced
2. Expansion of CVRP's Community Partner Network to include a total of 13 community-based organizations representing disadvantaged communities across California.
3. Changes to CVRP approved by the Board in November 2022 to further focus the program on low- and moderate-income car buyers
    - Increased incentive amounts for low- and moderate-income applicants (to be implemented in late-February 2023)
    - Addition of a prepaid card to cover charging costs at public stations for low- and moderate-income applicants (to be implemented in Summer 2023)
    - Expansion of CVRP Rebate Now preapproval pilot statewide bringing the incentive to the point of purchase for lower-income car buyers (to be implemented in Summer 2023)
    - Legislatively-required removal of Plug-in hybrid electric vehicles from CVRP eligibility by January 1, 2025

3.2. Electric Bicycle Incentive Project

The Electric Bicycle Incentive Project is a new project that aims to provide "on-the-saddle" rebates to reduce the purchase price for electric bicycles (e-bikes) to income qualified consumers. The pilot will be designed to help Californians reduce their VMT by lowering barriers to e-bike ownership, as well as learn about bicycle safety and support local businesses. The Electric Bicycle Incentives Project will pilot an approach

that aims to 1) help people replace car trips with e-bike trips, 2) increase access to electric bicycles, and 3) reduce GHG emissions.

Key Collaborators: Local and Regional Government; Non-Governmental Organizations; Fleets; Academia; Bicycle manufacturers; Bicycle coalitions; Bicycle retailers

Key Actions and Expected Results:
The Electric Bicycle Incentives Project is currently under development. Staff anticipates having a project administrator in place by mid-to-late 2022. Solicitation, policy, and implementation public work groups will be held and will continue throughout 2022.

2022 Outcomes:
A project administrator began work on the project in December 2022. Policy and implementation public work groups will be held and will continue throughout 2023.

3.3. Financing Assistance for Lower-income Consumers Pilot
The Financing Assistance for Lower-Income Consumers Pilot (includes the Clean Vehicle Assistance Program and Driving Clean Assistance Program) is designed to increase access to clean transportation for lower-income Californians by providing low interest loans and vehicle price buy-downs at the point-of-sale. In addition, buyers of plug-in hybrid and battery-electric vehicles are also eligible for home charging equipment. One unique provision of this program provides financial literacy and advanced vehicle technology training to ensure consumer protection, increase the rate of successful loan repayments, and ensure that the vehicles chosen by participants adequately meet their transportation needs. This pilot is meant to complement CVRP and Clean Cars 4 All by providing low-interest loans to participants in those programs.

Website: https://cleanvehiclegrants.org/, https://communityhdc.org/dcap/

Key Collaborators Local and Regional Government; Federal and Tribal Governments; DOF; Treasurer's Office; Non-Governmental Organizations; California Infrastructure and Economic Development Bank

Key Actions and Expected Results:

1. Refine applicant processing and other implementation and policy factors that support the continued growth and evolution of this pilot. CARB anticipates implementing changes that include shifting away from a first-come-first-serve program to a needs-based program focused on income eligibility, transportation and geographic needs, and other factors that help to identify consumers that truly need the incentive to purchase an electric vehicle in mid-2022. Additional changes include adjustments to loan rates and terms within the financing components of the program, and purchase price limitations on vehicles supported by the program.

2. Ongoing: track number of consumers who participate, their income level and residency location, costs and types of vehicles purchased, and loan repayment status.
3. The program continues to refine program parameters, broaden financial institution support, and eventually expand the case management approach developed by the Driving Clean Assistance Program into the statewide Clean Vehicle Assistance Program
4. Increase priority community access through Access Clean California and related outreach efforts.

2022 Outcomes:

1. Finalized the needs-based model framework to replace the first-come, first-served model in equity programs. The implementation of the needs-based model will expedite the application processing for priority population and provide more support throughout the process to ensure successful clean vehicle purchase
2. Completed the process of serving applications on the Clean Vehicle Assistance Program (CVAP) reservation list
3. Finalized the joint solicitation for the Financing Assistance project and Statewide Clean Cars 4 All in an effort to align programs, streamline application processing and data collection, improve program administrators' communication, and more importantly reduce the application processing burden for consumers. The solicitation will be launched in Q1 of 2023 and CARB plans to launch the new projects by Q4 2023
4. Implemented program changes such as reduced the income eligibility criteria to 300% Federal Poverty Level (FPL), vehicle purchase price cap of $45,000, lowered the loan APR to 8% for all lenders, and graduated Hybrid Electric Vehicles (HEV) from the list of eligible vehicles.

3.4 Clean Mobility Options Voucher Pilot Program, or CMO

The Clean Mobility Options Voucher Pilot Program provides funding for various community clean transportation projects (other than vehicle ownership), including zero-emission and plug-in hybrid car sharing, vanpools, electric and regular bicycle sharing, scooter sharing, innovative transit, micro-and on-demand services.

Website: https://www.cleanmobilityoptions.org/

Key Collaborators Local and Regional Government; CEC; Federal and Tribal Governments; Non-Governmental Organizations; Fleets; Academia

Key Actions and Expected Results:

1. Transportation needs assessment projects; Ongoing implementation, Planning and construction phase: End of 2022.
2. Mobility projects: Launch end of 2022 to mid-2023
3. Metrics: numbers and types of clean vehicles, chargers, and clean mobility options introduced into priority communities; number of residents participating as

drivers or riders; zero-emission vehicle miles traveled, and number of trips taken; and improvements in access to mobility experienced by participants; Ongoing.
4. Expand access to clean transportation and mobility options in priority communities through additional training, technical assistance, learning tools and information-sharing opportunities, and ensuring that awarded projects are responsive to community needs and preferences.
5. Provide additional funding for community transportation needs assessments and mobility projects in mid-2022 and through further training, technical assistance, learning tools and information sharing opportunities.

2022 Outcomes:

1. Transportation needs assessment projects:
   - 24 needs assessment projects completed in 2022.
2. Planning and construction phase:
   - 17 mobility projects are in planning and construction phase.
3. Mobility projects:
   - 3 projects launched.

3.5 Clean Cars 4 All

Clean Cars 4 All provides incentives for lower-income consumers living in and near disadvantaged communities who scrap their old light-duty vehicles and purchase new or used hybrid, plug-in hybrid, or ZEV replacement vehicles. Furthermore, participants can choose an alternative mobility option such as an electric bike and accessories, a voucher for public transit, or a combination of clean transportation options allowed under the program in lieu of purchasing a replacement vehicle. In addition, buyers of plug-in hybrid-electric vehicles (PHEVs) and batter-electric vehicles are also eligible for home charger incentives or prepaid cards for public charging facilities. This program is currently available in the South Coast Air Quality Management District, San Joaquin Valley Unified Air Pollution Control District, Bay Area Air Quality Management District, Sacramento Metropolitan Air Quality Management District, and San Diego Air Pollution Control District (coming soon).
Key Collaborators

Website: https://ww2.arb.ca.gov/our-work/programs/clean-cars-4-all

Key Collaborators Air districts; Local and Regional Governments; Federal and Tribal Governments; California Dept. of Consumer Affairs, Bureau of Automotive Repair; DOF; Treasurer's Office; Non-Governmental Organizations; California Infrastructure and Economic Development Bank

Key Actions and Expected Results:

1. Annual reporting: reporting period varies annually.
2. Ongoing: track and collect metrics on program use including details of program performance relative to established goals, funding and expenditure status, program analysis, program modifications, and goals for the upcoming year 2.

Increase priority community access through Access Clean California and related outreach efforts. Prepaid cards were included in program guidelines through the FY 2020-2021 Low Carbon Transportation Funding Plan. Sacramento Metropolitan Air Quality Management District began offering the option this year and has issued 92 charge cards so far with another 167 pending. An update the program guidelines will allow for statewide expansion of the program and improve flexibilities so that the program can be more responsive to market conditions and the needs of the participants. The process to update the guidelines began in 2021 with a workshop on August 24th, 2021 and will continue into 2022 with more workgroups and a solicitation for a statewide administrator.

2022 Outcomes:

1. Clean Cars 4 All program administrators continued the integration progress with Access Clean California
2. Sacramento Metropolitan Air Quality Management District funded an additional 150 prepaid charge cards and multiple administrators have begun pilot programs to issue these cards to their participants.
3. Guideline updates were completed to allow program flexibilities and enable statewide expansion of the program.
4. Lowered the income cap to 300% and increased incentive amounts.

3.6 The Sustainable Transportation Equity Project (STEP)

STEP is a transportation equity pilot that addresses community residents' transportation needs, increases access to key destinations, and reduces greenhouse gas emissions in disadvantaged and low-income communities throughout California. STEP has two grant types: Planning and Capacity Building Grants and Implementation Grants. Examples of STEP projects funded: new electric shuttle and bike-sharing services, public transit and shared mobility subsidies, urban forestry, new bike paths, community transportation needs assessments, and active transportation education and outreach events. All projects incorporate significant community engagement during all phases of project planning, development and implementation.

Website: ww2.arb.ca.gov/our-work/programs/low-carbon-transportation-investments-and-air-quality-improvement-program-1

Key Collaborators Local and regional government; Community groups; NGOs; Fleets; Academia

Key Actions and Expected Results:

1. Execute 3 Implementation Grants (totaling $25M). Grant implementation may extend through spring 2026 and will include draft and final reports.
2. Begin development of the next STEP solicitation, which will include review of lessons learned from the first STEP solicitation and STEP's technical assistance final report.

2022 Outcomes:

1. Executed 3 Implementation Grants (totaling $25M)
2. Began updating the next STEP solicitation, including reviewing lessons learned from the first STEP solicitation; coordinating with other clean mobility programs, particularly Clean Mobility in Schools and Planning and Capacity Building; and starting a public process on the updates.
3. Released an RFP for a technical assistance provider for the next STEP solicitation

3.7 Hybrid and Zero-emission Truck and Bus Voucher Incentive Program (HVIP)

HVIP provides incentives for the long-term transition to ZEVs in the heavy-duty market and supports investments in other emerging technology areas to achieve greenhouse gas emission reductions and ambient air quality standards. HVIP provides point-of-sale discounts at participating dealerships for dozens of eligible vehicles, making the cleanest technologies affordable for California fleets. Larger incentives are available to public transit and school districts, as well as small fleets with vehicles domiciled in a disadvantaged community. HVIP will continue to support the overall transition to ZEVs in the heavy-duty sector and deployment of clean heavy-duty technologies in priority communities.

Website: https://californiahvip.org/

Key Collaborators Local and Regional Government; CEC; Federal and Tribal Governments; Fleets; Non-Governmental Organizations; DOF; Treasurer's Office; California Infrastructure and Economic Development Bank; Vehicle Manufacturers and Supply Chain; Insurance regulators

Key Actions and Expected Results:

1. Reopen HVIP in spring 2022 and track its implementation and metrics.
2. Support the deployment of 1,000 zero-emission drayage trucks, 1,000 zero-emission transit buses, and 1,000 zero-emission school buses by administering set-asides within HVIP beginning in spring 2022.
3. Release the new project implementation manual by March 2022 to establish all project policies and protocol for FY 2021-22.
4. Launch a new pilot within HVIP, Innovative Small e-Fleets, by summer 2022 to implement innovative funding mechanisms geared towards supporting small fleets transition to zero-emission trucks.
5. Outreach to priority communities where appropriate.

To monitor progress, CARB will continue to track the number of clean trucks and buses supported, tons of air pollution reduced, growth in the number of eligible clean technology manufacturer and vehicle types, number of purchasers and fleets that have participated, clean miles driven, and percent of vouchers supporting vehicles deployed in priority communities.

2022 Outcomes:

1. HVIP was reopened March 30, 2022, with approximately $430 million and $272 million was requested within the first 24 hours of opening.
2. The March 30, 2022, reopening included set asides for public transit buses, public school buses, and drayage trucks . The drayage truck and public school bus set asides were fully subscribed and to date, over 150 public transit bus vouchers totaling over $20 million have been requested.
3. A revised project implementation manual was released March 15, 2022, to update project implementation guidelines and administrative protocol.
4. Innovative Small e-Fleets pilot opened for voucher requests on August 31, 2022 and was fully subscribed within two weeks after $35 million in vouchers were requested by 73 unique small fleets.
5. Presented on HVIP incentives at over 30 in person and virtual outreach events.

3.8 Volkswagen Appendix D, the Environmental Mitigation Trust

The Environmental Mitigation Trust is intended to fully mitigate all past and future excess NOx emissions from the vehicles subject to the diesel emissions settlement by requiring VW to pay about $2.7 billion into a national mitigation trust fund. California's allocation of the trust is about $423 million. The types of projects being funded fall into these five categories: zero-emission transit, school and shuttle buses; zero-emission Class 8 trucks; zero-emission freight and marine; combustion freight and marine; and light-duty ZEV infrastructure. Investments in ZEV technologies will help accelerate the deployment of zero-emission buses, trucks and freight equipment.

Website: https://ww2.arb.ca.gov/our-work/programs/volkswagen-environmental-mitigation-trust-california

Key Collaborators CEC; CPUC; South Coast and Bay Area Air Quality Management Districts, San Joaquin Valley Air Pollution Control District; Local and Regional Government; Federal and Tribal Governments; Non-Governmental Organizations

Key Actions and Expected Results:

1. Vehicles purchased with VW trust money to be on the road include zero-emission transit, school, and shuttle buses; zero-emission Class 7 and 8 heavy-duty freight and drayage trucks, and zero-emission port cargo handling equipment, airport grand support equipment, shore power; as well as public light-duty ZEV infrastructure.
2. Release funding in 2 installments for each category except light-duty ZEV infrastructure; the first installment for each was released starting in Fall 2019. The three collaborating air districts listed above are administering VW funds statewide.
3. Continue to execute contracts for hundreds of trucks, buses and equipment approved for funding.
4. Evaluate emissions benefits from vehicles funded in the first installment and make adjustments to the funding categories if necessary.

2022 Outcomes:

1. At the end of 2022, 433 contracts were executed totaling over $64 million in funding for replacement of diesel vehicles with eligible trucks.
2. Participated in round table discussions with the three air districts administering the funds and we have made changes to the minimum requirements for funding to increase demand for the VW trust funds.
3. Opened the second installment of $65 million for the bus project category. CARB anticipates that the second installments for the remaining bins will be open during 2023.
4. Continued to obtain feedback from the project administrators as well as the general public to streamline the VW program.

3.9 Funding Agricultural Replacement Measures for Emission Reductions (FARMER)

FARMER provides incentive funding for farmers to replace older diesel vehicles and equipment with the cleanest available commercial technology. CARB sets guidelines for the program and air districts implement the program according to the guidelines. These guidelines include the ability to fund commercially available ZEV technology and support local demonstrations of pre-commercial ZEV technologies.

Website: https://ww2.arb.ca.gov/our-work/programs/farmer-program

Key Collaborators Local and Regional Government; Federal and Tribal Governments; Non-Governmental Organizations; Farmers; Treasurer's Office; CDFA

Key Actions and Expected Results:

1. Continue implementing FARMER-eligible projects through local air districts, including zero-emission vehicle and equipment replacement projects where feasible.
2. Continue tracking and supporting program administration done through local air districts, including the number of zero-emission equipment (e.g., electric utility terrain vehicles) deployed and new zero-emission agricultural demonstration projects.
3. In 2022, CARB plans to expand funding opportunities for zero-emission agricultural equipment (e.g., electric agricultural tractors and forklifts) in FARMER through the addition of a dedicated zero-emission agricultural equipment project category.

2022 Outcomes:

1. In 2022, the FARMER Program added a dedicated project category for zero-emission agricultural equipment (e.g., battery-electric tractors and forklifts).
2. CARB staff supported program administration by local air districts and tracked the number of zero-emission agricultural utility terrain vehicles deployed throughout the State and the status of two zero-emission tractor demonstration projects.

3.10 Advanced Technology Demonstration and Pilot Projects: Advanced Technology Demonstration and Pilot Projects

This program accelerates development and deployment of the most advanced — primarily zero-emission — precommercial and early commercial heavy-duty on- and off-road technologies. In the coming year, three new large scale zero-emission drayage truck projects will start, representing 150 additional zero-emission heavy-duty trucks in drayage and regional haul service, with two of those projects being located in AB 617 communities. The public process to help develop the next round of demonstration and pilot projects will start for the five project categories approved by the Board in November, 2021. Up to six projects will compete this year, including the first wave of large-scale freight facility demonstrations from the Zero and Near Zero-Emission Freight Facilities projects (ZANZEFF) with two large scale deployments of zero-emission heavy-duty vehicles and equipment for on and off-road applications, including supporting infrastructure with solar installations.

Website: https://ww2.arb.ca.gov/sites/default/files/movingca/projectheavyduty.html

Key Collaborators Vehicle and Engine Manufacturers; Fleets; Local and Regional Government; Federal and Tribal Governments; Non-Governmental Organizations; Grid Operators, Electricity and Hydrogen Providers; Academia; CEC; Treasurer's Office; CalSTA; CalTrans

Key Actions and Expected Results:

1. Three additional Zero-Emission Drayage Truck and Infrastructure Pilot Projects will be getting underway representing 150 additional zero-emission trucks to the 130 already funded, representing a significant deployment of commercially available heavy-duty trucks that will see service in California for years to come and act as a catalyst for other fleets to adopt similar technology.
2. This year, implement the new demonstration and pilot projects, which are primarily focused on the off-road sector and execute grant agreements for the large-scale drayage truck projects in coordination with CEC that were approved as part of the FY 2021-22 Funding Plan.
3. Up to six additional projects will end this cycle, including completion of the state's first large scale zero-emission drayage truck demonstration, some advanced zero-emission cargo handling equipment demonstrations at the San Pedro Ports and the Port of Stockton, as well as others.
4. On-going: 20 additional demonstrations and pilots of technologies ranging from zero-emission drayage trucks to a fuel cell operated passenger ferry actively deployed on the San Francisco Bay this year, to facility-wide shifts toward zero emission demonstrating many types of heavy-duty on- and off-road vehicles and equipment with supporting infrastructure with some including solar installations.
5. Ongoing: annually update the Long-Term Heavy-duty Investment Strategy to track progress on key technology commercialization, analyze project efficacy, and identify future investment priorities and recommended funding levels to maintain critical momentum.

6. On-going: identify additional demonstration and pilot areas via the annual funding plan public process; if adequate funding is available, implement recommendations in the annual funding plan.
7. On-going: evaluate metrics including successful commercialization of advanced technologies in the heavy-duty sector; number of deployed vehicle and equipment types; percent of funded projects in or near priority communities; and emission reductions.
8. On-going: prioritize deployments in or near priority communities.

2022 Outcomes:

1. Two of the three additional Zero-Emission Drayage Truck and Infrastructure Pilot Projects executed their grant agreements with both CARB and CEC, work is underway to deploy100 additional zero-emission heavy-duty trucks.'
2. Conducted the solicitation process for the Third-Party Administrator for the FY 2021-2022 Advanced Technology Demonstration and Pilot Projects program. Funding for the technical solicitation was combined with FY 2022-2023 demonstration and pilot funding, and a solicitation is expected to be released in Spring 2023.
3. Projects are on-going with great successes on many projects including the wholistic warehouse and distribution project, testing of the capture and control system for oil tankers, and others. The fuel cell ferry project will begin its demonstration and data collection effort in 2023.
4. Three projects completed this year, an agriculture focused box truck project in the San Joaquin Valley, a large scale zero-emission drayage truck and off-road equipment project, and another large-scale fuel cell drayage truck demonstration project.

3.11 Clean Off-Road Equipment Voucher Incentive Project (CORE)

CORE provides point-of-sale discounts for off-road equipment, that targets commercialized products that have yet to achieve a significant market foothold. It accelerates deployment of cleaner technologies by providing a streamlined process for fleets ready to purchase specific zero-emission equipment to receive funding to offset the higher cost of such technologies.

Website: https://ww2.arb.ca.gov/our-work/programs/clean-off-road-equipmentvoucher-incentive-project and https://californiacore.org/

Key Collaborators Vehicle Manufacturers and Supply Chains; Fleets; Local and Regional Government; Non-Governmental Organizations; DOF; Treasurer's Office

Key Actions and Expected Results:

1. CORE first received funding in 2021, will be reopened in summer of 2022, and its implementation and metrics will be tracked.
2. In addition to freight movement equipment, CORE will expand into other heavy-duty off-road equipment like construction, agricultural, and material handling.

Additionally, there is $30 million specifically for zero emission small off-road equipment for small business and sole proprietor professional landscapers.

3. Release new project implementation manual by June to establish all project policies and protocol for FY 2021-2022. To monitor progress, CARB will continue to track the number of zero-emission off-road vehicles/equipment supported, tons of air pollution reduced, growth in the number of eligible clean technology manufacturer and vehicle/equipment types, number of purchasers and fleets that have participated, hours operated, and percent of vouchers supporting vehicles deployed in priority communities.
4. The 2021 Budget provided opportunity for CORE to expand beyond freight offroad equipment to include non-freight off-road equipment like those used in construction and agriculture. It also provided an additional $30M for commercial grade landscaping equipment for small businesses and sole proprietors (SB 170) and this funding will be implemented to the CORE program.

2022 Outcomes:

1. Released an updated implementation manual describing the heavy-duty off-road project policies and procedures in July 2022 and added attachment D detailing the professional landscaping service equipment policies and procedures in September 2022.
2. CORE heavy-duty off-road funding launched on July 18, 2022, with $125 million. Eligible equipment categories include terminal tractors, electric transport refrigeration units, large forklifts, airport cargo handling equipment, wide-body aircraft tugs, railcar movers and switcher locomotives, construction equipment, agricultural equipment, and commercial harbor craft.
3. Three of the nine heavy-duty categories were oversubscribed in about 90 minutes.
4. The CORE pro landscaping funding launched November 7, 2022, with $27.5 million, specifically, for small businesses and sole proprietors. The current CORE pro landscaping eligible equipment catalog consists of ten different equipment types including edgers, string trimmers, leaf blowers, walk-behind and ride-on mowers, batteries, and chargers. Since launch it has been providing a steady stream of incentives for equipment and batteries.

3.12 Carl Moyer Program/Community Air Protection Program

The Carl Moyer Memorial Air Quality Standards Attainment Program (Moyer) is a grant program that funds the incremental cost of cleaner-than-required engines, equipment, and other sources of air pollution. The Moyer Program complements California's regulatory program by providing incentives to obtain early or extra emission reductions, especially from emission sources in minority and low-income communities and areas disproportionately impacted by air pollution. Carl Moyer Program

Website: https://ww2.arb.ca.gov/our-work/programs/carl-moyermemorial-air-quality-standards-attainment-program

Community Air Protection Incentives Website:
https://ww2.arb.ca.gov/ourwork/programs/community-air-protection-incentives

Key Collaborators Local and Regional Government (Air Districts); AB 617 Communities; Federal and Tribal Governments; Fleets; Non-Governmental Organizations; DOF; Treasurer's Office; California Infrastructure and Economic Development Bank

Key Actions and Expected Results:

1. FY 2020-Present, State Reserve (10% of the annual Moyer funding) has been prioritized to ZEV deployment.
2. Since 2017- Present, the CAP Program, where feasible and supported by communities, focus funding zero-emission technologies, including zero-emission charging infrastructure that supports medium- and heavy-duty vehicles.
3. Senate Bill 129 allocated $45M to air districts in severe or extreme nonattainment (South Coast and San Joaquin Valley air districts) through Moyer for the purchase of non-diesel MHD/HHD vehicles emitting no more than 0.02g/bhp-hr NOx or lower that replace diesel vehicles. Remaining monies after fiscal year 2022/23 exclusively dedicated to Zero emission vehicles.
4. Recent amendments to cost-effective limits and funding amounts in the onroad chapter will provide increased opportunities for applicants to transition to zero emission technologies.
5. Because Moyer receives annual allocations, CARB will continue to emphasize funding for zero-emission equipment in 2022 and after; for CAP incentives, a new allocation is provided annually through budget appropriation Focus incentives on projects with direct impact on priority communities.
6. To monitor progress, CARB will continue to track the number of clean trucks and buses supported, tons of air pollution reduced, where funds are spent as well as several other supporting factors. Additional ZEV statistics can be found at: https://ww2.arb.ca.gov/carl-moyer-program-statistics-and-reports

2022 Outcomes:

1. State Reserve Moyer Year 24 (Fiscal Year 2021-22) budget was $24.7M and went toward commercial grade zero-emission lawn and garden equipment. State Reserve Moyer Year 25's (Fiscal Year 2022-23) budget is $13M and is to go toward On-Road Voucher Incentive Program (VIP) where only on-road zero-emission replacement truck projects are eligible.
2. The Carl Moyer Program and CAP Program incentives continue to support the deployment of ZEV technologies, including infrastructure. In 2022, the Moyer Program provided an estimated $4.5M and the CAP Program provided an estimated $5.5M in ZEV heavy-duty on-road vehicle project funding. Since 2018, the Moyer Program has provided funding of an estimated $11M for ZEV heavy-duty on-road vehicle projects, and the CAP Program provided funding of an estimated $57M for ZEV heavy-duty on-road vehicle projects. In 2022, the Moyer Program provided an estimated $455K and the CAP program provided an estimated $1.2M in Zero-Emission Charging Infrastructure. Since 2018, the Moyer

Program has provided funding of an estimated $8.8M to Zero-Emission Charging Infrastructure, and the CAP program of an estimated $22.2M to Zero-Emission Charging Infrastructure. Staff expect to publish a new status update memo for Moyer Program incentives in April 2023, which will include data on Moyer incentives expenditures up to November 2022.

3. South Coast AQMD submitted a grant disbursement request of $32.1M for SB 129 funds which was approved by CARB in mid-December 2022. San Joaquin Valley APCD submitted a grant disbursement request of $12.9M which was approved by CARB in early October 2022. Project implementation is underway with CARB staff assisting the air districts where appropriate.
4. In April 2022, the Carl Moyer Program increased funding opportunities to bolster incentives for on-road heavy-duty vehicles transitioning to advanced technologies like 0.02 NOx standard engine vehicles to zero-emission standard vehicles. Similarly, the Carl Moyer Program's On-Road Heavy-Duty Voucher Incentive Program (VIP) was recently updated in January 2023 to reflect recommendations for increased and equitable funding opportunities for zero-emission technologies among small fleets, including those within communities with priority populations. CARB expanded VIP to allow additional funding for replacement vehicles meeting the zero-emission standard with funding up to $410,000 per Class 8 vehicle to align with the same funding updates made to the Carl Moyer Program for on-road heavy-duty vehicles. In addition, Chapter 10: Infrastructure was also updated in January 2023 to reflect recommendations for increased funding to applicants of heavy-duty truck parking facilities that provide communal charging, simplified eligibility process for charging stations in priority populations, and clarification of program requirements. The recommendations were received from the Incentive Program Advisory Group (IPAG) public meetings held throughout 2022 and various stakeholders, including small to larger fleets, environmental justice, air districts, industry, and community members.
5. The Carl Moyer Program is funded with dedicated fees and is currently authorized to receive $130M per year. The proposed 2023 budget as released in January would appropriate $250M to CAP for FY2023-2024; majority of this money will go to incentives, with a focus on increasing the adoption of ZEVs wherever technologically feasible and within and benefiting the most heavily impacted communities in the State
6. CARB continues to track the number of clean trucks and buses supported and tons of air pollution reduced. Staff expect to publish a new status update memo for Moyer Program incentives in April 2023, which will include data on Moyer incentives expenditures up to November 2022. Additionally, through IPAG the updated On-Road Heavy-Duty VIP now provides guidance on incentives for environmental justice areas and communities with a priority population (disadvantaged or low-income community). Updates include prioritizing outreach and applications from these areas and communities, requiring that 50 percent of all projects funded must benefit these areas and communities, as well as requiring air districts to report and track projects within these areas and communities.

3.13 Community Air Protection (CAP) Incentives

The legislature has appropriated GGRF moneys annually since 2017 for incentives supporting the CAP Program, established through Assembly Bill (AB) 617 (C. Garcia, Chapter 136, Statutes of 2017). The Legislature has appropriated $964 million in CAP incentives since 2017, with an additional appropriation in the Governor's proposed FY 2022-23 budget. The initial appropriation of CAP incentives included legislative 24 direction to fund projects pursuant to the Carl Moyer Program (see above) and the Proposition 1B Goods Movement Emission Reduction program, with a broad focus on zero-emission technologies and priority populations. Legislative direction in subsequent appropriations expanded funding options to include zero-emission medium- and heavy-duty vehicle charging infrastructure (also handled through the Carl Moyer Program), new incentives to address stationary sources of pollution, and new incentives created by air districts to address strategies identified in Community Emissions Reduction Programs they create pursuant to AB 617. Community Air Protection Incentives
Website: https://ww2.arb.ca.gov/ourwork/programs/community-air-protection-incentives

Key Collaborators Local and Regional Government (Air Districts); AB 617 Communities; Federal and Tribal Governments; Fleets; Non-Governmental Organizations; DOF; Treasurer's Office; California Infrastructure and Economic Development Bank

Key Actions and Expected Results:

1. From 2017- Present, CAP incentives, where feasible and supported by communities, is focused on zero-emission technologies, including zero-emission charging infrastructure that supports medium- and heavy-duty vehicles.
2. Local air districts must report CAP incentives expenditure progress to CARB semi-annually as part of GGRF statutory requirements; results will help identify project benefits (emission reductions, job outcomes and outreach events, etc.)
3. Recent amendments to the Carl Moyer Program (see above) will likewise increase opportunities in CAP incentives for applicants to transition to zero-emission technologies.
4. Members of the Board require staff to provide regular reports on CAP incentives expenditure progress; the latest report was published late in December 2021, and was published on CARB's CAP incentives Website: https://ww2.arb.ca.gov/resources/documents/december-2021-report-ab617-community-air-protection-incentives

2022 Outcomes:

1. In 2022, CARB published a Community Air Protection Incentives Project Dashboard, which contains project-level data on CAP incentives, at the following webpage: https://ww2.arb.ca.gov/our-work/programs/community-air-protection-incentives/community-air-protection-incentives-project.
2. CARB published a new status update memo and submitted it to members of the Board in May 2022: https://ww2.arb.ca.gov/our-

work/programs/community-air-protection-incentives/ab-617-community-air-protection-incentives.

3. Staff expect to publish a new status update memo for CAP incentives in April 2023, which will include data on CAP incentives expenditures up to November 2022.
4. Since CAP incentives are appropriated from the GGRF, they are subject to the requirements of California Climate Investments. As such, CARB publishes information on CAP incentives in its annual updates on GGRF expenditures: https://www.caclimateinvestments.ca.gov/air-protection-funds.

3.14 Clean Mobility in Schools Pilot Project

The Clean Mobility in Schools Pilot Project is a holistic approach for California school districts located in disadvantaged communities to fund zero-emissions fleet turnover for school buses and other district vehicles; implement ZEV car and van pooling for staff, active transportation projects, and lawn and garden equipment and maintenance vehicles. Three grants launched in 2020 to three school districts. One new project will be launched by Fall 2022.

Website: https://www.caclimateinvestments.ca.gov/clean-mobility-in-schools-pilot-1
Key Collaborators Local and Regional Government; Fleets; Non-Governmental Organizations; Vehicle and Engine Manufacturers; Grid Operators, Electricity and Hydrogen Providers; DGS; CEC; Caltrans; DMV; CPUC; Academia; Communities; School Districts
Key Actions and Expected Results:

1. Large charging infrastructure projects for the three zero-emissions fleets were completed in 2021. One new project is expected to launch in late 2022.
2. 20 battery-electric school buses were delivered in 2021, 10 battery-electric school buses expect to be delivered in January 2022, and 8 additional school buses shall be ordered in 2022. In addition, 19 non-school-bus ZEVs were delivered in 2021 and 37 more are to be ordered in 2022.
3. An E-bike Pilot Project will be launched in 2022 at one grantee school location.
4. A student-developed and produced animated video titled "The Story of a Sunbeam" will be released in Spring 2022. The theme depicts how the sun drives electric school buses.
5. Curriculum development and facility clean energy strategy plans will be finalized in 2022.

2022 Outcomes:

1. One new project is expected to launch in Spring 2023 instead of late 2022.
2. 10 battery-electric school buses were delivered in January 2022. In addition, 6 non-school-bus ZEVs were delivered in 2022.
3. An E-bike Pilot Project launched in 2022 at one grantee school location.
4. A student-developed and produced animated video titled "The Story of a Sunbeam" was released in Spring 2022. The theme depicts how the sun drives electric school buses.

5. Curriculum development and facility clean energy strategy plans were finalized in 2022.

3.15 Rural School Bus Pilot

The Rural School Bus Pilot provides funding for zero-emission school buses (battery-electric) and charging infrastructure to replace the oldest conventionally-fueled school buses in California. May also fund new conventionally-fueled school buses.

Website: https://www.caclimateinvestments.ca.gov/rural-school-bus-pilot-project

Key Collaborators Vehicle and Engine Manufacturers; Fleets; Local and Regional Government; Non-Governmental Organizations; Grid Operators, Electricity and Hydrogen Providers; CEC; DMV; School Districts

Key Actions and Expected Results:

1. An additional 60 new school buses will be deployed in 2022.
2. $130 million was allocated for approximately 300 zero-emission school buses in rural communities and will be implemented through HVIP beginning in Spring 2022.

A data collection and analysis project will be the focus for 2022 to report on a variety of end-user experiences.

2022 Outcomes:

1. 14 new school buses were deployed in 2022.
2. Public School Bus Set-aside funds began implementation through HVIP in March 2022.

3.16 Truck Loan Assistance Program

This program helps small business truck owners that fall below conventional lending criteria and are unable to qualify for traditional financing attain financing for cleaner trucks.

Website: https://ww2.arb.ca.gov/our-work/programs/truck-loan-assistance-program

Key Collaborators Vehicle and Engine Manufacturers; Fleets; Local and Regional Government; Federal and Tribal Governments; Non-Governmental Organizations; DOF; Treasurer's Office; CalCAP Lenders; California Infrastructure and Economic Development Bank; CDFA

Key Actions and Expected Results:

1. Work with CPCFA and participating lenders to increase the number of zero-emission heavy-duty trucks financed by small fleets
2. Develop strategies in support of the new Innovative Small e-Fleets set-aside in HVIP and borrowers seeking zero-emission vehicle loans

2022 Outcomes:

1. In 2022, nearly 4,500 loans were enrolled in the Truck Loan Assistance Program for the purchase of nearly 4,600 trucks. CARB contributions of nearly $48 million for 2022 were leveraged into over $474 million in financing. While a majority of the enrolled loans finance diesel or CNG trucks, zero-emissions trucks remain an eligible use of loan proceeds.
2. The FY 2022-23 funding allocation of $28.64 million for the Truck Loan Assistance Program was approved by the CARB Board and is expected to enable financing for about 3,000 new truck purchases.
3. CARB staff has updated the borrower eligibility form in the draft amended Interagency Agreement for the loan program to verify that the prospective borrower is aware that CARB is developing the Advanced Clean Fleets Regulation, that the regulation sets an end date for combustion-powered new medium- and heavy-duty vehicle sales in California, and that they may be subject to potential future obligations under this and other future regulations requiring transition to zero-emission technology.
4. In 2022, the CARB Board approved $5 million in Low Carbon Transportation funding for the new Zero-Emission Truck Loan Pilot Project for the FY 2022-2023 funding cycle. This pilot could fund approximately 65 zero-emission trucks, assuming a $350,000 average cost per zero-emission truck and a 20 percent contribution rate. In addition, CEC intends to offer co-funding to ensure financing for the charging and fueling infrastructure for this joint project.

3.17 Senate Bill 372 Medium- and Heavy-duty Zero-Emission Fleet Purchasing Assistance Program

This program is within the Air Quality Improvement Program to make financing tools and non-financial supports available to operators of medium- and heavy-duty vehicle fleets to enable those operators to transition their fleets to zero-emission vehicles.

Website:
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220SB372

Key Collaborators California Pollution Control Financing Authority (CPCFA), the Public Utilities Commission, State Energy Resources Conservation and Development Commission, environmental justice organizations, medium- and heavy-duty vehicle fleets of diverse sizes and types, financiers, truck equipment manufacturers, transportation, logistics, and fleet management companies, nongovernmental organizations, and other relevant stakeholders.

Key Actions and Expected Results:

1. Consult with various stakeholders and relevant state agencies regarding specified program components, and the development and design of financing tools and nonfinancial supports that are most appropriate for different sizes and sectors of medium- and heavy-duty vehicle fleets.

2. Ensure that the financial tools and nonfinancial supports required pursuant to the program are available to operators of medium- and heavy-duty fleets by January 1, 2023.
3. Develop a data collection and dissemination strategy for the program, and track project implementation.
4. Provide a website with information regarding the potential financing and grant options, and other technical assistance available through the program.

2022 Outcomes:

1. CARB staff consulted with various stakeholders and relevant state agencies through one-on-one meetings, forums, a listening session, surveys, training events, and regularly scheduled agency coordination meetings to discuss how to leverage planned or existing efforts. CARB/CEC/CPUC/GoBiz have recurring coordination meetings.
2. A suite of financial tools and nonfinancial supports is available today for operators of medium- and heavy-duty fleets. These programs range from financial resources such as loan assistance and monetary vouchers towards the price of a new vehicle purchase, to non-financial resources such as training webinars and web resources.
3. CARB, in partnership with CALSTART, have developed a new CARB-funded California Zero-Emission Vehicle Population Dashboard that compiles data and information about the deployment of financing for medium- and heavy-duty zero-emission vehicles. This dashboard will collect and disseminate information about financing programs and will help track implementation of all California medium- and heavy-duty funding projects.
4. CARB staff have developed a website , ZEV TruckStop, with information about all potential financing and non-financial options available through the program.

4. Community Engagement

4.1 Engage community representatives and stakeholders

CARB will solicit input on lessons learned and potential project changes as part of the annual Funding Plan for Clean Transportation Incentives, including Clean Transportation Equity Projects and Access Clean California and Technical Assistance/Capacity Building, Access Clean CA: Outreach Partner Network and Ongoing SB 350 Low-Income Barriers Report recommendations implementation (community transportation needs assessments)

Website: Low Carbon Transportation Investments and Air Quality Improvement Program | California Air Resources Board

Key Collaborators Community advocates, project administrators, SGC, CEC, Caltrans, CAPCOA, Air Districts, fleet owners/operators, tribal communities, market segments such as last mile delivery and drayage

Key Actions and Expected Results:

1. Conduct workgroup meetings from January through July to identify project needs and potential changes and develop a proposed Funding Plan, including:
2. Outreach through Access Clean California to outreach partners and project administrators on determining community-identified needs (funding, awareness-building, broader access to incentives).

Incorporating community ideas and addressing unique needs to develop an equitable path forward for investments and consider longer-range planning of funding needs.

2022 Outcomes:

1. *Between March and September 2022, CARB staff held 17 public meetings to solicit feedback on Low Carbon Transportation Investments and numerous one-on-one discussions with interested stakeholders and community advocates to develop the recommendations contained in the 2022/2023 Fiscal Year Funding Plan for Clean Transportation Incentives*
2. *CARB adopted the Funding Plan in November 2022*

4.2 Engage with communities participating in the Community Air Protection Program (CAP)

CARB will engage with communities participating in CAP to identify community needs and develop funding projects that meet those needs

Website: Carl Moyer Memorial Air Quality Standards Attainment Program | California Air Resources Board

Key Collaborators Community steering committee members, Air Districts

Key Actions and Expected Results:

1. Hold steering committee meetings and continue engagement with impacted residents to inform ongoing implementation of the CAP
2. Determine community-identified needs (funding, awareness-building, broader access to incentives).
3. Incorporate community ideas on path forward for investments, including longer-range planning of funding needs.
4. Determine how to minimize burdens (or potential burdens) of heavy-duty regulations, especially on small fleets and owner operators.
5. Provide support for DACs/LICs that have yet to be selected for participation in AB 617, but that do continue to suffer from disproportionate levels of air pollution.

2022 Outcomes:

1. Throughout 2022, all 35 local air districts collectively held or attended over 400 events, community steering committee meetings, workshops, and other events

to continue the conversation with community members. Many events were focused specifically on addressing issues within the communities selected to participate in the Program, but some events pertained more broadly to all heavily impacted communities within an air district. These meetings and events were attended by a combined total of over 24,000 members of the public.

2. Air districts also continually select and fund projects using CAP incentives within all impacted communities within their boundaries. As of November 2021, of the $376 million expended by air districts on projects so far, over $300 million has been spent within and benefiting disadvantaged communities, while over $350 million has been spent in a combination of disadvantaged and low-income communities.
3. Even as CARB and the air districts work to implement the emissions reduction programs already created and approved in the communities initially selected to participate in the Program in 2018, CARB has annually and continuously selected additional communities to participate; CARB and the air districts have taken the early lessons learned to better streamline the process for freshly-selected communities going forward, and staff are incorporating these lessons learned into a new *Community Air Protection Blueprint*, currently in development, and set to be considered by the Board for adoption in late 2023. The *Community Air Protection Blueprint* is a set of guidance for other staff at CARB, the air districts, community-based organizations, and community members that all participate in the Program.

4.3 Conduct outreach and hold listening sessions with communities

CARB will conduct outreach and hold listening sessions with communities to inform the development and implementation of clean transportation regulations, including:
Advanced Clean Fleets (medium and heavy-duty);
Heavy-duty Inspection and Maintenance; and
Zero emission Forklifts

Website: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets

Key Collaborators Community advocates, CAPCOA, Air Districts, fleet owners/operators, market segments such as last mile delivery and drayage

Key Actions and Expected Results:

1. Hold listening sessions to engage communities on regulatory efforts and identify potential concerns related to regulations and their impacts on communities.
2. Determine how to minimize burdens (or potential burdens) of heavy-duty regulations, especially on small fleets and owner operators.

2022 Outcomes:

1. CARB staff hosted a listening session which provided an overview of regulations but also asked participants about additional ideas for how to clean up heavy-duty vehicles in communities and support small fleets in their transition to zero-emission vehicles.

2. There have been numerous trainings, industry meetings, and other outreach efforts. targeted to small fleets to explain upcoming regulations and address concerns and barriers.

5. CA ZEV Market Development

5.1 CALGreen Building Codes:
CARB will work with Department of Housing and Community Development and Building Standards Commission to advance infrastructure requirements at multi-dwelling units and non-residential buildings to support light-duty [medium- and heavy-duty] ZEV charging in the CALGreen building code.

In December of 2021 CBSC approved proposed updates to the CALGreen building code. Starting January 1, 2023, the approved code changes will increase the number of EV capable spaces and require EV charging stations be installed. For multi-unit dwellings and hotels and motels, the updated code will require 10% of parking spaces to be EV capable (conduit and panel capacity for future charging station installations), 25% of spaces to be EV Ready (a level 2 cord-set compatible electrical receptacle) and an additional 5% of parking spaces have EV chargers installed for developments of 20 units or more. Additionally, for medium- and heavy-duty vehicles there will be a mandatory requirement to install charging infrastructure to support later additions of EV chargers up to 400 kW refueling in new warehouses, grocery stores and retail buildings that have off-street loading spaces.

Website: www.dgs.ca.gov/BSC/CALGreen#codes

Key Collaborators BSC; HCD; CEC; CPUC; GO-Biz; CaFCP; Local and Regional Government; Grid Operators, Electricity and Hydrogen Providers; Non-Governmental Organizations; Vehicle Manufacturers and Supply Chain

Key Actions and Expected Results:
1. CARB will provide support for the intervening cycle

2022 Outcomes:
1. CARB staff provided cost and emissions reduction analysis in support of proposed changes for the 2022 Intervening Code Cycle. The Code Advisory Council is scheduled to meet February 8-10, 2023, for public discussion of the submitted documents.
2. Developed appropriate methods to increase the number and type of locations for medium- and heavy-duty ZEV charging across California by adding manufacturing facilities and office buildings to existing requirements for charging infrastructure installation.

5.2 Assembly Bill 8 Annual Evaluation of and Report on Hydrogen Station Network:
Annual evaluation of fuel cell electric vehicle deployment and hydrogen station network development (AB 8).

Website: ww2.arb.ca.gov/resources/documents/annual-hydrogen-evaluation

Key Collaborators
CEC; GO-Biz; CDFA; DMV; Vehicle Manufacturers and Supply Chain; Grid Operators, Electricity and Hydrogen Providers

Key Actions and Expected Results:

1. Complete and transmit *Annual Evaluation* to CEC for final review by June 30 every year; public release follows, typically in the third quarterof each year
2. CEC publishes *Joint Agency Staff Report on AB 8* by December 31each year

2022 Outcomes:

1. Completed and published CARB's 2022 Annual Hydrogen Evaluation Report in September of 2022.

5.3 Hydrogen Station Network Self-Sufficiency Analysis Per AB 8.
Assessment of State of California support amount and timing for the hydrogen fueling station network to achieve financial self-sufficiency.

A final report was published in October 2021, finding that self-sufficiency can be achieved by 2030 with continued growth of the hydrogen network alongside growth of the in-state fuel cell electric vehicle fleet. Several scenarios also point to the ability for hydrogen fuel to reach price parity with gasoline in this time alongside expansion of renewable and low-carbon hydrogen fuel sources.

Website: www2.arb.ca.gov/resources/documents/self-sufficiency-report

Key Collaborators CEC; GO-Biz; Vehicle Manufacturers and Supply Chain; Grid Operators, Electricity and Hydrogen Providers

Key Actions and Expected Results:

1. CARB will evaluate the need for updated analysis going forward.

2022 Outcomes:

1. No further analysis occurred in 2022.

5.4 Interagency agreements:
CARB/CEC ZEV workforce training and development in priority communities: Support workforce training and development and career pathway development projects, including curriculum, ZEV manufacturing and pre-apprenticeship training, train-the-trainer, tuition reimbursement, and other ZEV and infrastructure training in 2022.

Key Collaborators CEC; GO-Biz; Labor and Workforce Development; Employment Training Panel; Local and Regional Government; Non-Governmental Organizations

Key Actions and Expected Results:

1. Implement agreement activities (above) in 2022
2. Explore interagency agreement with CEC on new pre-apprenticeship project
3. Identify existing and/or potential new interagency agreements and/or partnerships for dealership training and adult/vocational curriculum development

2022 Outcomes:

1. *Continued interagency agreement with CEC to implement the Inclusive, Diverse, Equitable, Accessible, and Local (IDEAL) ZEV Workforce Training and Development.*
2. *Based on conversations with CEC, redirected funding to Foundation for California Community Colleges to provide ZEV workforce training and development support to community colleges.*
3. *Held one workgroup meeting (April) to solicit public input on workforce training and development for priority populations through adult education and vocational schools.*

5.5 Technical assistance/capacity-building funding to community-based organizations for outreach, community transportation needs assessments, and clean mobility project development.

Conduct pilot funding for outreach capacity-building, including fellowship opportunities, for community-based organizations in 2022. Additionally, continue funding for community transportation needs assessments, as outlined below, to increase clean mobility access for priority communities.

Key Collaborators CEC; SGC; Caltrans; Local and Regional Government; Federal and Tribal Governments; Non-Government Organizations; Communities

Key Actions and Expected Results:

1. Evaluate overall framework for providing technical assistance and capacity-building and modify as needed, based on lessons learned
2. Support outreach pilots for community-based organizations in 2022
3. Continue to implement community transportation needs assessments projects in 2022
4. Ongoing: continue third-party evaluation and funding for future community transportation needs assessments
5. Develop best practices guidance and recommendations for project improvement in 2023

2022 Outcomes:

1. Technical assistance, capacity-building, and community transportation programs were modified based on direct community feedback. These efforts are ongoing, with continued funding, and are being implemented through

several CARB efforts including STEP, CMO, and through new programs launching in 2023.
2. Six outreach pilots lead by community-based organizations wrapped up in 2022. Additional pilots will be selected and implemented through ACCess Clean California in 2023 with an increased emphasis on building long-term community-based organization capacity to conduct outreach.
3. Third-party evaluation of community transportation needs assessments and approaches is ongoing with the development of key technical memorandums providing program design recommendations and outlining the process for creating a participatory evaluation with community stakeholders.

5.6 Hydrogen Station Network Development Support

CARB's hydrogen fueling station validation program provides station confirmation testing services for California Energy Commission (CEC) funded (AB8) and privately funded stations, including light-duty and medium and heavy-duty (if applicable). Applicants of CEC funded stations are required to have stations tested to ensure that fuelings are fast, safe, and consistent prior to opening. Likewise, hydrogen fuel cell electric vehicle (FCEV) manufacturers require testing of both publicly and privately funded stations prior to opening. The program's primarily goal is to accelerate the development and proliferation of a self-sufficient, safe, and reliable hydrogen fueling station network for a growing fleet of FCEVs, a key component of CARB's ZEV goals.

Key Collaborators CEC; GO-Biz; CDFA/DMS, Vehicle Manufacturers, hydrogen stations operators, technology providers, SAE, CSA, and NREL

Key Actions and Expected Results:

1. On-going: Conduct hydrogen fueling station confirmation testing using the hydrogen station testing equipment performance (HyStEP) device on light-duty stations as well as provide preliminary testing results for medium and heavy-duty stations. Anticipate testing a minimum of 16 light-duty stations and support preliminary testing of 2 medium and heavy-duty hydrogen stations in 2022.
2. On-going: Hydrogen fueling standard protocol and test method development. Continue involvement in the SAE and CSA/ANSI standard protocols and test methods developments for light-duty fuel cell vehicles, and preliminary work on the medium and heavy-duty fueling standard protocol development.
3. On-going: Potential regulation development for light-duty hydrogen fueling stations. CARB and CDFA DMS continue collaborative efforts on potential hydrogen fueling station regulations for light-duty vehicles. Additionally, CARB has conducted numerous discussions with stakeholders, including authority having jurisdiction (AHJ) on proposed aspects of the regulation and infrastructure needs. There is a consensus by all stakeholders that such a regulation would be beneficial.
4. On-going: CARB/CEC interagency agreement to build the next generation HyStEP 2.0 device. CARB and CEC have an interagency agreement, approved by CEC in June of 2021, to fund the building the next generation testing device, HyStEP 2.0. CEC, CARB, and other stakeholders will work with NREL on the HyStEP

2.0 design, which is expected to be completed in early 2022. CARB will hire a contractor in late 2022, through the request for proposal (RFP) process, to build HySTEP 2,0. which is primarily designed to support the advancement of light-duty hydrogen fueling stations but may have applications for medium and heavy-duty hydrogen fueling stations.

2022 Outcomes:

1. CARB staff supported the development of the Energy Commission's next hydrogen station funding solicitation, GFO-22-607, which was released on October 21, 2022. This solicitation seeks to fund new hydrogen fueling stations particularly in areas that are more rural and support fuel cell electric vehicle deployment in disadvantaged communities currently outside of the funded network.
2. CARB staff continue to collaborate with CDFA DMS on the development of light-duty hydrogen fueling station testing regulation. CDFA DMS hosted a public pre-rulemaking workshop on August 11, 2022. CARB and CDFA DMS staff continue to develop next steps to inform the ongoing development of the regulation.
3. The HySTEP 2.0 device Request for Proposals has been submitted to DGS and is awaiting approval. Once approved, CARB will post the RFP and host a pre-bid webinar.

6. Mobility and Technology Advancement

6.1 California Integrated Travel Project:
Building off the interagency agreement and published Market Sounding Report, CARB and Caltrans will continue their partnership to strengthen an integrated payment system for various transportation networks.

Website:
www.calitp.org/assets/Mobility.Accounts.Market.Sounding.Summary.Report.pdf

Key Collaborators CalSTA; CalTrans; Technology and Mobility Service Providers;Transit Agencies; Communities

Key Actions and Expected Results:

1. Implement Market Sounding Report findings and next steps: by providing information and policy signals on how mobility accounts can be created to deliver benefits such as multimodal trip planning, simplified access to discounts and subsidies, and seamless payment from customers
2. Explore ways to align Cal-ITP standards with climate investment programs such as Low Carbon Transit Operation Program (LCTOP) and regulations such as Electric Vehicle Supply Equipment (EVSE) Standards Regulation.
3. Investigate opportunities to build off Cal-ITP streamlined eligibility verifications for CARB incentive programs such as for CARB's Low Carbon Transportation Equity Projects.

4. Cal-ITP will provide a payment solution that serves all customer groups across mobility services, including public transit, rail, bike share, scooter share, car share and transportation network companies (TNCs); the goal is to introduce a new payment option to both new and established services with minimal barriers to entry; this system will act as an intermediary in the open payment system, connecting unbanked customers to the payment networks

2022 Outcomes:

1. Launched Cal-ITP Benefits, a fully digital eligibility verification process for transit riders; verifying eligibility digitally before linking discounts to contactless bank cards in collaboration with Monterey-Salinas Transit
    - Press Release
    - Benefits web app
    - Case Study on putting contactless debit cards into the hands of unbanked transit riders
2. On the above project, worked with CDT on verifying a rider's digital identity before linking discounts to bank cards, using transit as a catalyst for creating a digital identity
    - Digital Identity and Benefits Market Sounding Report
3. Low-income electric vehicle (EV) owners in the San Joaquin Valley received reloadable contactless debit cards to use at EV charging stations as part of a nine-month demonstration project launched by Valley Clean Air Now (Valley CAN) and the State of California's Cal-ITP, GO-Biz, and CARB
    - Press Release
4. DGS and Cal-ITP release Master Service Agreements (MSAs) that allow public transportation providers anywhere in the U.S. to acquire the hardware / software to allow riders to pay their fare using a contactless credit/debit/prepaid card or mobile wallet
    - Press Release
5. Nine agencies purchased off of California DGS's approved contactless payment hardware / software MSAs, including:
    - South Carolina's Coast RTA is the first non-California transit agency to buy from DGS MSAs and implement a modern fare system that accepts riders' mobile wallets and bank cards
    - Press Release
6. Cal-ITP negotiated below-market rates for discounted cellular data plans that can be tapped by public transportation providers in California—and across the U.S.—to connect their contactless fare payment and other devices to the internet
    - Press Release

6.2 Clean Mobility Evaluation:

Contracts with academia and clean mobility equity partners to evaluate clean mobility (carshare, etc.) and community transportation needs assessment projects in priority communities.

Key Collaborators CEC; Caltrans; CalSTA; Local and Regional Government; Non-Governmental Organizations; Academia

Key Actions and Expected Results:

1. Clean Mobility Evaluation: develop evaluation methodology, including hypotheses, metrics, and data needs, and initiate evaluations of selected clean mobility and community transportation needs assessment projects in 2022; Ongoing: monitor contract progress; report due June 2024
2. Community Transportation Needs Assessments Evaluation: develop metrics and evaluate up to 32 community transportation needs assessments, conduct relevant discovery activities to identify best practices, and provide guidance to grantees on needs assessment implementation; monitor contract progress through 2022

2022 Outcomes:

1. UC Berkeley initiated evaluations on 11 of CARB's clean mobility projects
2. Evaluation plans, including methodology, hypotheses, metrics and data needs developed for the 11 projects under evaluation.
3. Researchers are conducting interviews with project grantees on 'lessons learned,' and working with grantees to gather telematics data, conduct participant surveys, and characterize pre- and post-project conditions

7. External Market Development

7.1 International ZEV Alliance

Comprised of 18 jurisdictions, the International ZEV Alliance members seek to collaborate with other governments to expand the globalZEV market and enhance government cooperation on ZEV policies, in order to strengthen and coordinate efforts to combat air pollution, limit global climate change, reduce oil dependence and increase ZEV deployment. Focus area reports in 2021 will include the used ZEV market; supporting jurisdictions with 100% ZEV market ambitions; and the charging ecosystem. CARB is a founding member organization.

Website: www.zevalliance.org

Key Collaborators CEC; CPUC; GO-Biz; CalEPA; Other States

Key Actions and Expected Results:

1. The three focus areas for 2022: Charging solutions for medium- and heavy-duty zero-emission vehicles; promoting ZEV battery reuse, recycling, and sustainability; quantifying the environmental justice benefits of ZEVs
2. Deep-dive working sessions: These are optional 90-minute virtual meetings to facilitate knowledge sharing and collaborative problem solving on a specific ZEV policy challenge, led by member governments and supported by the Secretariat. The topics would be nominated by members and then voted upon through a survey process. The Secretariat will also produce an

internal summary memo following each session. 3 deep dive working sessions are planned for 2022.

3. ZEV Community: The Secretariat will continue to coordinate activities with the ZEV Community. CARB is part of the ZEV Community group of governments with zero-emissions targets which is co-hosted by the Under2 Coalition in partnership with C40 Cities and the US Climate Alliance. Activities include webinars, the ZEV Forum series, and publishing blogs and case studies.
4. In-person annual assembly: Building on monthly meetings, the ZEV Alliance members convene an annual Assembly meeting to discuss member priorities, see ZEV progress at site visits, and advance long-term planning. For 2022, assuming members can travel safely, the 2022 Assembly will be hosted in Germany in May.
5. COP 27: The 27th Conference of Parties (COP 27) will be held in Sharm El-Sheikh, Egypt in November 2022. As at previous COP meetings, the Secretariat, ZEV Alliance members, and key partners will discuss opportunities to organize side events to disseminate findings from focus areas research.

2022 Outcomes:

1. *The International ZEV Alliance completed reports on the focus areas for 2022 (https://zevalliance.org/publications/), held deep-dive sessions on public charging reliability, and hosted ZEV Community events on heavy-duty ZEV procurement and international partnerships.*
2. *COP 27 was hosted in Egypt where countries reached a historic decision to establish a loss and damage fund, particularly for nations most vulnerable to the climate crisis. Additionally, the Netherlands and Sweden announced committing to the Zero-Emission Government Fleet Declaration, which was already endorsed by Canada, Germany, New Zealand, and Norway. By signing this declaration, governments commit to 100% light-duty ZEV acquisition for their government-owned and operated fleets and aim for 100% ZEV medium- and heavy-duty vehicle purchase by no later than 2035.*

7.2 Multi-State ZEV Task Force

Along with 15 other states and the District of Columbia, California is a member of the Multi-State ZEV Task Force, which serves as a unique forum to catalyze, guide, and support state action to advance electrification of light-, medium-, and heavy-duty vehicles. The Task Force is led by the Northeast States for Coordinated Air Use Management (NESCAUM). CARB will continue dialogue and collaboration with member states, especially around development of the next version of the ZEV regulations.

Website: www.nescaum.org/topics/zero-emission-vehicles

Key Collaborators CEC; CPUC; GO-Biz; Vehicle Manufacturers, Vehicle/Equipment Manufacturers and Supply Chain, Non-Governmental Organizations

Key Actions and Expected Results:

1. Finalize Medium, Heavy-Duty ZEV Action Plan
2. Coordinate multi-state public education campaign
3. Coordinate and collaborate on the buildout of publicly accessible charging infrastructure (permit streamlining, interoperability, equipment standards, data collection, etc.)

2022 Outcomes:

1. *The Multi-State ZEV Task Force (comprised of 17 states, D.C., and Quebec) finalized the Multi-State Medium- and Heavy-Duty Zero-Emission Vehicle Action Plan in July 2022 (https://www.nescaum.org/initiatives/mhd-zev-initiative).*
2. *Continued its fourth year of the Drive Change. Drive Electric public awareness campaign by adding videos that answered questions about driving electric. Learn more at https://driveelectricus.com*

7.3 Veloz

The California-based nonprofit works with its unique and diverse membership to support consumer awareness and accelerate uptake of ZEVs. Veloz's *Electric For All* campaign and the associated EV consumer shopping tool www.electricforall.org that launched in 2018 has had significant impact and has plans to launch again in 2022. CARB is a founding member organization. (Also see entry for Veloz under Consumer Awareness section below.)

Website: www.Veloz.org

Key Collaborators CEC; CPUC; GO-Biz; Caltrans; OPR; CalSTA; CalEPA; Legislature and Governor's Office; CaFCP; Local and Regional Government; Vehicle and Engine Manufacturers; Grid Operators, Electricity and Hydrogen Providers; Non-Governmental Organizations; Academia; International Relationships; Fleets

Key Actions and Expected Results:

1. Veloz will hold 3 summits in 2022, gathering ZEV industry and related stakeholders to discuss the run up to 2035; March, July, and November
2. Veloz will hold 6 webinars (approx. every other month) to discuss timely policy and technical solutions to reach 2035 EO and bring the industry together.
3. Veloz plans to launch its next statewide EV Electric For All public awareness campaign in mid-2022. If the appropriate funding is received, Veloz aims to create a 2-year campaign, focus on priority populations, and increase funded partnerships to drive Electric For All and ElectricForAll.org as a top consumer EV shopping and education tool.
4. Veloz aims to launch a ZEV Messaging Research Project in the spring of 2022 to better understand which messages will help convince Californians to go EV.
5. Veloz is looking to leverage its programs beyond CA in the coming years through strategic partnerships.

2022 Outcomes:

1. *Veloz hosted 8 virtual events in 2022 to accelerate the ZEV market, communicate the value of zero-emission transportation, and drive policy education.*
2. *Veloz commissioned a survey of California voters' views of ZEVs and messaging to persuade adoption (https://www.veloz.org/resource/veloz-and-fm3-memo/. The results were used to inform their public awareness campaign.*

7.4 California Fuel Cell Partnership

The partnership is focused on growing the market for fuel cell electric vehicles and hydrogen fuel. Members collaborate on ideas and actions that will create a sustainable future for zero-emission cars, trucks and buses. CARB is a founding member organization.

Website: https://cafcp.org

Key Collaborators CDFA Weights and Measures; GOBiz; Vehicle and Engine Manufacturers; Hydrogen Providers and Retail Station Developers; Local and Regional Government; Fleets; Academia; Federal Government Agencies

Key Actions and Expected Results:

1. Initiate, develop and publish a heavy-duty roadmap strategy based on the 2035 FCET Vision.
2. Establish the organization as a national nonprofit.
3. Communicate the benefits of fuel cell vehicles and hydrogen through outreach materials, webinars, events, social media and media relations.
4. Provide education and outreach to state and local governments, priority communities, NGOs, and other stakeholders, securing greater awareness and support.
5. Ensure outreach to light and heavy-duty applications, including expanding awareness and education among fleet and transit agencies on new Advanced Clean Trucks and Innovative Clean Transit regulations.
6. Continue development of CaFCP's station map and network progress reports.
7. Integrate all new public hydrogen stations into Station Operational Status System (SOSS) and expand visualization and other capabilities to increase stakeholder and consumer value.

2022 Outcomes:

1. The Hydrogen Fuel Cell Partnership (a nationally-focused 501(c)(3)) was formally launched on September 20, 2022. CARB continues to be an active Board-level member.

8. Consumer Awareness

8.1 Veloz

Veloz is a California nonprofit focused on accelerating the electric vehicle market. Its *Electric For All* consumer awareness campaign—the largest electric vehicle

marketing campaign in the state—is in its fourth phase in 2022, launching in mid-2022. The organization further advances vehicle electrification through its sales dashboard, online shopping tool, webinars, public summits, media outreach, monthly blog and support of partnerships within the ZEV community. CARB is a founding member of Veloz.

Website: www.Electricforall.org

Key Collaborators CEC; CPUC; GO-Biz; Caltrans; OPR; CalSTA; CalEPA; Legislature and Governor's Office; Local and Regional Government; Vehicle and Engine Manufacturers; Grid Operators, Electricity and Hydrogen Providers; Non-Governmental Organizations; Academia; International Relationships; Fleets

Key Actions and Expected Results:

1. Track Electric For All phase four campaign reach and engagement
2. Track and report 2022 webinar engagement
3. Track and report 2022 summit engagement
4. Veloz is adding used EV content and resources to the ElectricForAll.org website to bridge the information gap and encourage the adoption of used EVs.

2022 Outcomes:

1. *Veloz launched content on used ZEVs on the ElectricForAll.org website (https://www.electricforall.org/used-evs/).*
2. *Veloz was awarded a $2.5 million grant from the Governor's Office of Business and Economic Development to improve consumer awareness of ZEV technologies and their benefits and to increase access to ZEVs in priority communities by helping convert this awareness into decisions to drive or ride in ZEVs.*
3. *Veloz launched their Myths Busting Myths Electric For All public education campaign (https://www.electricforall.org/campaign/. The 15-month campaign features paid advertising – 50% of which is focused on priority communities – throughout California and across digital channels. In addition, the effort raises ZEV education and awareness in hard-to-reach communities through strategic partnerships with eight funded partner organizations and community outreach efforts that complement targeted, multilingual media messaging.*

8.2 DriveClean.ca.gov

DriveClean.ca.gov is a consumer clean car buying guide with a focus on ZEVs that provides all vehicle models sold in California since model year 2000, ranks them by smog and GHG score, and allows sorting by fuel economy, electric range and incentives. DriveClean delivers information on ZEV benefits, functionality, charging and fueling, and provides an extensive clean car incentives database that is searchable by zip code.

Website: www.DriveClean.ca.gov

Key Collaborators Non- Governmental Organizations, State and Local Government

Key Actions Expected Results

1. Refine information to best meet audience needs, incorporating resources to serve car buyers at all income levels.
2. Explore opportunities with partners to share and leverage DriveClean's vehicle and incentives data for other consumer-facing ZEV web platforms.
3. Collaborate with Veloz and the Electric For All campaign to deliver car buyers the most useful information and tools in their ZEV journey.

2022 Outcomes:

1. *In 2022 CARB secured a plan and funding to upgrade the DriveClean.ca.gov website for work to be completed in early 2023.*
2. *CARB partnered with AAA to help their team build an Electric Car Resources web page with shared content from the DriveClean.ca.gov website.*
3. *In 2022 CARB analyzed car buyer research and facilitated multi-divisional collaboration on consumer messaging, with particular attention on priority populations.*

8.3 Access Clean California (formerly known as One Stop Shop)

Additional support for outreach to priority communities to increase awareness of clean vehicle ownership incentives and other clean mobility options and ensure equity in all ZEV-related programs and regulations.

Website: https://accesscleanca.org/

Key Collaborators CEC; CPUC; SGC; GOBiz; Caltrans; Local and Regional Government; Federal and Tribal Governments; Non-Governmental Organizations and communities

Key Actions and Expected Results:

1. Launch Benefits Finder: Conduct full scale public launch of Benefits Finder web tool and continue expanded outreach through community-based organizations and other outreach partners in 2022.
2. Continue efforts to expand web tool to include other state and local low-income consumer-focused programs, in addition to all of CARB's clean vehicle ownership projects.
3. Continue publication, streamlining and ongoing improvement of incentive and accessibility information, outreach resources, consumer tools and buying guides
4. Strengthen and expand outreach partnerships in 2022

2022 Outcomes:

1. Continued to build-out and add functionality to the Benefits Finder application tool, including achieving integration with all of the connected programs.

2. Developed a high-touch case management system to help applicants successfully navigate the entire application process.
3. Expanded outreach partner network, adding community-based organizations representing priority populations.
4. Outreach partners conducted outreach in priority communities throughout the state.
5. Benefits Finder experienced steady growth in application rates in each quarter of 2022.

9. Worker Awareness

9.1 Educational Events

Conduct events for heavy-duty ZEV fleet owners to support increased vehicle uptake (e.g., infrastructure requirements, maintenance, etc.). CARB monitors the number of attendees at these events and seeks stakeholder input, including surveys of event effectiveness.

Website: www.arb.ca.gov/truckstop

Key Collaborators Non-Governmental Organizations; Air Districts; Vehicle Manufacturers and Supply Chain, Local and Regional Government; Fleets; Financing Institutions

Key Actions and Expected Results:

1. Provide assistance and information for 200-300 participants per event
2. Event curriculum currently under development for MHD ZEV forums
3. Ensure that the curriculum for these events is designed for all operators including smaller fleets, many of which are owned and operated in underserved communities

As communities begin to electrify CARB will monitor the number of attendees at these events and seeks stakeholder input, including surveys of event effectiveness

2022 Outcomes:

1. Four, one daylong educational and instructional webinars conducted with over 900 in attendance.
2. Worked with industry to develop curriculum for two, one day-long instructional webinars for MHDZEVs
3. Developed contract to investigate needs of regulated communities and applied this information to address the needs of small fleets and underserved communities
4. Contractor surveys attendees after each event to obtain input regarding event effectiveness and suggestions for new topics.

9.2 Educational Material

CARB will provide outreach materials to support medium- and heavy-duty ZEV regulations. This material includes the newly introduced MHD ZEV informational website.

Website: www.arb.ca.gov/truckstop

Key Collaborators Air Districts; Vehicle Manufacturers and Supply Chain; Local and Regional Government; Fleets; Financing Institutions

Key Actions and Expected Results:

1. Provide materials requested by medium- and heavy-duty CARB programs
2. Send mailers to the regulated community
3. Update digital assistance such as the TruckStop webpage
4. Target smaller fleets, many of which are owned and operated in underserved communities.

Continue to provide outreach material development to support medium- and heavy-duty ZEV regulations, including ongoing updates to the MHD ZEV website.

2022 Outcomes:

1. Developed factsheets and online resources requested by medium- and heavy-duty CARB programs
2. Sent over 630,000 mailers to the regulated community
3. Created zero-emissions specific online resources (arb.ca.gov/zevtruckstop)
4. Targeted known smaller fleets when advertising day-long educational events by utilizing data collected from CARB regulation reporting systems
5. To support medium- and heavy-duty ZEV regulations, developed instructional guides for introducing ZEV terminology and technology, developed online hub of ZEV tools and educational materials, and recorded videos of educational events and posted them on website