California Air Resources Board ZEV Action Plan

The Governor's Office of Business and Economic Development (GO-Biz) is leading the next phase of California state government's collaboration to ensure a robust and actionable zero-emission vehicle market development strategy is in place to meet the goals of the executive order signed by Governor Newsom in September 2020. GO-Biz has published a Zero-Emission Vehicle Market Development Strategy that identifies California's key principles for growing the ZEV market, showcases the steps state government is taking to electrify transportation and outlines how further collaboration and effort will accelerate the move to zero emissions.

GO-Biz has asked each state agency listed in the ZEV Market Development Strategy to provide key objectives and metrics related to their work to advance vehicle electrification. The document below outlines the California Air Resources Board's (CARB) response to this request. GO-Biz has asked that the agency action plan list very high-level actions with key milestones and metrics.

Table 1 below lists the key CARB objectives identified in the Zero-Emission Vehicle Market Development Strategy. Following the table, for each objective, programs and key collaborators and key milestones are listed.

At the forefront of these efforts is recognition that we must increase transportation equity and access in priority population communities throughout California.

Table 1: CARB Objectives

Legend

- D: Direct pillar connection/Lead pillar development
- I: Indirect pillar connection /Support pillar development

Pillars				Objectives
Vehicles	Infrastr.	End User	Workforce	
D	D	I		**Analysis**. Maintain shared analytical understanding of the role of transportation in air quality/toxic and climate emissions.
D	I	I	I	**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		**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	D	D	D	**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, 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	**Mobility and Technology Advancement**. Invest in research, development, and demonstration to advance clean mobility and ZEV technology, including opening/enabling new markets.
	D	I	D	**Information Sharing**. Feed aggregated OEM and market data into agency policymaking processes.
D	D	D		**External Market Development**. Leadership/collaboration with other states, nations, federal government, local government and community-based organizations, etc.

		D	D	**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.

Analysis

CARB maintains shared analytical understanding of the role of transportation in air quality, toxic air contaminants and greenhouse gas emissions. CARB develops, maintains and publishes a number of analytical tools and reports. Below are some of the key tools and reports related to the ZEV market. All of the efforts listed below incorporate equity and include robust consideration of air pollution and climate change impacts on priority communities.

1. **AB 32 Scoping Plan:** AB 32 required California to reduce its greenhouse gas emissions to 1990 levels by 2020—a reduction of about 15% below emissions expected under a business-as-usual scenario. The Scoping Plan describes the approaches taken to achieve that goal. The plan was updated in 2017 as a result of SB 32 for a 2030 target of 40% below 1990 levels. The next Scoping Plan will chart the path to statewide carbon neutrality by mid-century, utilizing an expansive scope that includes energy-related emissions as well as the net carbon flux associated with natural and working lands. As such, the plan will cover the transportation sector in depth and provide directional messaging that will inform future policy mechanisms at CARB for years to come.

   Key Collaborators: CPUC; CEC; CalEPA; CNRA; CDFA; CalFire; CWDB; SWRCB; SGC

   Key Results and Actions:
   - Assess the policy signals necessary to transition to ZEVs in the timeframe necessary to achieve carbon neutrality.
   - Recommend long-term carbon-intensity targets for Low Carbon Fuel Standard (LCFS) program to promote zero-emissions fuels and technology in transportation.
   - Arrange for a just workforce transition away from the petroleum fuels industry to sustainable, low-carbon technologies as part of the growing green economy.
   - Ensure that clean technology is affordable and accessible to low-income communities.
   - Analyze the air quality and public health benefits associated with decarbonizing the transportation sector.

   2021 Outcomes:
   - In June 2021, CARB established the AB 32 Environmental Justice Advisory Committee (EJAC) and begun the process to develop the 2022 Scoping Plan.
   - Over the course of the second-half of 2021, CARB held 12 workshops to discuss topics related to carbon neutrality and the 2022 Scoping Plan.
   - CARB has initiated modeling work to identify pathways to carbon neutrality, which includes modeling assessing various decarbonization strategies for the transportation sector based on the Governor's ZEV EO, input from the EJAC, and public feedback. Preliminary modeling results will be available in Q1 or Q2 2022. Subsequent modeling will provide information on the air quality and public health benefits associated with carbon neutrality pathways.
   - The final 2022 Scoping Plan Update is due at the end of 2022.

2. **Mobile Source Strategy:** The 2020 Mobile Source Strategy is an integrated planning effort to identify the technology mix trajectories and specific actions needed to achieve California's clean air and greenhouse gas emissions targets over the next 30 years. Actions in the strategy will deliver broad environmental and public health benefits, support efforts to modernize and upgrade transportation infrastructure, enhance system-wide efficiency, provide more equitable access to clean transportation and mobility options, and promote clean economic growth in the mobile sector.
   Key Collaborators: CEC, CPUC, GoBiz, CalSTA, local air districts
   Key Results and Actions:
   - Revised draft 2020 MSS for public comment and 3rd workshop in April 2021
   - Proposed 2020 MSS for public comment and Board consideration in Summer 2021
   - Technology mix trajectories showing the levels of cleaner technologies needed for the transportation sector to reduce emissions to the levels needed to meet air quality targets, and bring us closer to achieving carbon neutrality in 2045:
   - On-road light-duty scenario targeting 100% ZEV & PHEV sales by 2035
   - On-road medium- and heavy-duty vehicle scenarios targeting 100% ZEV sales by 2035 combined with accelerated turnover to maximize near term air quality benefits
   - Off road scenarios targeting full transition to ZEV by 2035 for sectors with smaller engines including SORE, TRUs, and forklifts; accelerated turnover for construction /industrial/mining, agricultural equipment, commercial harbor craft; and introduction of cleaner technologies for locomotives, ocean going vessels, aircraft, where possible to require under State/local authority, and recommending cleaner standards and in-use requirements from applicable federal/international authorities.
   - Programmatic concepts including ZEV sales/fleet requirements, cleaner standards for combustion technologies, and in-use requirements will be developed into measures and federally enforceable commitments through the State SIP Strategy, and further into regulations/programs through the regulatory development process.
   - 2021 Outcomes:
     - The revised draft 2020 MSS was released for public comment on April 21, 2021 and a third public workshop was held on May 6, 2021.
     - The final 2020 MSS was released September 28, 2021 and was heard by the Board on October 28, 2021.
     - The final document will be forwarded to appropriate policy and fiscal committees of the California Legislature as required by California Senate Bill 44

3. **Low Carbon Transportation and Air Quality Improvement Program Funding Plan:** The plan provides a framework for mobile source incentives to cut greenhouse gas,

criteria pollutant and toxic air contaminants through deployment of advanced technology and clean transportation in the light- and heavy-duty sectors. Each year the legislature appropriates funding to the program, triggering an annual funding plan supported by guidelines for these investments.
Key Collaborators: CEC; CPUC; CalSTA; CTC; CalTrans; Local and Regional Government; Vehicle Manufacturers and Supply Chain; Fleets; Non-Governmental Organizations; Communities
Key Results and Actions:

- Proposed plan for public comment and Board consideration in fall 2021
  - Proposed FY 2021-22 Plan released for public comment in October and approved by the Board November 19, 2022.
- Conduct enhanced outreach efforts to share information and seek feedback from communities and underrepresented stakeholders/priority communities
  - Conducted enhanced outreach through small fleet focus groups and a community listening session in addition to 18 public work groups and 2 public workshops
- Incorporate workforce training and development opportunities into existing incentive projects
  - Incorporated workforce training and development opportunities into existing projects and dedicated funding to workforce training and development
- Develop metrics and data collection plans to measure behavioral changes and the socioeconomic benefits of incentives, connected to the ZEV Strategy website
  - Metrics and data collection plans included
- Focus on reducing barriers to advanced zero-emission technologies, especially for the most challenged fleets and consumers
  - Focus on reducing barriers to advanced zero-emission technologies included

4. **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, a one-stop-shop 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.
   Key Collaborators: CEC; CPUC; GO-Biz; SGC; CWDB; CalTrans; Local and Regional Government; Federal and Tribal Governments; Non-Governmental Organizations; Communities

Key Results and Actions:

- 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
    - CARB funds needs assessments through its Clean Mobility Options Voucher Pilot (CMO)and Sustainable Transportation Equity Pilot (STEP) projects and is providing community clean mobility project technical assistance through these projects as well. Access Clean California also provides outreach funding and technical assistance to community outreach partners and community-based organizations. $5M has been allocated through the latest approved Funding Plan for outreach, technical assistance and capacity-building.
- Outreach Roadmap measures will be further coordinated with state government and local agencies
    - CARB meets regularly with various state agencies, air districts, and other project administrators to implement the Outreach Roadmap strategies. Access Clean California (administered by GRID Alternatives) is instrumental in helping to connect the various outreach efforts amongst state and local agencies, as well as coordinating implementation of the Outreach Roadmap.
- A draft grants and solicitations best practices document is anticipated to be released for public comment in 2021, and can help inform potential changes to clean transportation and other incentive projects
    - This has taken longer than anticipated but is now slated for early 2022. Staff are integrating this guidance into the upcoming three-year investment strategy document for the Low Carbon Transportation Investments.
- Establish Access Clean California as unifying and streamlining portal for priority community access to incentives
    - Access Clean California will be launching full scale once incentive projects regain funding; continual upgrades are being made to the Benefits Finder web tool and outreach partner resource hub; additional outreach partnerships are ongoing to expand the outreach network; an income verification pilot conducted in 2021 will be rolled out in 2022; the project team has been working with other state and local incentive project administrators, such as air districts and utilities, to integrate their projects into Access Clean California.

Regulation

To achieve air quality standards and climate change goals, CARB regulates emissions from motor vehicles and other off-road mobile sources. These regulations are typically applied to the emissions performance of new vehicles and equipment, but are also, in specific cases, applied to fleet users. CARB has organized and led the development and implementation of light-duty ZEV regulations since 1990. Medium- and heavy-duty vehicle regulations have recently turned attention to zero-emissions standards and comprise a combination of manufacturer and fleet requirements. Transportation sector

emissions, along with congestion, are increasing, despite improved emissions performance resulting from motor vehicle criteria pollutant and greenhouse gas emissions regulations, amplifying the need for new actions with mobility. Off-road vehicle and equipment are increasingly important contributors to overall mobile source emissions. Regulations for off-road sources are also focused on transitioning to zero-emissions. CARB is committed to equity and priority population outreach integral to its regulatory activities.

1. **Advanced Clean Cars 1:** Advanced Clean Cars 1 is comprised of regulations covering criteria and greenhouse gas emissions standards for new passenger cars and light-duty trucks and requirements for automakers to sell zero-emission vehicles. The ZEV requirements are expected to result in about 10% of new car sales to be zero emissions by 2025.
   Key Collaborators: Vehicle Manufacturers and Supply Chain; CEC; CPUC; Federal and Tribal Governments; Other State Governments
   Key Results and Actions:
   - Continue to track new ZEV sales in the state and enforce auto manufacturer requirements
   - Regain regulatory authority from federal government
     - The waiver for CARB's light-duty zero-emission vehicle and greenhouse gas emission standards remains revoked by the SAFE Part 1 Federal Rule. Until California's authority for its zero-emission and greenhouse gas emission standards for light-duty vehicles is restored, CARB is administering these standards on a voluntary basis. Auto manufacturer requirements were enforced for criteria emission standards.

2. **Advanced Clean Cars 2:** In addition to continuing standards for criteria and greenhouse gas emissions, the Advanced Clean Cars 2 regulation will set ZEV requirements with a goal of reaching 100% ZEV sales by 2035, with implementation beginning post-2025. 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.
   Key Collaborators: CEC; CPUC; BAR; Vehicle Manufacturers and Supply Chain; Non-Governmental Organizations; Local and Regional Government; Federal and Tribal Governments; Other State Governments; Communities
   Key Results and Actions:
   - Public workshops and community engagement: spring and fall 2021
     - Completed three public workshops in May, August and October 2021
     - CARB staff also hosted a community listening session on clean transportation, including the Advanced Clean Cars 2 rulemaking.
   - Public comment period and Board consideration mid-2022
     - Board Hearing for consideration of proposed regulation in June 2022

3. **Clean Miles Standard:** The Clean Mile Standard is a regulation to achieve zero-emission miles and reduce greenhouse gas emissions from Transportation Network Company operations. The draft regulation is proposing 90% of vehicle miles traveled from transportation network companies such as Uber and Lyft be zero-emission miles by 2030.
   Key Collaborators: CPUC; CEC; Local and Regional Government; Grid Operators, Electricity and Hydrogen Providers; Fleets; Non-Governmental Organizations; Organized Labor; TNC Drivers.
   Key Results and Actions:
   - Board consideration May 2021
     - Board Adopted proposed regulation in May 2021
   - Support CPUC adoption of implementing regulation
     - CPUC proceedings now initiated to establish implementation requirements

4. **Clean Fleets:** By the end of 2021, propose a new regulation to the Board to accelerate the market for trucks and buses. The regulation would contribute to the goal of achieving 100% zero-emission drayage, last-mile delivery and public fleets by 2035; 100% zero-emission refuse, utility fleets and buses by 2040; and 100% zero emissions for other truck and bus fleets, where feasible, by 2045.
   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 Results and Actions:
   - Conduct stakeholder and community outreach via public workshops with daytime and evening public meetings leading up to the hearing
     - CARB has been conducting stakeholder and community outreach via public workshops with daytime and evening public meetings. Topics include aspects of the regulation and infrastructure issues.
   - Develop regulatory proposal for CARB consideration by end of 2021
     - The board consideration timeline was delayed until late 2022 due to the complex nature of the regulation
   - Will focus high priority fleets and strategies to reduce emissions and accelerate benefits in disadvantaged communities.

5. **Innovative Clean Transit:** 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.
   Key Collaborators: Vehicle Manufacturers and Supply Chain; Technology Providers; Fleets; Grid Operators, Electricity and Hydrogen Providers; Workforce Training and Development Institutions; Labor and Workforce Development; Local and Regional Government; Federal and Tribal Governments; Academia; Non-Governmental Organizations; CPUC; HCD; International Relationships
   Key Results and Actions:
   - Zero-emission bus rollout plans: all large transit agency plans will be reviewed and available online by June 2021

        - 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).
    - Reporting: all transit agencies are required to annually report their fleet inventories and relevant bus and fuel purchases starting March 2021
    - Comprehensive review: major data collection and analytical work will take place in 2021
        - Reporting results are available at ICT Program Update website at https://ww2.arb.ca.gov/our-work/programs/innovative-clean-transit/program-update
    - Ongoing: outreach to transit agencies and zero-emission bus manufacturers to further understand market barriers and develop solutions

6. **Zero-emission Airport Shuttle:** Airport shuttle operators must transition to 100% zero-emission vehicle technologies by 2035.
   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 Results and Actions:
    - Reporting begins March 1, 2022, when all airport shuttle fleet owners must report to Truck and Bus Regulation Reporting (TRUCRS) on an annual basis.
        - Implementation underway, no changes

7. **Advanced Clean Trucks:** The Advanced Clean Trucks (ACT) regulation, approved in 2020, ensures 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 100,000 zero-emission trucks by 2030 and 300,000 by 2035.
   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 Results and Actions:
    - Manufacturers must sell ZEVs starting with the 2024 model year
    - Mandatory requirement for large entities including businesses and government agencies that own trucks, and brokers to report vehicle information by April 2021 to support future policy decisions
        - Data has been reported to CARB and is undergoing analysis

8. **Heavy-duty Vehicle Greenhouse Gas Standards:** Phase 1 and 2 greenhouse gas emissions standards give manufacturers the ability to certify vehicles in California and gives CARB the authority to enforce the regulatory requirements. Like the Phase 1 standards, the Phase 2 standards include advanced technology multipliers to encourage manufacturers to make heavy-duty ZEVs.
   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 Results and Actions:

- Implement Phase 2 standards for model year 2021, the first year of Phase 2 engine and vehicle standards.
  - Fully implemented

9. **Heavy-duty Phase 3 GHG Standards:** This regulation will be 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 Results and Actions:
   - 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.

10. **Transport Refrigeration Units:** By end of 2021, propose amendments to existing TRU rules for all truck TRUs to be zero emissions by 2030. By end of 2024, develop new rule to transition trailer TRUs and the remaining TRU categories to zero emissions. Key Collaborators: TRU, Engine Manufacturers; Infrastructure Providers; Fleets; Grid Operators, Electricity and Fuel Providers; CEC; Organized Labor; Freight Facilities
    Key Results and Actions:
    - Outreach via stakeholder meetings leading up to Board hearing
      - Held community listening sessions as part of CARB Freight Days June 8 and June 10, 2021.
    - Proposal for Board consideration by the end of 2021
      - Input received from stakeholder meetings and listening sessions informed the regulatory proposal heard by the Board at the September 23, 2021 meeting. The Board will consider the final proposal in early 2022.
    - The proposed amendments would result in emission reductions from TRUs across the state, including those operating in lower-income and disadvantaged communities

11. **Commercial Harbor Craft:** By end of 2021, propose amendments to the existing CHC regulation that staff anticipates may result in up to 100 vessels in California to be 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.
    Key Collaborators: Vessel Owners and Operators, Vessel Builders, Engine Manufacturers; Grid Operators, Electricity and Fuel Providers; CPUC; CDFW; Local and Regional Government
    Key Results and Actions:

- Outreach via stakeholder meetings leading up to Board hearing
  - Held a public workshop on the regulatory concept on March 16, 2021 and various meetings with communities, vessel owners, and technology providers.
- Proposal for Board consideration by the end of 2021
  - Public workshops informed the regulatory proposal heard by the Board at the November 18, 2021 meeting. The Board will consider the final proposal in early 2022.
- Proposal will achieve emission reductions in all communities statewide and provide compliance extensions for business owners meeting financial need criteria with additional stringency for vessels in disadvantaged communities.

12. **Locomotives:** By 2022, propose an In-Use Locomotive Regulation that sets fees based on locomotive operations. Funds would be used to mitigate emissions through use and development of cleaner technologies, including zero-emissions equipment and infrastructure.
    Key Collaborators: Locomotive Manufacturers; Railroads; Grid Operators, Electricity and Hydrogen Providers; Local and Regional Government; Federal and Tribal Governments; CEC; Caltrans; CalSTA; CTC; Organized Labor
    Key Results and Actions:
    - Community listening session scheduled for March 4, 2021
      - Hosted listening session March 4, 2021
    - Outreach via spring 2021 public workshop and ongoing meetings with railroads, communities and technology providers
      - Held a public workshop March 30, 2021 and meetings with railroads, communities and technology providers. These meetings informed the proposed regulatory concepts
    - The proposed concept would result in emission reductions from locomotives operating across the state, including those operating in lower-income and disadvantaged communities

13. **Zero-emission Forklifts:** By early 2022, propose a measure to accelerate the deployment of zero-emission forklifts with a focus on those for which commercial options are readily available.
    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 Results and Actions:
    - Develop regulatory proposal for Board consideration in early 2022
      - 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.
    - Conduct stakeholder and community outreach via public workshops leading up to the hearing

14. **Small Off-Road Engines:** By the end of 2021, propose a measure to transition manufacture of SORE for sale in California to zero-emissions.
    Key Collaborators: SORE Manufacturers and Trade Associations; Local Government; Neighborhood Coalitions; Environmental Organizations; Landscapers
    Key Results and Actions:
    - Outreach via spring 2021 public workshop and stakeholder meetings leading up to Board hearing
        - Workshop held March 24, 2021; staff met with engine and equipment manufacturers, trade associations, landscaper associations, community organizations, environmental organizations, and other stakeholders throughout 2021 leading up to the Board hearing
    - Proposal for Board consideration in fall 2021
        - Board Adopted regulatory proposal December 2021; minor changes approved by the Board will be released early 2022 for a 15-day public comment period
    - The proposed amendments would result in emission reductions from SORE operating across the state, including those operating in lower-income and disadvantaged communities
        - Expected statewide emission reductions are 64.5 tons per day of reactive organic gases, 7.9 tons per day of oxides of nitrogen

Incentives

CARB's clean vehicle ownership and clean mobility incentive projects lower cost and risk barriers for both manufacturers and consumers/fleets, 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. Many of CARB's incentive programs have been designed to specifically serve priority communities and bolster uptake of clean technologies in regions of the state most impacted by poor air quality. CARB strives to ensure that incentive projects are designed to consider the state's high-road workforce goals as well and encourage high-road market expansion and improved job quality for California workers.

1. **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).
    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 Results and Actions:

- Outreach and education, particularly to priority communities
  - Due to the ongoing health and economic crisis, in-person outreach has been very limited. A majority of outreach has been done through virtual meetings, various multimedia efforts, and occasionally in-person through CVRP's Community Partner Network, 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
- Ongoing: track and collect metrics on program use
  - Updated program information regarding rebate statistics, various analyses, survey data, and outreach statistics can be found on the CVRP website, www.cleanvehiclerebate.org.
- The Governor's Proposed Budget does not include funding for CVRP. CVRP will prioritize half of the remaining funding for increased rebates for lower-income consumers. Programs like the statewide Clean Fuel Reward, administered by utility providers, will continue.
  - The Budget Act of 2021 included a substantial upfront allocation of $525 million for CVRP from both the General Fund ($425 million) and the Greenhouse Gas Reduction Fund ($100 million).
  - This allocation funded the CVRP waitlist that lasted from May 19-September 15, 2021 and is expected to fund CVRP for Fiscal Years 2021-22, 2022-23, and 2023-24.
  - Additionally, $10 million of this allocation will be used to establish the Electric Bicycles Incentive Project. Staff will implement this program separately from CVRP.

2. **Financing Assistance for Lower-income Consumers Pilot:** (includes the Clean Vehicle Assistance Program and Driving Clean Assistance Program) 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.
   Key Collaborators: Local and Regional Government; Federal and Tribal Governments; DOF; Treasurer's Office; Non-Governmental Organizations; California Infrastructure and Economic Development Bank Key Results and Actions:
   - Refine applicant processing and other implementation and policy factors that support the continued growth and evolution of this pilot

        - In November 2021, with the adoption of the FY 2021-22 Clean Transportation Incentives Funding Plan, the Board approved significant 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. Changes also included adjustments to loan rates and terms within the financing components of the program, and purchase price limitations on vehicles supported by the program.
    - Ongoing: track number of consumers who participate, their income level and residency location, costs and types of vehicles purchased, and loan repayment status
        - The program continues to refine program, 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.
    - Increase priority community access through Access Clean California and related outreach efforts

3. **Clean Cars 4 All:** 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: 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 Results and Actions:
    - Annual reporting: reporting period varies annually.
    - 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
    - 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.

        - Update the program guidelines to 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.

4. **Clean Mobility Options:** 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.
   Key Collaborators: Local and Regional Government; CEC; Federal and Tribal Governments; Non-Governmental Organizations; Fleets; Academia
   Key Results and Actions:
   - Transportation Needs Assessments: implement 24 projects by fall 2021
     - Implemented 24 projects by fall 2021
   - Planning and construction: implement this phase by the end of 2021
     - Planning and construction phase extended to end of 2022
   - Mobility projects: launch up to 20 mobility projects by the end of 2021
     - Launch of projects by end of 2022 to mid-2023
   - 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
   - Ongoing: 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
     - Providing 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

5. **Sustainable Transportation Equity Project:** is a new 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 ($1.75 million) and Implementation Grants ($17.75 million). Examples of STEP projects funded: new electric carsharing and bike-sharing service, 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.
   Key Collaborators: Local and Regional Government; NGOs; Fleets; Academia
   Key Results and Actions:

- Awarded eight Planning and Capacity Building grants and three Implementation
- Grants in November 2020; grant agreements will be executed in May 2021
  - Completed. All 11 grant agreements were executed in June 2021 and have begun implementation. Details on each funded project can be found here. Grant implementation may extend through spring 2025 and each grant will develop a (likely publicly available) final report.
- Lessons learned are regularly gathered from CARB staff, grantees, and technical assistance providers. They will be compiled for public release and used to discuss updates to future STEP solicitations with stakeholders. Initial lessons learned on the STEP solicitation can be found in the technical assistance provider's interim report.
- Planning grant and implementation work will be done through 2022 and 2024, respectively, followed by draft and final project reports

1. **ZEV infrastructure provisions in the LCFS:** Allows for entities to generate LCFS credits for the unused capacity of light-duty Hydrogen refueling infrastructure (HRI) and DC fast charging infrastructure (FCI). Station owners or equipment owners submit applications and include detailed information on costs and revenues generated. Capacity credits for DC fast chargers can be generated up to five years after application acceptance, and up to 15 years for approved hydrogen refueling stations. For HRI applicants, the total company wide Carbon Intensity (CI) must be less than 150 gCO_2e/MJ and have at least 40% renewable content to qualify for HRI credits in that quarter, in excess of the SB1505 requirements. Approval for HRI stations is approved in collaboration with the ZEV infrastructure team at CARB. For FCI applicants, individual chargers will not be credited for higher than350 kW peak capacity.

   This provision was developed in response to Executive Order 8-48-18, direction in Board Resolution 18-17, and stakeholder comments. This provision supports development of ZEV infrastructure and is designed to sunset after an initial period of enhanced support for ZEV infrastructure build-out. The maximum quantity of infrastructure credits issued will be capped at 2.5% of overall program deficits for each category (2.5% for the hydrogen station provision and 2.5% for the fast-charging provisions, for a maximum of 5% of total deficits across both).

   <u>Key Collaborators:</u> Hydrogen providers, Electric Vehicle Service Providers, CEC
   <u>Key Results and Actions:</u>
   - Incentivize development of ZEV refueling infrastructure: 54 Hydrogen Stations have been approved for HRI crediting. 940 DCFC chargers have been approved for FCI crediting.
     - 62 hydrogen stations have been approved for HRI crediting, including 10 in 2021 to date.
     - 1314 DC fast chargers have been approved for FCI crediting, including 358 in 2021 to date.
   - Report and track total credits generated within the 5 percent total cap.

- As of December 2021, 35 percent (HRI) and 10 percent (FCI of the 2.5 percent limit applicable to each provision has been reached.

2. **California Clean Fuel Reward (CCFR)**: is a statewide electric vehicle point-of-purchase (or lease) incentive program established by Electric Distribution Utilities (EDUs) to provide a reduction in price on new light-duty plug-in Electric Vehicle (EV) in California. The CCFR is funded exclusively through LCFS proceeds generated by EDUs for providing electricity for residential EV charging. The CCFR is in addition to other local, state and federal EV incentives.

   The CCFR was launched in November 2020, prior to which each EDU was offering different incentives to EV drivers in their respective territory funded by their LCFS revenues. The objective of the program is to help California reach its ZEV and carbon reduction goals by incentivizing retail customers seeking to purchase or lease a new vehicle to choose an electric vehicle by providing a consistent statewide point-of-purchase discount on eligible vehicles without any additional eligibility requirements.
   Key Collaborators: Electric Distribution Utilities; Vehicle Manufacturers; Car dealerships; CPUC and NGOs.
   Key Results and Actions:
   - $1,500 initial maximum reward available to all customers purchasing or leasing new eligible EVs in California at participating dealerships.
     - The rebate has since been reduced to $750. The size of the award is relative to the capacity of the vehicle's battery
     - Average award amount received in 2021 was $1,418.
     - Rewards received in 2021 totaled $264 million
   - Annual reporting by the program administrator (Southern California Edison).
   - EDUs may adjust reward amount based on their financial forecasting of future LCFS credits.
   - Ongoing: Continue to educate and enroll new dealerships to be a partner in the program.

7. **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 have been awarded to three school districts.
   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 Results and Actions:
   - Large charging infrastructure projects for the three zero-emissions fleets
     - Large charging infrastructure projects for each grantee fleet – one project completed installation in 2021, two others are progressing

through design and permitting phases and expect to be completed early 2022.

- 28 battery-electric school bus deliveries in 2021, and 36 non-school-bus ZEVs in 2021 and 2022.
  - 28 battery-electric school buses delivered in 2021, 19 ZE utility carts delivered, 19 light- and medium-duty ZEVs to be delivered in 2022.
- Curriculum development and facility clean energy strategy plans
  - Additional funds allocated in FY21/22 will fund 13 battery electric school buses, 29 non-school bus ZEVs, a large infrastructure project, and workforce development

8. **Hybrid and Zero-emission Truck and Bus Voucher Incentive Program (HVIP):** incentives for long-term transition to ZEVs in the heavy-duty market and supporting 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 vehicles domiciled in a disadvantaged community. And with elevated incentives for zero-emission Class 8 drayage trucks, HVIP is supporting the Project 800 goal of 800 zero-emission drayage truck orders. 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.

   Key Collaborators: Local and Regional Government; 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 Results and Actions:
   - HVIP supported the Project 800 goal of 800 zero-emission drayage truck orders by the end of 2021
   - Reopen HVIP in spring 2021 and track its implementation and metrics
     - HVIP reopened to new voucher requests in three funding waves in June, August and October of 2021 with approximately $170 million in funding available, and this funding was quickly exhausted
   - Release new project implementation manual by April 2021 to establish all project policies and protocol for FY 2020-21
   - Support work in the FY 2021-22 Funding Plan to develop new heavy-duty incentives specifically designed to make zero-emission trucks accessible to small fleets and owner-operators; plan to implement before the end of 2022
     - Proposed new policies in the FY 2021-22 Funding Plan to support small fleets including a $25 million pilot project focused on innovative funding mechanisms to support small fleets and owner operators; plan to implement before the end of 2022
   - Outreach to priority communities where appropriate

        - Continued outreach and held focus groups with small fleets and owner operators
    - 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
        - Additional voucher data is available on the HVIP website: https://californiahvip.org/impact/

9. **Carl Moyer Program/Community Air Protection Program**: The Moyer program provides grant funding to replace equipment and engines with equipment that is cleaner-than-required by rules or regulations. Community Air Protection (CAP) incentives support the Community Air Protection Program established through AB 617 by funding projects in communities that are most heavily impacted by disproportionate levels of air pollution. The program provides purchase assistance for cleaner technology with a priority on zero-emission equipment and infrastructure that supports medium- and heavy-duty vehicles.
   Key Collaborators: Local and Regional Government; Federal and Tribal Governments; Fleets; Non-Governmental Organizations; DOF; Treasurer's Office; California Infrastructure and Economic Development Bank; AB 617 Communities
   Key Results and Actions:
    - Administer programs; track project progress; emphasize need for budget appropriation to support these programs
    - Local air districts must report CAP incentives to CARB semi-annually and Moyer incentives annually; results will help identify project benefits (emission reductions, job outcomes and outreach events, etc.)
        - Recent amendments to cost-effective limits and funding amounts in the on-road chapter will provide increased opportunities for applicants to transition to zero emission technologies
    - Ongoing: because Moyer receives annual allocations, CARB will continue to emphasize funding for zero-emission equipment in 2021 and after; for CAP incentives, a new allocation is provided annually through budget appropriation
    - Focus incentives on projects with direct impact on priority communities

10. **Volkswagen Appendix D, 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 include: 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. It was recommended that a balanced investment strategy includes funding for low-NOx combustion categories to ensure near-term NOx reductions as well as investments in ZEV technologies to accelerate the deployment of zero-emission buses, trucks and freight equipment.

Key Collaborators: CEC; CPUC; Local and Regional Government; Federal and Tribal Governments; Non-Governmental Organizations
Key Results and Actions:

- First vehicles purchased with VW trust money to be on the road by the end of 2021; projects include Class 8 heavy-duty and drayage trucks, as well as some light-duty charging infrastructure
  - First vehicles include 12 zero-emission school buses and 2 zero-emission shuttle buses
  - Delivery of 15 additional school buses and 2 additional shuttle buses are in process
  - Additional vehicles purchased with VW trust money to be on the road in 2022 projects include zero-emission transit, school, and shuttle buses; low NOx and zero-emission Class 7 and 8 heavy-duty and drayage trucks, and zero-emission port cargo handling equipment, airport grand support equipment, shore power; as well as some light-duty charging infrastructure

11. **Funding Agricultural Replacement Measures for Emission Reductions (FARMER):** 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.
    Key Collaborators: Local and Regional Government; Federal and Tribal Governments; Non-Governmental Organizations; Farmers; Treasurer's Office; CDFA
    Key Results and Actions:
    - More than $300 million has been allocated through this program over the last 3 fiscal years. Of that, more than $170 million has been implemented through the local air districts, with about 10% supporting the deployment of zero-emission battery- electric utility terrain vehicles; the Bay Area Air Quality Management District has invested $1 million of their allocation in an on-going zero-emission tractor demonstration; and program funding has come from a variety of sources over the years with the bulk of the funds coming from the Greenhouse Gas Reduction Fund
      - Of the $300 million, $249 million has been implemented through local air districts with about 10% supporting the deployment of more than 2,200 zero-emission battery-electric utility terrain vehicles
    - On-going: track and support program administration done through local air districts; number of zero-emission equipment (e.g., electric utility terrain vehicles) deployed and new zero-emission agricultural demonstration projects
    - Ongoing: reassess incentive levels for zero-emission equipment used in agriculture and achieve emission reductions through agricultural equipment replacement projects
      - Expanding funding opportunities for zero-emission agricultural equipment

12. **Advanced Technology Demonstration and Pilot Projects:** accelerate development and deployment of the most advanced — primarily zero-emission — precommercial and early commercial heavy-duty on- and off-road technologies. In the last year, 6 projects were completed, including the demonstration of battery electric rubber tire gantry cranes, the first generation of battery-electric yard trucks, among other types of zero-emission heavy-duty on- and off-road vehicles and equipment (includes battery-electric and fuel cell electric technologies)
    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 Results and Actions:
        - Three additional projects were selected for funding: a barge-based capture and control project for oil tankers at berth and 2 large scale zero-emission drayage truck projects in direct coordination with CEC
        - Four projects were completed including a zero-emission locomotive project, large scale deployment of 29 electric school buses, zero-emission cargo handling equipment, and a zero-emission transit pilot project
    - On-going: 22 additional demonstrations and pilots of technologies ranging from zero-emission drayage trucks to fuel cell operated passenger ferry, to a batteryelectric locomotive, among other types of heavy-duty on- and off-road vehicles and equipment
        - 21, instead of 22 additional demonstrations and pilots of technologies ranging from large scale deployments of zero-emission drayage trucks, to zero-emission agriculture tractors, to the holistic conversion of a facility away from diesel to zero-emission and renewable CNG
    - 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
        - This year's updated Long-Term Heavy-Duty Investment Strategy was published in October 2021.
    - 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
        - This year, several new demonstration and pilot projects primarily focused on the off-road sector and further funding for large scale drayage truck projects in coordination with CEC were approved as part of the FY 2021-22 Funding Plan.
    - 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
    - On-going: prioritize deployments in or near priority communities

13. **Rural School Bus Pilot:** 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.
    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 Results and Actions:
    - More than 100 new school buses on the road by end of 2021 of the nearly 200 expected from awarded funds so far.
        - 131 new school buses have been delivered by the end of 2021, 75 are battery- electric. Expect to deploy remaining 50 school bus projects by early 2023.
    - Ongoing: forming data collection and analysis project to track and report on user experience for multiple audience types.
        - Began coordination meetings for data collection research grants through DOE and CalStart. CalStart selected three RSBPP recipients to participate, results coming in 2022.
        - The Budget Act of 2021 provided $130M towards zero-emission school bus replacements in rural and underserved communities. Funds will be administered through HVIP.

14. **Truck Loan Assistance Program:** help small business truck owners that fall below conventional lending criteria and are unable to qualify for traditional financing attain financing for cleaner trucks.
    Key Collaborators: Vehicle and Engine Manufacturers; Fleets; Local and Regional Government; Federal and Tribal Governments; Non-Governmental Organizations; DOF; Treasurer's Office; California Infrastructure and Economic Development Bank; CDFA
    Key Results and Actions:
    - Conduct lender education in 2021
        - Conducted interviews with 3 most active truck lenders to get input on program adjustments and fleet needs
    - Ongoing: consider program adjustments to increase access, with a focus on priority communities

15. **Proposition 1B Goods Movement Emission Reduction Program:**
    The Proposition 1B Goods Movement Emission Reduction Program (Prop. 1B) provides grant funding to reduce air pollution emissions and health risks from freight movement along California's four priority trade corridors in the Bay Area, Central Valley, Los Angeles/Inland Empire, and San Diego/Border. Prop. 1B is a scrap and replace program that prioritizes the funding of zero emission technology and is implemented by local agencies (air districts and ports) to incentivize the reduction of diesel particulate matter and NOX emissions in vehicles and equipment that is "not otherwise required by law or regulation."
    Key Collaborators: Vehicle and Engine Manufacturers; Fleets; Local and Regional

Government; Federal and Tribal Governments; Non-Governmental Organizations; DOF; Treasurer's Office; California Infrastructure and Economic Development Bank; International Relationships

Key Results and Actions:

- Ongoing: continue to administer incentive programs, including the Proposition 1B
  - The Prop 1B incentive program will continue to be administered until the local agencies expend their allocated funds.
- Goods Movement Emission Reduction Program
  - Local Agencies held solicitations for, contracted, and funded several zero-emission freight equipment and infrastructure projects.
- Ongoing: continue to track and report zero-emission freight equipment funded and associated emission benefits in California's four priority trade corridors (Los Angeles/Inland Empire, Central Valley, Bay Area and San Diego/Border)
  - Prop 1B continues to track zero emission freight projects and their associated emission reduction benefits through the Goods Movement Online Database (GMOD). Project results are updated semi-annually in a report to the Department of Finance.
- Map Prop 1B program investments made in AB 617 communities
  - Prop 1B investments made in AB 617 communities and funded through the Community Air Protection Incentives Program are mapped through the California Climate Investments Project Map (https://webmaps.arb.ca.gov/ccimap/).

16. **Clean Off-Road Equipment Voucher Incentive Project** (CORE) is a first-come, first-served voucher program 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.

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

    Key Results and Actions:

    - Reopen CORE in spring 2021 and track its implementation and metrics
      - CORE did not receive funding in 2021.
      - CORE will be reopened in spring of 2022 instead of 2021.
    - Release new project implementation manual to establish all project policies and protocol for FY 2020-21 and FY 2021-2022
      - Project implementation manual delayed to cover FY 2021-2022
    - To monitor progress, CARB will continue to track the number of zero-emission off-road vehicles 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, hours operated, and percent of vouchers supporting vehicles deployed in priority communities

California ZEV Market Development

CARB engages in a number of actions aimed at expanding new and used ZEV markets and increasing access to clean mobility. The Objectives Table at the front of this document lists consumer outreach and education in this objective, but since the table also has a separate objective focused on consumer awareness, those actions will be described in that section of CARB's action plan.

1. **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).
   Key Collaborators: CEC; GO-Biz; CDFA; DMV; Vehicle Manufacturers and Supply Chain; Grid Operators, Electricity and Hydrogen Providers
   Key Results and Actions:
   - Complete and transmit *Annual Evaluation* to CEC for final review by June 30 every year; public release follows, typically in the third quarter of each year
     - Annual Evaluation was provided to CEC, public release September 2021
   - CEC publishes *Joint Agency Staff Report on AB 8* each year by December 31
     - Contributed to CEC Joint Agency Staff Report on AB 8, published December 2021

2. **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.
   Key Collaborators: CEC; GO-Biz; Vehicle Manufacturers and Supply Chain; Grid Operators, Electricity and Hydrogen Providers
   Key Results and Actions:
   - Develop and publish final report by the second quarter of 2021
     - Hydrogen Station Network Self-Sufficiency Analysis per AB 8 was published and posted to CARB's website in October.

3. **EVSE Open Access Regulation:** Implement and track SB 454 electric vehicle charging equipment open access EVSE standards that support transparency of ZEV charging costs to consumers.
   Key Collaborators: Grid Operators, Electricity and Hydrogen Providers; Non-Governmental Organizations; Academia; Local and Regional Government; CEC; CPUC; GO-Biz
   Key Results and Actions:
   - Complete open access standards technology assessment report in 2021
     - Technology Assessment Report expected in early 2022 with presentation to the Board to follow.
   - Ongoing: implement and track EVSE standards compliance
     - Implementation and tracking underway

4. **CALGreen Building Codes:** 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 for the 2021 triennial code cycle with particular focus on ensuring access for priority communities.
Key Collaborators: BSC; HCD; CEC; CPUC; GO-Biz; CaFCP; Local and Regional Government; Grid Operators, Electricity and Hydrogen Providers; NonGovernmental Organizations; Vehicle Manufacturers and Supply Chain
Key Results and Actions:

- Work toward 2021 CALGreen building code light-duty ZEV infrastructure requirements
  - Expanded light-duty requirements, and new requirements for medium- and heavy-duty ZEV charging, were approved by BSC on December 16, 2021
-

5. **Interagency agreement — 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 2021.
   Key Collaborators: CEC; GO-Biz; Labor and Workforce Development; Employment Training Panel; Local and Regional Government; Non-Governmental Organizations
   Key Results and Actions:
   - Implement agreement activities (above) in 2021
     - CARB signed an interagency agreement with CEC in 2021 and contributed $1M to CEC's grant program. The solicitation was released in late 2021 and grantees will be selected in early 2022.

6. **Technical assistance/capacity-building funding to community-based organizations for outreach and clean mobility project development —** Milestone: Conduct pilot funding for outreach capacity-building, including fellowship opportunities, for up to 10 community-based organizations in 2021. Additionally, establish requirements and conduct pilot funding for community transportation needs assessments as part of CARB's clean mobility projects to increase clean mobility access for priority communities.
   Key Collaborators: CEC; SGC; Local and Regional Government; Federal and Tribal Governments; Non-Government Organizations; Communities
   Key Results and Actions:
   - Support outreach pilots for up to 10 community-based organizations in 2021 through the project
     - CARB funded outreach and technical assistance/capacity-building for six grassroots community-based organizations. Grantees received a mix of funding, fellows, and training in coordination with the Strategic Growth Council's first Partners Advancing Climate Equity (PACE) cohort. The outreach pilots will conclude in January 2022.
   - Implement first round community transportation needs assessments projects in 2021

        - CARB's initial round of funding for community transportation needs assessments through the CMO project was successful and funded 20 needs assessments, which were completed in 2021. The first round of funding through the STEP project yielded eight planning grant agreements and are currently in process, to be implemented over the next couple years.
    - Develop best practices guidance and recommendations for project improvement in 2022
        - The initial CMO needs assessments presented their findings and recommendations for project improvement in late 2021. Additionally, CARB partnered with the UC Berkeley Othering and Belonging Institute to evaluate and provide recommendations on both CMO and STEP needs assessment projects, which will be applied to both CMO and STEP for future rounds of funding.

Mobility and Technology Advancement

Invest in research, development, and demonstration to advance clean mobility and ZEV technology, including opening/enabling new markets.

1. **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 Results and Actions:
    - Evaluation methodology: develop evaluation methodology, including metrics, and complete baseline evaluations of selected clean mobility and community transportation needs assessment projects in 2021
        - CARB partnered with the UC Berkeley Institute of Transportation Studies (and member of the Climate Smart Communities Consortium) to develop metrics, an evaluation methodology, and conduct evaluations of CARB-funded clean mobility projects.
        - CARB partnered with the UC Berkeley Othering and Belonging Institute to evaluate and provide recommendations on both CMO and STEP needs assessment projects, which will be applied to both CMO and STEP for future rounds of funding.
    - Ongoing: monitor contract progress; report due May 2022
        - CARB continues to receive and review contract progress for both evaluation contracts listed above.

2. **California Integrated Travel Project:** CARB has entered into an interagency agreement with Caltrans to strengthen an integrated payment system for various transportation networks.
   Key Collaborators: CalSTA; CalTrans; Technology and Mobility Service Providers; Transit Agencies; Communities
   Key Results and Actions:
   - Market Sounding Report: Caltrans/CARB are finalizing a Market Sounding Report that provides information on how mobility payment accounts can be created to promote and measure multimodal trips. The report highlights seven key findings for the State to consider based on stakeholder feedback and identifies next steps for Caltrans and CARB to continue to play a critical role in developing, implementing, and sending policy signals that support CAL-ITP.
   - Caltrans and CARB are continuing coordination around CAL-ITP.
   - 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

3. **Community transportation needs assessments:** Requirements and funding for community transportation needs assessments to increase clean mobility access for priority communities.
   Key Collaborators: CEC; Local and Regional Government; Federal and Tribal Governments; Non-Governmental Organizations
   Key Results and Actions:
   - Implement first-round community transportation needs assessments projects in 2021
     - CARB's initial round of funding for community transportation needs assessments through the CMO project was successful and funded 20 needs assessments, which were completed in 2021. The first round of funding through the STEP project yielded eight planning grant agreements and are currently in process, to be implemented over the next couple years.
   - Ongoing: continue third-party evaluation and funding for future community transportation needs assessments
     - CARB partnered with the UC Berkeley Othering and Belonging Institute to evaluate and provide recommendations on both CMO and STEP needs assessment projects, which will be applied to both CMO and STEP for future rounds of funding.
   - Develop best practices guidance and recommendations for project improvement in 2022
     - The initial CMO needs assessments presented their findings and recommendations for project improvement in late 2021. Additionally, CARB partnered with the UC Berkeley Othering and Belonging Institute

to evaluate and provide recommendations on both CMO and STEP needs assessment projects, which will be applied to both CMO and STEP for future rounds of funding.

Information Sharing

CARB's objective for information sharing is to feed aggregated manufacturer and market data into agency policymaking processes. These data support California clean transportation efforts and improved air quality and help better serve priority communities.

1. **Light-duty regulations:** CARB tracks and maintains records of ZEV credits generated under the ZEV regulation based on manufacturer's annual reporting of qualifying ZEVs.
   Key Collaborators: Vehicle and Engine Manufacturers; Federal and Tribal Governments; Local and Regional Government; Other State Governments
   Key Results and Actions:
   - An annual disclosure report released in the fall of each year includes California vehicle production by large- and intermediate-volume manufacturers, along with ZEV credit balances and ZEV credit transfers
     - A revamped annual ZEV disclosure report was released in December 2021 which includes a more comprehensive overview of manufacturer ZEV compliance. New data disclosed includes the regulatory credit requirement by manufacturer, number of eligible vehicle sales and associated credits generated by make and model, and a complete accounting of each manufacturer's credit balance. https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/zev-program/zero-emission-vehicle-credit-balances

External Market Development

CARB is committed to continuing its leadership and collaboration with other states, nations, the federal government, local governments and community-based organizations to share best practices, coordinate implementation of programs and partner on ZEV market-related initiatives. All of these organizations consider equity in their work. Several of the organized partnerships and organizations CARB participates in are listed below:

1. **International ZEV Alliance:** Comprised of 18 jurisdictions, the International ZEV Alliance members seek to collaborate with other governments to expand the global ZEV 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.

Key Collaborators: CEC; CPUC; GO-Biz; CalEPA; Other States; International Governments

Key Results and Actions:

- Three focus areas for 2021: addressing the remaining needs in the charging infrastructure ecosystem; setting and achieving 100% ZEV targets; and used ZEVs
  - All focus areas complete, each with a report and workshop; two workshops were for members only, and one public (used ZEVs topic).
- Ongoing in 2021: discussion and learnings about green recovery during the time of COVID-19 and the economic downturn
  - Discussions spanned the year's meetings as topics of interest came up, including California's unprecedented 2021-2022 budget for ZEVs and ZEV infrastructure.
- ZEV Community forums: as members of IZEVA, CARB is part of the ZEV Community group of governments with zero-emissions targets; ZEV Community is holding a number of forums in 2021 to get jurisdictions collaborating on a number of ZEV topics, including infrastructure, hydrogen and green recovery
  - CARB staff participated in two separate rounds of forums in 2021 that covered these topics, including light- and heavy-duty ZEVs and ZEV infrastructure.

2. **Multi-State ZEV Task Force:** California is a member of the Multi-State ZEV Task Force, comprised of the Section 177 states that have adopted California's light-duty ZEV regulations. The Task Force has published a multi-state ZEV Action Plan for 2018-2021 aimed at accelerating uptake of ZEVs in all member states. CARB will continue dialogue and collaboration with member states, especially around development of the next version of the ZEV regulations.

   Key Collaborators: CEC; CPUC; GO-Biz; Vehicle Manufacturers

   Key Results and Actions:

   - Series of ZEV Action Plans, work on battery improvement, diversity in available models, charger interoperability
     - Development of the medium- and heavy-duty ZEV Action Plan with a focus on environmental justice.
   - Coordinated multi-state public education campaign
   - Encourage increased focus on hydrogen

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 has had more than 275 million impressions and kicks off the next phase of its campaign in 2021. CARB is a founding member organization. (Also see entry for Veloz under Consumer and Worker Awareness section below.)

   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 Results and Actions:

- Veloz will hold 2-3 summits in 2021, gathering ZEV industry and related stakeholders to discuss the run up to 2035: March, July and November
  - Veloz held three virtual summits in 2021 (March, July and November), gathering ZEV industry and related stakeholders to discuss the run-up to 2035.
  - Nearly 1,000 participants.
- It's *Electric For All* public awareness campaign will conclude a six-month flight in June; metrics for the campaign, including focus on reaching priority communities, will be gathered and analyzed
  - The 2021 Electric For All public awareness campaign, "40 Million Reasons to Go Electric," concluded a 6-month flight in July 2021 and achieved deeper engagement with audiences, with 41 million impressions, almost 11 million video views, more than 366,000 visits to ElectricForAll.org, and more than 70,000 automaker leads.
  - ElectricForAll.org visits totaled more than a quarter-million in 2021 with 21,000 average visits per month.
- Ongoing: webinars about current ZEV topics with key players in the industry
  - Veloz held eight webinars in 2021. Topics included the 2035 full ZEV transition; electrifying rideshare; infrastructure permitting in cities; electrification of medium- and heavy-duty fleets; autonomous vehicle electrification; and COP26 highlights from Veloz leaders.
  - Nearly 1,400 webinar participants.
  - Veloz expanded the tools in the Electricforall.org website to include used car incentives and electric vehicle myths vs. facts.
  - Veloz is working on its next public awareness campaign for 2022.
  - Veloz.org visits in 2021 totaled around 60,000 with 5,000 average visits per month.

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.
   Key Collaborators: CEC; CDFA; GOBiz; Legislature and Governor's Office; Vehicle and Engine Manufacturers; Grid Operators, Electricity and Hydrogen Providers; Local and Regional Government; Fleets; Academia; Federal and Tribal Governments
   Key Results and Actions:
   - 45 hydrogen refueling stations, national partnerships, event staging, educational materials
   - Support development of Fuel Cell Electric Truck Roadmap to help align stakeholders around a shared vision

- CARB continues to support the California Fuel Cell Partnership activities as an actively engaged member and with leadership in the role of executive board chair and prior chair in the past 2 years. Key products included the publication of the Fuel Cell Electric Truck Vision and a plan for transition to a nonprofit organization.

Consumer and Worker Awareness

CARB's consumer and worker awareness objective is to strengthen and expand ZEVrelated education and outreach, and tailor it to the unique needs of impacted communities to ensure all Californians, especially priority communities, can reap the benefits of the transition to cleaner mobility options. CARB works to broaden outreach to priority communities to ensure equity in all ZEV-related programs and regulations through a number of programs described below:

1. **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.
   Key Collaborators: CEC; CPUC; SGC; GOBiz; Caltrans; Local and Regional Government; Federal and Tribal Governments; Non-Governmental Organizations and communities
   Key Results and Actions:
   - Launch Benefits Finder: public launch of Benefits Finder web tool and expanded outreach through community-based organizations and other outreach partners in 2021.
     - The Benefits Finder was 'soft' launched in mid-2021 due to lack of funding available through many of the incentive projects and will launch full scale once programs receive new funding.
   - Expanded outreach to priority communities: expansion of web tool to include other state and local low-income consumer-focused programs, in addition to all of CARB's clean vehicle ownership projects.
     - CARB was unable to expand outreach due to lack of incentive project funding (many went into waitlist mode or closed to new applicants); however, the Access Clean California project team continued to work with other agencies and utilities to plan for expansion of the incentives included in the platform.
   - Publication, streamlining and continued improvement of incentive and accessibility information, outreach resources, consumer tools and buying guides
     - CARB staff meets monthly to coordinate its incentive outreach websites and continues to assess and improve information accessibility, outreach resources and buying guides, such as DriveClean and Moving California. Additionally, Access Clean California is continually improving its outreach partner resource hub and materials.
   - Strengthen outreach partnerships in 2021

- Additional outreach partnerships were formed with several entities in southern and central California, such as the Central California Asthma Collaborative.

2. **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 third phase in 2021, called *40 Million Reasons to Go Electric*. The organization further advances vehicle electrification through its sales dashboard, online buying tool, webinars, public forums, media outreach and support of partnerships within the ZEV community. CARB is a founding member of Veloz.

   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; NonGovernmental Organizations; Academia; International Relationships; Fleets

   Key Results and Actions:

   - Track *Electric For All* phase three "40 Million Reasons to Go Electric" 2021campaign reach and engagement on the related website
     - The 2021 Electric For All public awareness campaign, "40 Million Reasons to Go Electric," concluded a 6-month flight in July 2021 and achieved deeper engagement with it audiences with 41 million impressions, almost 11 million video views, more than 366,000 visits to ElectricForAll.org, and more than 70,000 automaker leads.
     - ElectricForAll.org visits totaled more than a quarter-million in 2021 with 21,000 average visits per month.

   - Track and report 2021 webinar numbers and engagement
   - Track and report 2021 public forum events and engagement
     - Veloz held eight webinars in 2021. Topics included the 2035 full ZEV transition; electrifying rideshare; infrastructure permitting in cities; electrification of medium- and heavy-duty fleets; autonomous vehicle electrification; and COP26 highlights from Veloz leaders.
     - Nearly 1,400 webinar participants.
   - Track and report 2021 public forum events and engagement
     - Veloz held three virtual summits in 2021 (March, July and November), gathering ZEV industry and related stakeholders to discuss the run-up to 2035.
     - Nearly 1,000 participants.

Additional 2021 Results:

- Veloz launched the Home Charging Advisor and Incentive Assistant on Electricforall.org to help EV drivers find home charging equipment and incentives and to apply online with one application form.
- Veloz expanded the tools in the Electricforall.org website to include used car incentives and electric vehicle myths vs. facts
- Veloz is working on its next public awareness campaign for 2022.
- Veloz.org visits in 2021 totaled around 60,000 with 5,000 average visits per month.

3. **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.
   Key Collaborators: Non-Governmental Organizations; Air Districts; Vehicle Manufacturers and Supply Chain, Local and Regional Government; Fleets; Financing Institutions
   Key Results and Actions:
   - Provide assistance and information for 200-300 participants per event
     - Planning for these events has begun. First event expected Q3 of 2022
   - Equity: many operators that attend these events are 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

4. **Educational Material:** provide outreach materials to support medium- and heavy-duty ZEV regulations.
   Key Collaborators: Air Districts; Vehicle Manufacturers and Supply Chain; Local and Regional Government; Fleets; Financing Institutions
   Key Results and Actions:
   - Provide materials requested by medium- and heavy-duty CARB programs
     - FAQs in development to assist fleets with infrastructure
   - Send mailers to the regulated community
     - Mailers sent to fleets advising them of the Advanced Clean Fleets rule development
   - Update digital assistance such as the TruckStop webpage
   - Equity: target smaller fleets, many of which are owned and operated in underserved communities.
   - Ongoing: continue to provide outreach material development to support medium- and heavy-duty ZEV regulations