CALIFORNIA
AIR RESOURCES BOARD

# Proposed Fiscal Year 2019-20 Funding Plan for Clean Transportation Incentives

## For

## Low Carbon Transportation Investments and the Air Quality Improvement Program

CALIFORNIA CLIMATE INVESTMENTS
Cap and Trade Dollars at Work

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# EXECUTIVE SUMMARY

The proposed Fiscal Year (FY) 2019-20 Funding Plan for Clean Transportation Incentives for Low Carbon Transportation and the Air Quality Improvement Plan (FY 2019-20 Funding Plan or Funding Plan) represents a total of $533 million in clean transportation investments from two related funding sources appropriated to the California Air Resources Board (CARB, State Board, or Board) in the Budget Act of 2019.

Each fiscal year, CARB must submit a proposed Funding Plan to the Board for approval. The Funding Plan serves as the blueprint for expending the Low Carbon Transportation and Air Quality Improvement Program (AQIP) funds appropriated to CARB in the State budget. The plan establishes CARB's priorities for the funding cycle, describes the projects CARB intends to fund, and sets funding targets for each project.

The two funding sources covered in this Funding Plan are:

- $485 million for Low Carbon Transportation investments funded with Cap-and-Trade Auction Proceeds and appropriated to CARB through the Budget Act of 2019.

- $48 million for AQIP appropriated to CARB through the Budget Act of 2019.

CARB uses this funding to accelerate development and early commercial deployment of the cleanest mobile source technologies and to improve access to clean transportation. These incentives are important in helping California achieve its goals to reduce greenhouse gas (GHG) emissions, improve air quality, deploy zero-emission vehicles (ZEVs), protect California priority populations and communities, and reduce petroleum dependency.

The Low Carbon Transportation and AQIP funds are just two of the incentive funding programs in CARB's larger portfolio of clean transportation investments. These are complemented by other CARB programs, other State agency programs, local air district programs, as well as actions taken by other local government entities. Each program has its own statutory and policy direction, but collectively they fit together to support California's multiple near-term and long-term public heath, air quality, and climate change goals.

One of our challenges is finding the right balance between investing in technologies that provide cost-effective deployments of market-ready technologies versus investing in transformative zero-emission technologies that cost more in the near-term but are needed to meet our 2030 and 2050 goals. Both are needed and the local air districts and the State share the responsibility in directing investments. This shared responsibility is necessary—the State is better equipped to provide the large-scale investments needed to send market and policy signals and move the needle in terms of advancing policies and technologies in a way that smaller, locally-focused investments simply cannot match. Air districts are better positioned to address regional and community

scale air quality challenges in a way that meets the unique needs of their region and incorporates community input.

The Low Carbon Transportation program is the only program in CARB's portfolio and one of the only programs in the State, available to support the demonstration, pilot, and early market deployment of emerging and zero-emission technologies. It is also a testing ground for innovative projects focused on priority populations to improve access to clean transportation. AQIP is currently funding a unique project that provides financing assistance to small trucking businesses. As a technology reaches market scale, other programs within CARB's portfolio such as the Carl Moyer Program (Moyer), the Proposition 1B Goods Movement Emission Reduction Program (Prop 1B), Funding Agricultural Replacement Measures for Emission Reductions (FARMER), and Community Action Plan Program (CAPP), begin to play a more prominent role. These programs commonly require scrapping an older vehicle or piece of equipment and are based on cost-effectiveness; because of this they have traditionally funded technologies that are more widely available and low risk for fleet adoption. Defining and quantifying metrics that signal when technologies move on from Low Carbon Transportation to other incentive programs or can stand on their own will require an empirical approach to monitoring technology evolution.

Low Carbon Transportation and AQIP cumulative investments made in previous years' Funding Plans have been tremendously successful – so much so that CARB now needs to make significant changes to both the light-duty and heavy-duty project categories in this year's plan in order to better align demand for funding with the amount of funding available and avoid having to start and stop programs when the funds are exhausted.

This Funding Plan continues to support the emission reduction goals identified in the *Climate Change Scoping Plan*, *State Implementation Plan*, Senate Bill (SB) 350 (De León, Chapter 547, Statutes of 2015) study on *Overcoming Barriers to Clean Transportation Access for Low-Income Residents, California Sustainable Freight Action Plan, and the ZEV Action Plan*. These incentives provide important early steps to transform the transportation sector to zero-emission and near zero-emission technologies. These goals also support our overall air quality and climate goals in reducing emissions in impacted communities throughout the State.

The proposed Funding Plan describes CARB's policy drivers and vision for these advanced technology mobile source investments, eligible project categories and criteria, project funding allocations, program implementation details, and the justification for these investments. Background on these two funding sources is provided below, followed by a summary of the proposed investments.

**Low Carbon Transportation**: The Low Carbon Transportation Program is part of California Climate Investments, a statewide program that puts billions of Cap-and-Trade dollars to work reducing GHG emissions, strengthening the economy, and improving public health and the environment—particularly in disadvantaged communities. CARB's Low Carbon Transportation Program is designed to accelerate the transition to

advanced technology low carbon freight and passenger transportation with a priority on providing health and economic benefits to California's most disadvantaged communities, with a focus on increasing deployment of zero-emission vehicles and equipment wherever possible. These investments support the state's climate change, air quality, ZEV deployment, and petroleum reduction goals.

For FY 2019-20, the Legislature appropriated $485 million for the Low Carbon Transportation Program to continue and build on investments from previous years. The budget appropriation explicitly specifies the funding be invested in the following categories:

- $238 million for the Clean Vehicle Rebate Project (CVRP), with the stipulation that $25 million be used to fund increased rebates for low-income recipients.

- $65 million for the Enhanced Fleet Modernization Program and Plus-Up Pilot Project (Clean Cars 4 All), replacement of school buses, and light-duty equity pilot projects authorized pursuant to SB 1275 (De León, Chapter 530, Statutes of 2014).

- $182 million for clean trucks, buses, and off-road freight equipment including the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) and advanced technology freight demonstration and pilot commercial deployment projects.

**Air Quality Improvement Program (AQIP)**: AQIP is a mobile source incentive program that focuses on reducing criteria pollutant and diesel particulate emissions with concurrent GHG reductions. CARB investments started under AQIP provide the foundation for the Low Carbon Transportation investments that now make up the vast majority of the proposed Funding Plan. AQIP has provided funding for CVRP, HVIP, and advanced technology demonstrations since 2009, and the allocation has ranged between $25-$30 million per year over the last few years. In recent years, these projects have been primarily funded with Low Carbon Transportation appropriations, and the majority of AQIP funds have been directed to the Truck Loan Assistance Program and other diesel emission reduction projects. For FY 2019-20, the Legislature appropriated $48 million to CARB for AQIP. This one-time infusion of additional funding is intended to address an anticipated increase in demand as a result of a new law that will only allow trucks that are compliant with the Truck and Bus Regulation to be registered by the Department of Motor Vehicles (DMV)[1].

[1] SB 1 (Beall, Chapter 5, Statutes of 2017) requires the owners of motor vehicles subject to the Truck and Bus Regulation to demonstrate compliance in order to register their vehicles, effective January 1, 2020.

## Staff's Proposal

Staff's proposal is to continue to focus these incentives on accelerating the development and deployment of the cleanest feasible mobile source technologies and improving access to clean transportation. Since their inception, these investments have been utilized to support the emission reduction goals identified in the Climate Change Scoping Plan, State Implementation Plan, and California Sustainable Freight Action Plan. These projects are designed to both achieve immediate emission reductions and, equally important, support the transformation of the fleet to one that is largely zero-emitting where feasible and as clean as possible where zero-emissions are not feasible. In designing these investments, CARB strives to maximize the benefits for disadvantaged communities, low-income communities, and low-income households.

In most cases, these projects continue to build on investments from previous budget cycles that were envisioned as multi-year investments. Staff developed the proposed project allocations thorough a public process and by evaluating anticipated demand and technology readiness, and reviewing the long-term planning elements of previous Funding Plans.

The Heavy-Duty Investment Strategy and the Three-Year Plan for CVRP, ZEV Market, Clean Transportation Equity Investments, and Outreach played a key role in this assessment. Staff also considered other available funding sources and stakeholder input. Staff's proposed funding allocations are shown in Table 1.

**Table 1: Proposed Project Allocations for FY 2019-20 Funding Plan**

| Project Category | Allocation* (millions) |
|---|---|
| **VEHICLE PURCHASE INCENTIVES AND CLEAN MOBILITY PROJECTS** | |
| CVRP (including increased Rebates for Lower Income Applicants) | $238 |
| Clean Transportation Equity Projects | $65 |
| **Vehicle Purchase Incentives and Clean Mobility Projects Investment Total** | **$303** |
| **HEAVY-DUTY VEHICLE AND OFF-ROAD EQUIPMENT INVESTMENTS** | |
| Clean Truck and Bus Vouchers (HVIP) | $142 |
| Heavy-Duty Advanced Technology Demonstration and Pilot Projects | $40 |
| **AQIP-FUNDED HEAVY-DUTY INVESTMENTS** | |
| Truck Loan Assistance Program | $48 |
| **Heavy-Duty Vehicle and Off-Road Equipment Investment Total** | **$230** |
| **TOTAL** | **$533** |

*Does not include adjustments for project administration.

*Vehicle Purchase Incentives – CVRP:* The Legislature allocated $238 million for CVRP, which includes $213 million for Standard CVRP rebates plus an additional $25 million for lower income applicants to ensure the equity element of CVRP continues to grow and that rebates are prioritized for lower income applicants even if funding for standard

rebates runs short. At this proposed funding level, changes to CVRP will be needed to ensure that funds do not run out before the end of the year.

*Clean Transportation Equity Investments:* The $65 million allocated for clean transportation equity projects will help to increase access to clean transportation and mobility options benefiting disadvantaged and low-income communities and low-income households consistent with the direction provided by SB 1275 and SB 350. This covers vehicle purchasing incentives, clean mobility options, outreach, community needs assessments, technical assistance, and the One-Stop-Shop. Staff is proposing to continue existing projects and add two new projects: The Sustainable Transportation Equity Project, and the Outreach, Community Transportation Needs Assessments, and Technical Assistance Project. These projects fill an important role in ensuring holistic and transformative transportation investments are made, as well as providing critical support to better understand community needs, increase awareness and build capacity for underserved communities and residents to access clean transportation funding opportunities.

*Clean Trucks, Buses, and Off-Road Equipment Investments*: The budget includes a total of $182 million for heavy-duty vehicle and equipment projects as shown in Table 1. The proposed projects include advanced technology demonstrations, early commercial pilots, and voucher incentives for commercially available technologies consistent with the direction of SB 1204 (Lara, Chapter 524, Statutes of 2014) and SB 1403 (Lara, Chapter 370, Statutes of 2018), which guide CARB's heavy-duty vehicle investments funded with Cap-and-Trade auction proceeds. These investments support a broad range of clean and efficient vehicle technologies, with funding opportunities for battery electric, fuel cell, hybrid, natural gas, and clean diesel engine technologies as well as engine and system efficiency improvements and low carbon renewable fuel use.

Consistent with prior year's investments and Legislative direction, $142 million of this proposal would be used to continue CARB's ongoing effort to fund the incremental costs of clean trucks and buses through HVIP. Another key focus is advanced technology demonstration and pilot projects, supporting the continued advancement of technology through the phases needed to get to full commercialization, also referred to as the commercialization arc. For FY 2019-20, staff is proposing to allocate $40 million for demonstration and pilot projects. Staff proposes continued funding for the Truck Loan Assistance Program, which is anticipating an increase in demand as a result of a new law that will only allow trucks that are compliant with CARB's Truck and Bus Regulation to be registered by the DMV.

The proposed projects are based on staff's assessment of the state of each technology and its role in the long-term transformation of the heavy-duty fleet to zero-emission where feasible and hybrid and low nitrogen oxide (NOx) engines powered by clean, low-carbon renewable fuels everywhere else. They support the beachhead technologies identified in the Heavy-Duty Investment Strategy.

*Disadvantaged Community, Low-Income Community, and Low-Income Household Investment Targets:* A key component of these programs is providing health and economic benefits to California's most disadvantaged communities, low-income communities, and low-income households, collectively referred to as "priority populations[2]." Assembly Bill (AB) 1550 (Gomez, Chapter 369, Statutes of 2016) establishes disadvantaged community, low-income community, and low-income household targets for the State's Cap-and-Trade auction proceeds investments. Staff has designed program projects with additional incentives to benefit priority populations. In addition, staff will focus outreach in low-income and disadvantaged communities in order to help increase these targets. With this in mind, staff recommends that at least 50 percent of the Low Carbon Transportation appropriation be invested in projects that meet the criteria for providing direct, meaningful, and assured benefits to priority populations with the following targets:[3]

- At least 35 percent of funds for projects located within, and benefiting individuals living in, disadvantaged communities.

- At least 15 percent of funds for projects within and benefiting low-income communities or benefiting low-income households, or within and benefiting low-income communities within a half-mile of a disadvantaged community.

Staff considers the targets to be a floor and strives to exceed them. In designing project solicitations and implementation requirements, staff will consider whether there are provisions that can be incorporated to help ensure that CARB exceeds these minimum targets. CARB is not limiting the disadvantaged community and low-income community/household focus to Low Carbon Transportation investments. Staff designs investments from AQIP to benefit underserved populations as well.

## Summary of Investments

Table 2 provides an illustrative example of how the suite of proposed investments in this Funding Plan is part of CARB's coordinated strategy to make progress toward California's multiple air quality and climate change goals. Most of this funding comes from Cap-and-Trade auction proceeds, and as such, there is a primary focus on investments that reduce GHG and benefit disadvantaged and low-income communities. However, CARB has also designed these investments to provide co-benefits to support the State's climate pillars of reducing short-lived climate pollutants and petroleum use, providing emission reductions for the State Implementation Plan and 2016 *Sustainable Freight Action Plan*, and reducing diesel toxics emissions.

[2] Priority populations include residents of: (1) census tracts identified as disadvantaged by California Environmental Protection Agency per SB 535; (2) census tracts identified as low-income per AB 1550; or (3) a low-income household per AB 1550. See Section VII.B of CARB Funding Guidelines for more information on the definitions of priority populations.

[3] Benefit Criteria Tables for determining benefits to priority populations: www.arb.ca.gov/cci-resources

**Table 2: Multiple Policy Goals Met by Proposed Funding Plan Investments**

| Proposed Projects | Climate Change Scoping Plan | Short-Lived Climate Pollutants | Ozone and PM State Implementation Plan | Sustainable Freight | Air Toxics | Petroleum Reduction | Disadvantaged / Low Income Communities | SB 375 Sustainable Communities |
|---|---|---|---|---|---|---|---|---|
| Vehicle Purchase Incentives | √ | √ | √ | | √ | √ | √ | |
| Clean Mobility Projects | √ | √ | √ | | √ | √ | √ | √ |
| HVIP – Clean Truck and Bus Vouchers | √ | √ | √ | √ | √ | √ | √ | √ |
| Heavy-Duty Demonstration and Pilot Projects | √ | √ | √ | √ | √ | √ | √ | √ |
| Truck Loan Assistance | | √ | √ | √ | √ | | √ | |

## California Environmental Quality Act (CEQA) Requirements

CARB has determined that the proposed FY 2019-20 Funding Plan is not a project subject to, or is otherwise exempt from, the requirements of the California Environmental Quality Act (CEQA). CARB's certified regulatory program, which applies to the adoption, approval, amendment, or repeal of standards, rules, regulations, or plans for the protection and enhancement of the State's ambient air quality, has been certified by the California Secretary for Natural Resources under Public Resources Code section 21080.5 of CEQA (14 California Code of Regulations (CCR) 15251(d)). Public agencies with certified regulatory programs are exempt from certain CEQA requirements, including but not limited to, preparing environmental impact reports, negative declarations, and initial studies. For activities that constitute project approvals, as those terms are used in CEQA, CARB, as a lead agency, prepares a substitute environmental document (referred to as an "Environmental Analysis" or "EA") as part of the Staff Report prepared for a proposed action to comply with CEQA (17 CCR 60000-60008).

CARB, as the lead agency under CEQA, has reviewed the proposed FY 2019-20 Funding Plan and concluded that it is not a project under CEQA Guidelines § 15378(b)(4) and thus is not subject to CEQA. The proposed FY 2019-20 Funding Plan is a governmental fiscal activity that does not involve any commitment to any specific projects that may result in potentially significant impacts on the environment. The Funding Plan includes several funding programs or projects, such as CVRP and HVIP, which provide funds rebates or vouchers to support the purchase of cleaner vehicles on a first-come, first-served basis. The Funding Plan proposes budgetary allocations for these programs or projects over the next fiscal year.

Even if the FY 2019-20 Funding Plan were a project under CEQA, it would be categorically exempt from CEQA under the under the common sense exemption (14 CCR 15061(b)(3)) and the "Class 8" exemption (14 CCR 15308) for the protection of the environment. CEQA Guidelines state "the activity is covered by the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA." (14 CCR 15601(b) (3).) As mentioned above, the Funding Plan proposes budgetary allocations to CARB's clean vehicle rebate and voucher programs. The programs or projects receiving funding under the Funding Plan are aimed at incentivizing further ZEVs and low-emission vehicles within California, particularly to consumers in lower income or disadvantaged communities, which are disproportionally burdened with air pollution. Based on CARB's review, it can be seen with certainty that there is no possibility that the proposed Funding Plan may result in a significant adverse impact on the environment. Further, the proposed action is designed to protect the environment, and CARB found no substantial evidence indicating the proposal could adversely affect air quality or any other environmental resource area, or that any of the exceptions to the exemption applies (14 CCR 15300.2). Therefore, even if the FY 2019-20 Funding Plan were a project under CEQA, it would be exempt from CEQA.

# CHAPTER 1: INTRODUCTION AND BACKGROUND

The proposed FY 2019-20 Funding Plan includes $485 million for Low Carbon Transportation Investments funded with Cap-and-Trade Auction Proceeds (deposited in the GGRF), and $48 million for AQIP.

- $238 million for CVRP, with the stipulation that $25 million be used to fund increased rebates for low-income recipients.

- $65 million for the Enhanced Fleet Modernization Program and Plus-Up Pilot Project (Clean Cars 4 All), replacement of school buses, and light-duty equity pilot projects authorized pursuant to SB 1275 (De León, Chapter 530, Statutes of 2014).

- $182 million for clean trucks, buses, and off-road freight equipment including HVIP and advanced technology freight demonstration and pilot commercial deployment projects.

The proposed Funding Plan describes CARB's policy drivers and vision for these advanced technology mobile source investments, eligible project categories and criteria, project funding allocations, program implementation details, and the justification for these investments. CARB staff has developed a joint plan for these funding sources to ensure investments are coordinated while also ensuring that the statutory requirements applicable to each are met. The Low Carbon Transportation

investments build upon and greatly expand the technology advancing projects CARB has funded through AQIP since 2009.

CARB's 2014 and 2017 *Climate Change Scoping Plans* and 2016 *Mobile Source Strategy* conclude that many of the same actions are needed to meet GHG, smog forming, and toxic pollutant emission reduction goals – specifically, a transition to zero-emission and near zero-emission technologies and use of the cleanest, lowest carbon fuels and energy across all vehicle and equipment categories. The 2016 *California Sustainable Freight Action Plan* reiterates the need for this transition as it relates to the freight sector. In addition, AB 617 (C. Garcia, Chapter 136, Statutes of 2017) established new goals for reducing emissions of toxic air contaminants and criteria air pollutants in communities affected by a high cumulative exposure burden. The *2018 Progress Report on California's Sustainable Communities and Climate Protection Act* points to the need for adopting alternative modes of transportation wherever possible, and particularly in low-income and disadvantaged communities.

CARB is using these incentives to accelerate development and deployment of the cleanest feasible vehicle technologies for all vehicle and equipment sectors, from light-duty passenger cars to heavy-duty trucks and off-road equipment to meet California's air quality, climate change, transportation equity, and petroleum use reduction goals. These goals include:

- Achieving carbon neutrality as soon as possible, and no later than 2045; and achieving and maintaining net negative emissions thereafter as directed in the Governor's Executive Order B-55-18.

- Reducing GHG emissions to 1990 levels by 2020 as required by AB 32 (Núñez, Chapter 488, Statutes of 2006) and to 40 percent below 1990 levels by 2030 as required by Senate Bill (SB) 32 (Pavley, Chapter 249, Statutes of 2016).

- Reducing petroleum use in vehicles by 50 percent by 2030, one of the pillars of the State's climate change strategies for reducing GHG emissions, and reducing GHG emissions from the transportation sector to 80 percent below 1990 levels by 2050 as directed in the Governor's Executive Order B-16-2012.

- Meeting the federal health-based ambient air quality standards for ozone by 2023 and 2031 as well as the fine particulate matter (PM2.5) air quality standards.

- Reducing emissions of toxic air contaminants and criteria air pollutants in communities affected by a high cumulative exposure burden as required by AB 617.

- Ensuring that the State's overall auction proceeds investments meet the disadvantaged community, low-income community, and low-income household

targets established in AB 1550 and maximizing the benefits to these communities and households as required by the 2018 *Cap-and-Trade Auction Proceeds Funding Guidelines for Agencies that Administer California Climate Investments*.

- Following and incorporating goals and priorities from relevant legislation. Some of the key bills guiding the Funding Plan include SB 1275, SB 1204, SB 350, and SB 1403.

- Incorporating the findings and recommendations from CARB's SB 350 Low-Income Barriers Study, Part B: *Overcoming Barriers to Clean Transportation Access to Low-Income Residents*.

- Deploying 1 million ZEVs by 2023 pursuant to SB 1275.

- Deploying 1.5 million ZEVs by 2025 as directed in Executive Order B-16-2012, and deploying at least 5 million ZEVs by 2030 as directed in Executive Order B-48-18.

- Deploying over 100,000 freight vehicles and equipment capable of zero-emission operation and maximizing near zero-emission freight vehicles and equipment powered by renewable energy by 2030 as called for in the 2016 *California Sustainable Freight Action Plan*.

- Reducing emissions of methane and black carbon to 40 percent and 50 percent, respectively, below 2013 levels by 2030 as called for in the Short-Lived Climate Pollutant Reduction Strategy.

- Supporting the goals of Sustainable Communities consistent with SB 375 (Steinberg, Chapter 728, Statutes of 2008); exploring ways to reduce vehicle miles travelled while also increasing access to clean transportation options consistent with the SB 150 (Allen, Chapter 646, Statutes of 2017) Progress Report.

CARB has developed a portfolio of incentive programs that complement our regulatory program to reduce emissions and increase access to clean transportation. Each incentive program comes with its own statutory requirements, emission reduction goals, and eligible projects making the portfolio diverse and far-reaching. Together, these projects address multiple connected goals, including:

- Turning over the legacy fleet to achieve cost-effective, near-term emission reductions in support of State Implementation Plans (SIPs), air toxics, and community air protection goals.

- Accelerating the introduction and deployment of zero-emission technologies to meet California's longer-term air quality and climate change goals.

- Improving access to clean transportation and mobility options for low-income households and investing in the disadvantaged and low-income communities most impacted by pollution.

- Supporting the transition to and adoption of more sustainable transportation modes to reduce GHG emissions.

- Expanding the in-state supply chain for advanced technology components, increasing the number of manufacturers choosing California as a home for manufacturing, and leveraging private investment to support the commercial viability of advanced technology.

The large-scale statewide investments CARB makes through the Low Carbon Transportation program help send a market signal and move the needle in terms of advancing technologies. The State's $700 million investment in consumer rebates for ZEV passenger vehicles, for example, has contributed to California leading the nation in ZEV deployment by a considerable margin even compared to the other states that have opted into our ZEV regulation. CARB is doing the same with large-scale investments to electrify the heavy-duty sector, which is seeing success from investments in zero-emission transit buses, a natural beachhead for transforming the heavy-duty sector. These investments also set California up to benefit from the green economy with companies setting up zero-emission vehicle and component manufacturing operations in the state.

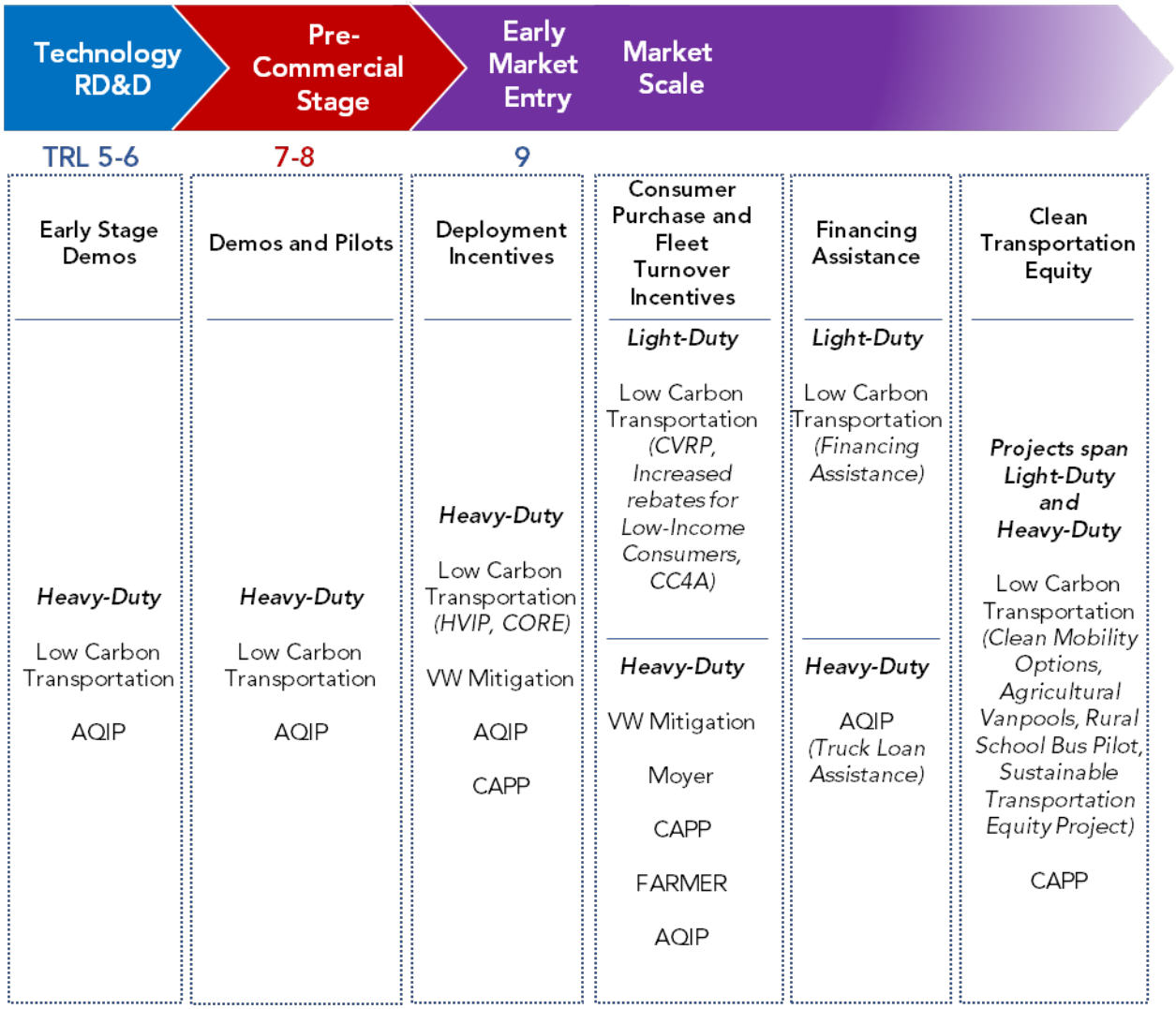
This Funding Plan focuses investments in the zero-emission vehicles and equipment which will expand and accelerate the market for technologies and help the State to achieve its goals for improving air quality and reducing GHG emissions and petroleum dependency. As such, it prioritizes zero-emission vehicle technologies and zero-emission vehicle enabling technologies while continuing a modest level of funding for cleaner combustion technologies where incentives can help to achieve emission reductions beyond what is required by regulations. Achieving these goals requires programs that provide near-term reductions with cleaner combustion along with some advanced technologies, as well as programs that will provide long-term reductions using primarily advanced technologies. CARB's overall investment strategy is a balanced portfolio, considering both near-term and long-term incentive funding needs, addressing equity and piloting innovative mobility.

## Clean Transportation Incentives Funding Portfolio

California has a long history of action against air pollution and investments in emerging technology. Over the last five years, as public health crises became more critical and the looming threat of climate change grew, California has dedicated

increasing financial resources to reducing criteria and climate pollutant emissions from the transportation sector. The State allocates billions of dollars annually to such programs. Figure 1 shows CARB's portfolio of clean transportation incentives and where the fit in on the commercialization path. As this figure shows, Low Carbon Transportation and AQIP are the only funding sources at CARB for heavy-duty demonstrations and pilots. They are also the only funding sources for light-duty investments and are a major contributor in clean transportation equity and financing assistance. Low Carbon Transportation and AQIP play an important role as the bridge for emerging technology and innovative clean transportation projects to the rest of the CARB portfolio. More details on each of the CARB programs can be found in Appendix D: Sources of Funding.

## Figure 1: CARB's Clean Transportation Investment Portfolio




The Low Carbon Transportation and AQIP investments covered in the proposed FY 2019-20 Funding Plan represent just one part of California's portfolio of clean transportation incentives. These are complemented by other CARB programs, other State agency programs, local air district programs, as well as actions taken by other local government entities. Each program has its own statutory and policy direction, but collectively they fit together to support California's multiple near-term and long-term public heath, air quality, and climate change goals.

The remainder of this introductory chapter provides background on the two funding sources covered in this Funding Plan, including a summary of Low Carbon Transportation and AQIP projects funded to date. This is followed by chapters covering proposed funding allocations, light-duty vehicle and transportation equity investments, heavy-duty vehicle and equipment investments, approaches to maximize

disadvantaged community benefits for the Low Carbon Transportation Program, contingency provisions, and grant administration.

**Low Carbon Transportation:** Cap-and-Trade auction proceeds provide funding for CARB's advanced technology, clean transportation incentive programs that reduce GHG emissions, expanding the types of projects previously funded through AQIP. These investments accelerate the transition to low carbon freight and passenger transportation, supporting the State's climate change strategy pillar of a 50 percent reduction in petroleum use in vehicles by 2030 as well as the State's goal to deploy five million zero-emission vehicles by 2030. Low Carbon Transportation and Fuels investments account for about 91 percent of the funds that will be covered in the FY 2019-20 Funding Plan.

*Low Carbon Transportation Funding to Date*: The Legislature has appropriated approximately $1.7 billion to CARB for Low Carbon Transportation projects over the past six budget cycles (FY 2013-14 through FY 2018-19). These appropriations are being used to fund: zero-emission and plug-in hybrid passenger vehicles through CVRP; light-duty vehicle equity projects to increase access to the cleanest vehicles benefiting low-income and disadvantaged communities and for lower-income Californians; deployment incentives for clean trucks and buses utilizing zero-emission, hybrid, and low NOx technologies; and advanced technology demonstration and pilot projects for freight trucks and equipment. More information regarding the current status of previously funded projects can be found in the chapters that follow.

About 50 percent of CARB's Low Carbon Transportation funding has been allocated to projects benefitting disadvantaged and low-income communities, including low-income households. The amount spent benefitting priority populations greatly exceeds the commitments made in past Funding Plans. Much of the disadvantaged community focused funding is for clean transportation equity projects, Zero-Emission Truck and Bus Pilot Projects, and Advanced Freight Technology Demonstration Projects. As an example, nearly 70 percent of HVIP funding has been awarded for trucks and buses operating in disadvantaged communities.

## Table 3: Low Carbon Transportation Project Allocations to Date

(FY 2013-14, 2014-15, 2015-16, 2016-17, 2017-18 and 2018-19)

| Project | Funding (millions) |
|---|---|
| **Vehicle Purchasing Incentives and Clean Mobility Options** | |
| CVRP | $702 |
| Public Fleet Incentives for CVRP Eligible Vehicles | $6 |
| Clean Cars 4 All (EFMP Plus-up) | $112[4] |
| Clean Mobility Options | $46.6 |
| Financing Assistance for Lower-Income Consumers | $35.9 |
| Agricultural Worker Vanpools | $9 |
| Clean Mobility in Schools | $10 |
| **Heavy-Duty Vehicle and Off-Road Equipment Investments** | |
| Advanced Technology Freight Demonstrations | $238 |
| Clean Off-Road Equipment Vouchers | $40 |
| Zero-Emission Truck and Bus Pilots | $85 |
| Rural School Bus Pilot | $55 |
| Low NOx Engine Incentives with Renewable Fuel | $13 |
| HVIP | $353 |
| **TOTAL** | **$1,705.5[5]** |

**Air Quality Improvement Program:** The Air Quality Improvement Program (AQIP) is a mobile source incentive program that focuses on reducing criteria pollutant and diesel particulate emissions with concurrent reductions in GHG emissions. A one-time infusion of additional funding to AQIP this year has given the program a budget of $48 million; typically it has an annual budget of around $28 million. Initially, AQIP had provided funding for CVRP, HVIP, and demonstrations for advanced emission reduction vehicle technologies since 2009. In recent years, these projects have been primarily funded from the Low Carbon Transportation appropriations, because demand has exceeded AQIP's budget. Since 2014-15, the majority of AQIP funds have been directed to the Truck Loan Assistance Program, which helps small business truckers to secure financing for newer trucks to meet compliance deadlines for CARB's in-use truck and bus regulation. AQIP accounts for about nine percent of the funds that will be covered in the FY 2019-20 Funding Plan.

*AQIP Funding to Date*: Table 4 provides a summary of AQIP investments to date including one-time funding provided in various years to help meet demand. In some years, CVRP and HVIP received funding from both AQIP and Low Carbon Transportation.

[4] Allocations to date for Clean Cars 4 All includes $10 million from Volkswagen settlement funds.
[5] Total does not include $18 million for State operations.

## Table 4: AQIP Project Allocations to Date[1]

| AQIP Project | Cumulative Project Allocations (millions) |
|---|---|
| Truck Loan Assistance | **$152**[1] |
| CVRP[2] | **$146**[2] |
| HVIP[2] | **$64**[2] |
| Low NOx Engine Incentives | **$10** |
| Agricultural Equipment Trade Up in San Joaquin Valley | **$4** |
| Advanced Technology Demonstration/Vehicle Testing | **$6** |
| Lawn and Garden Equipment Replacement | **$3** |
| Truck Filter Replacements | **$3** |
| Off-Road Hybrid Equipment Pilot | **$2** |
| Zero-Emission Agricultural Utility Equipment | **$0.1** |
| **TOTAL** | **$387** |
| Air Quality Improvement Fund<br>Other funding sources[1] | $297<br>$93.3 |

Projects rounded to nearest $ million, except for projects allocated less than $2 million. Totals may not sum due to rounding.

[1]Includes a total of $93 million from other funding sources: $53 million from the California Energy Commission's Clean Transportation Program, formerly known as the Alternative and Renewable Fuel and Vehicle Technology Program or Fund, to support CVRP and HVIP in various fiscal years, $10 million appropriated to Truck Loan Assistance Program in FY 2013-14 as a loan from the Vehicle Inspection and Repair Fund (VIRF) per SB 359 (Corbett, Chapter 415, Statutes of 2013), and $30 million transferred by the Legislature from VIRF to meet CVRP demand in 2014 per SB 852 (Leno, Chapter 25, Statutes of 2014) and SB 862 (Committee on Budget and Fiscal Review, Chapter 36, Statutes of 2014). Does not include $15 million that was allocated by CARB to the Truck Loan Assistance Program in FY 2017-2018.

[2]CVRP and HVIP also received Low Carbon Transportation funds in FY 2013-14 through 2018-19.

### Additional Legislation Guiding Funding Plan Development and Implementation

Several laws passed by the Legislature in recent years provide further guidance to CARB on these programs and specify requirements for the Funding Plan.

*SB 1275* (De León, Chapter 530, Statutes of 2014) guides CARB's light-duty vehicle investments. SB 1275 establishes the Charge Ahead California Initiative to increase the number of zero-emission and near zero-emission vehicles on California's roads and to increase access to these vehicles for lower-income Californians and disadvantaged communities. It also identifies the Cap-and-Trade auction proceeds as a funding

source that could be utilized to meet the provisions established in the Charge Ahead California Initiative. SB 1275 establishes requirements for how CARB implements CVRP and also requires that CARB establish programs such as car sharing, financing assistance, and enhancements to the EFMP scrap and replace program to increase access to clean vehicles for lower-income consumers and disadvantaged communities. Finally, SB 1275 requires CARB to include a long-term plan for CVRP and related light-duty vehicle incentives. CARB included the long-term plan in the FY 2016-17 Funding Plan and is including an updated plan as part of this Funding Plan.

*SB 1204* (Lara, Chapter 524, Statutes of 2014) guides CARB's heavy-duty vehicle investments funded with Cap-and-Trade auction proceeds. SB 1204 creates the California Clean Truck, Bus, and Off-Road Vehicle and Equipment Technology Program intended to help accelerate the introduction of the next generation of cleaner heavy-duty vehicles and engines with a priority on projects that benefit disadvantaged communities. Among other requirements, SB 1204 directs CARB to develop an annual framework and plan to guide these investments. The Three-Year Investment Strategy for Heavy-Duty Vehicles and Off-Road Equipment included in the FY 2017-18 Funding Plan was designed to help address this requirement.

SB 1403 (Lara, Chapter 370, Statutes of 2018) modifies the direction from SB 1204, directing CARB, in consultation with the Energy Commission, to develop and include a 3-year investment strategy for zero- and near zero-emission heavy-duty vehicles and equipment as part of the annual Low Carbon Transportation and AQIP Funding Plan. The strategy is to include a funding plan for the upcoming fiscal year and a forecast of estimated funding needs for the subsequent two fiscal years. SB 1403 also calls on CARB to include information related to milestones achieved through the State's school bus incentives programs and the projected need for funding.

*SB 350* (De León, Chapter 547, Statutes of 2015) directed CARB to conduct a study on the barriers for low-income Californians to access clean transportation options, including those in disadvantaged communities, as well as recommendations on how to increase access. In February 2018, CARB released the Final Guidance Document - Low Income Barriers Study, Part B: Overcoming Barriers to Clean Transportation Access for Low-Income Residents (Guidance Document). CARB's Guidance Document is an initial step in identifying the main barriers low income residents, including those in disadvantaged communities, face in accessing clean transportation and mobility options. Recommendations to overcome these barriers include both short-term and longer-term implementable actions that the Legislature, communities, State and local planning, transportation, public health, and air quality agencies can take to formulate innovative, meaningful solutions.

# CHAPTER 2: PROPOSED FUNDING ALLOCATIONS FOR FY 2019-20

## Investment Priorities for 2019-20

CARB uses incentives to accelerate deployment of the cleanest feasible mobile source technologies and to improve access to clean vehicle purchasing incentives and clean mobility options, which include access to alternative modes like transit, biking, and walking. In keeping with public input and legislative direction, staff strives to maximize benefits for priority populations, and prioritize investments that support multiple clean air goals as described in the introduction. These investments are designed to support the transformation of the fleet to zero emission wherever possible to meet long term air quality and climate change goals and to increase access to clean transportation. These projects achieve immediate emission reductions as well.

Staff determined project allocations by evaluating anticipated demand, reviewing the long-term planning elements of previous Funding Plans, the Three-Year Plan for CVRP, the ZEV Market, Clean Transportation Equity Investments, and Outreach, the Three-Year Investment Strategy for Heavy-Duty Vehicles and Off-Road Equipment included in prior Funding Plans, considering other available funding sources, and taking into account stakeholder input. Staff also evaluated the state of technology in order to evaluate and determine what projects are ready for investment. Staff's proposed funding allocations are shown in Tables 5 and 6.

## Draft Project Allocations

**Low Carbon Transportation:** For the $485 million Low Carbon Transportation appropriation, CARB staff proposes the project level allocations and priority population investment targets shown in Table 5. The details of each of these projects and rationale for these recommendations are described more fully in the remaining sections of this discussion document.

## Table 5: Draft Staff Proposed Project Allocations for $485 Million Low Carbon Transportation Appropriation

| Project Category | Allocation (millions) |
|---|---|
| **Vehicle Purchasing Incentives - CVRP** | **$238** |
| CVRP Standard Rebates | $213* |
| CVRP Increased Rebates for Lower Income Consumers | $25 |
| **Vehicle Purchasing Incentives – Clean Transportation Equity** | **$10.9 of $65** |
| Clean Cars 4 All | ($40)** |
| Financing Assistance | $10.9 |
| **Clean Mobility Projects – Clean Transportation Equity** | **$47.1 of $65** |
| Clean Mobility Options | $10 |
| Clean Mobility in Schools | $5 |
| Agricultural Vanpools | $5 |
| Rural School Bus Pilot | $4.45 |
| Sustainable Transportation Equity Project | $22 |
| State Operations | $0.65 |
| **Outreach, Community Needs Assessments, Technical Assistance, and One-Stop-Shop** | **$7 of $65** |
| **Heavy-Duty Vehicles and Off-Road Equipment Investments** | **$182** |
| Heavy-Duty Commercial Vouchers - HVIP | $142* |
| Heavy-Duty Commercial Vouchers - CORE | ($40)** |
| Heavy-Duty Demonstration and Pilot Projects | $40* |
| **TOTAL** | **$485** |

*Up to one percent of the allocation will be used for State Operations, including media buys for light-duty vehicles.
**$40 million each is still remaining from previous fiscal years for both the Clean Cars 4 All project and the CORE project.

*Vehicle Purchase Incentives – CVRP*: The budget appropriated a total of $238 million to support CARB's vehicle purchase incentives. This includes $213 million for Standard CVRP rebates plus an additional $25 million for lower income applicants to ensure the equity element of CVRP continues to grow and that rebates are prioritized for lower income applicants even if funding for standard rebates runs short. However, at this proposed funding level, changes to CVRP will be needed to ensure that funds do not run out before the end of the year.

*Clean Transportation Equity Projects*: The $65 million allocated for clean transportation equity projects will help to increase access to clean transportation and mobility options benefiting disadvantaged and low-income communities and low-income households consistent with the direction provided by SB 1275 and SB 350. This covers vehicle purchase incentives, clean mobility projects, outreach, community needs assessments, technical assistance, and the One-Stop-Shop. Staff is

recommending to continue existing projects and adding two new projects, the Sustainable Transportation Equity Project and Outreach Projects, to address additional priorities.

*Heavy-Duty Vehicle and Off-Road Equipment Investments*: CARB traditionally takes a portfolio approach with the investment of Low Carbon Transportation and AQIP funds. This means that it provides funding across multiple technologies at different points on their commercialization path to support those that are providing emission reductions today, as well as those that need to mature to meet future goals. Incentives are needed to help fund the development of advanced technologies through demonstration, to pilot projects through early commercialization and onto full market acceptance. While per-vehicle incentives tend to be larger for demonstration and pilot projects, these investments are crucial because they can accelerate the pace of commercializing advanced technology vehicles and equipment by spurring private investment and helping to cover the costs of technology development.

The FY 2019-20 budget appropriated $182 million for heavy-duty vehicle and off-road equipment projects from Low Carbon Transportation. Prior to the May Revision, staff was initially proposing to direct all of the initial heavy-duty allocation to support HVIP. In light of the additional funding that was allocated as part of the May Revision, staff acknowledged the potential opportunity to fund other heavy-duty vehicle and off-road equipment projects, such as demonstration and pilot projects. Staff sought input on the draft heavy-duty appropriation, including HVIP, the Clean Off-Road Engine voucher project (CORE), and potential demonstration and pilot project funding categories at a work group meeting in July 2019. Staff proposes that $142 million of this proposal would be used to continue CARB's ongoing effort to fund the incremental costs of commercially available clean trucks, buses and off-road equipment through the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) and Clean Off-Road Engine (CORE) voucher project. Another key focus is advanced technology freight equipment deployment and transformational freight projects, supporting the actions called for in the California Sustainable Freight Action Plan. For FY-19-20, staff is proposing to allocate $40 million to fund Advanced Technology Demonstration and Pilot projects. These may include support for previously funded technology demonstration projects that have been successfully completed and are ready to move to the next stage. Examples may include zero-emission fuel cell truck and port equipment, and an opposed piston engine ultra-low NOx class 8 line haul truck.

The proposed projects are based on staff's assessment of the state of each technology and its role in the long-term transformation of the heavy-duty fleet to zero-emission where feasible and hybrid and low NOx engines powered by clean, low-carbon renewable fuels everywhere else. They support the beachhead technologies identified in last year's Three-Year Investment Strategy for Heavy-Duty Vehicles and Off-Road Equipment.

*Project Administration:* Staff anticipates that about one percent of each category may be used for project administration by CARB. CARB's allocation for State Operations has been about $5 million per year; however, this amount has not increased, even as the total Low Carbon Transportation allocation has grown. Budget language for FY 2019-20 included authorization to allocate up to another five percent for administration. At this time, CARB only anticipates needing an additional one percent, which would be about $4.85 million of the total FY 2019-20 allocation.

*Disadvantaged Community, Low-Income Community, and Low-Income Household Investment Targets:* A key component of these programs is providing health and economic benefits to California's most disadvantaged communities and low-income households. AB 1550 establishes disadvantaged community, low-income community, and low-income household targets for the State's Cap-and-Trade auction proceeds investments. With the majority of the proposed FY 2019-20 allocation focused on first-come, first-served project categories, it may prove to be more challenging to meet the targets set in prior years. Staff will focus outreach in low-income and disadvantaged communities in order to help meet or exceed these targets. With this in mind, staff recommends that at least 50 percent of the Low Carbon Transportation appropriation be invested in projects meeting one of the AB 1550 criteria with the following targets:

- At least 35 percent of funds for projects located within, and benefiting individuals living in, disadvantaged communities.

- At least 15 percent of funds for projects within and benefiting low-income communities or benefiting low-income households.

Staff considers the targets to be a floor and strives to exceed them. In designing project solicitations and implementation requirements, staff will consider whether there are provisions that can be incorporated to help ensure that CARB exceeds these minimum targets. CARB is not limiting the disadvantaged community and low-income community/household focus to Low Carbon Transportation investments. Investments from the other funding sources (such as AQIP) are designed to benefit underserved populations as well.

Appendix A provides additional details on how CARB staff developed these minimum AB 1550 investment targets. Staff has been able to demonstrate that at least 50 percent of the Low Carbon Transportation funds meet at least one of the AB 1550 criteria. Staff will design each project to prioritize disadvantaged community, low-income community, or low-income household benefits. Thus, staff expects an appreciable amount of the funding will meet one of the AB 1550 criteria, even in cases where no benefits are estimated up front.

The guidance for implementing AB 1550 was incorporated into the latest guidelines approved by the Board in July 2018. Staff is following these requirements for determining AB 1550 benefits of Low Carbon Transportation investments.

While the AB 1550 requirements formally only apply to programs funded from the GGRF, CARB develops and implements all these incentives with a focus on providing benefits to priority populations wherever possible. For example, the AQIP-funded Truck Loan Assistance Program helps underserved populations by providing financing for small business truckers who have trouble getting conventional truck loans, thereby supporting the goals of AB 1550. Many of these cleaner trucks operate in and near disadvantaged communities.

**AQIP:** As noted in the March 13, 2019 public workshop, CARB staff proposes directing AQIP funding to projects that primarily provide criteria pollutant and toxics benefits and that may not the best fit for Cap-and-Trade auction proceeds funding. For FY 2019-20, all of the AQIP funds would be directed to the Truck Loan Assistance Program, which has been the case in most recent budget cycles, to meet expected increased demand by small and single owner-operator trucking fleets. Table 6 shows draft AQIP project allocations.

## Table 6: Draft Project Allocations for $48 Million AQIP Appropriation

| **Project Category** | **Allocation** (millions) |
|---|---|
| Truck Loan Assistance Program | $48 |
| **TOTAL** | **$48** |

## Funding Plan Development Process

Staff held 3 public workshops, 21 public work group meetings, and numerous individual meetings with interested stakeholders to develop the FY 2019-20 Funding Plan. Table 7 summarizes these public meetings.

**Table 7: Public Meetings on Development of FY 2019-20 Funding Plan**

| Date | Meeting |
|---|---|
| 12/4/2018 | Public Workshop meeting on the Update to the Three-Year Plan for CVRP, the ZEV Market, Clean Transportation Equity Investments, and Outreach |
| 12/5/2018 | Equity Projects Work Group Meeting |
| 12/11/2018 | Public Work Group Meeting - Heavy-Duty Advanced Tech Barriers & Incentives |
| 1/29/2019 | Heavy-Duty Investment Strategy Work Group #1 |
| 2/19/2019 | CVRP Public Work Group Meeting #1 |
| 3/13/2019 | Public Workshop on the FY 2019-20 Funding Plan for Clean Transportation Investments |
| 3/22/2019 | CVRP Public Work Group Meeting #2 |
| 3/25/2019 | HVIP Work Group Meeting |
| 3/25/2019 | Heavy-Duty Investment Strategy Work Group #2 |
| 3/28/2019 | Equity Projects Work Group Meeting |
| 4/4/2019 | CVRP Public Work Group Meeting #3 |
| 4/23/2019 | Equity Projects Work Group Meeting |
| 4/23/2019 | CVRP Public Work Group Meeting #4 |
| 5/1/2019 | Equity Projects Work Group Meeting |
| 5/7/2019 | Equity Projects Work Group Meeting |
| 5/8/2019 | Heavy-Duty Investment Strategy Work Group #3 |
| 5/15/2019 | Sustainable Transportation Equity Project (STEP) Work Group Meeting |
| 5/30/2019 | CVRP Public Work Group Meeting #5 |
| 6/11/2019 | Equity Projects Work Group Meeting |
| 6/13/2019 | Public Workshop on the FY 2019-20 Funding Plan for Clean Transportation Investments |
| 7/17/2019 | Heavy-Duty Projects Work Group Meeting |
| 7/24/2019 | Equity Projects Work Group Meeting |
| 8/1/2019 | CVRP Public Work Group Meeting #6 |
| 8/27/2019 | Clean Cars 4 All Work Group Meeting |

In addition to the public meetings on developing this Funding Plan, CARB conducts public outreach to inform stakeholders on incentive opportunities for funding appropriated in past budget years. There's been an increasing focus over the past year on tailoring outreach to disadvantaged communities. CARB has been in the process of conducting extensive community-based outreach as part of the development of the Community Air Protection Program (AB 617) and Accessible Clean

Transportation Options as directed by the Clean Energy and Pollution Reduction Act of 2015 (SB 350). Input received as part of these processes is reflected in this Funding Plan. A summary of all of these outreach activities is provided later in the document, in Chapter 6: Addressing California Climate Investment Guidelines Requirements.

# CHAPTER 3: LIGHT-DUTY ZEV MARKET AND CLEAN TRANSPORTATION EQUITY INVESTMENTS

## Overview

This section of the Funding Plan describes staff's draft proposals for public consideration for light-duty vehicle purchase incentives, such as CVRP and Clean Cars 4 All; and clean mobility projects including car sharing and other projects that increase low-income resident access to clean transportation. Each of these sections include funding recommendations for existing and new projects, as well as proposed changes to existing projects. This section also summarizes project funding to date and long-term plans for the ZEV market and clean transportation equity investments.

CARB's light-duty vehicle and clean transportation equity investments are aimed at supporting the long-term transformation of California's fleet and meeting policy, statutory, and regulatory goals and requirements. Traditionally, these investments have been divided into two funding allocations to align with Legislative budget line-items: CVRP, including increased incentives for lower income consumers; and clean transportation equity projects (equity projects), that span across various incentive mechanisms, all aimed at bringing incentives directly to disadvantaged and lower income consumers and communities. This year, while funding allocations continue to support these categories, staff have re-organized the projects within this document by type to better show how these projects work together to achieve common goals. These two distinct, but complementary elements of CARB's advanced technology vehicle and clean transportation equity investments include:

*Vehicle Purchase Incentives:* CVRP 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 adoption in low-income communities. Clean Cars 4 All and Financing Assistance are designed to increase access to cleaner vehicles in disadvantaged communities and lower-income households as prescribed by SB 1275 and supported by SB 350, as well as provide support to the secondary ZEV market. Each of these vehicle purchase incentive projects provide opportunities for all California residents to participate in vehicle purchase incentive programs as well as increase consumer awareness of clean vehicles in disadvantaged communities.

*Clean Mobility Investments:* Clean mobility options projects support transportation needs of low-income residents and those living in disadvantaged and low-income communities. Mobility needs are not the same in all communities and it is important to provide various options in order to be flexible and responsive to the transportation needs of specific communities. These projects provide funding for various clean mobility options (other than

vehicle ownership) including zero-emission and plug-in hybrid car sharing, vanpools, electric and regular bicycle sharing, ride-hailing, and other clean mobility options.

These incentive projects are a result of multiple key legislative drivers, including SB 1275, SB 535, AB 1550, SB 350, and SB 375/SB 150, but also recognize that increasing access and consumer awareness must be an ongoing process. In addition, equity projects follow SB 535's direction that investments must benefit California's disadvantaged communities, as well as AB 1550's direction that these investments also benefit low-income communities and households. These projects provide direct benefits to targeted communities, such as reduced GHG, criteria pollutant, and toxics emissions. These projects also produce critical co-benefits such as improving public health from reduced pollution exposure, transportation-cost savings, increased household economic stability, increased connectivity to destinations, reduced traffic congestion, and increased environmental sustainability.

A core priority across equity projects continues to be incorporating the findings of CARB's SB 350 Guidance Document. The Guidance Document identifies several barriers to accessing clean transportation and mobility options, such as affordability, funding for clean transportation investments, and a lack of awareness of clean transportation options. The Guidance Document also identifies community-specific barriers, like access, convenience and safety. Because each community is unique and there are many factors to consider, such as geographic, economic, demographic, or cultural and linguistic attributes, and varied styles of communication, there is no single statewide solution to address all barriers. This increases the importance of developing equitable but community-specific solutions and targeting resources for residents that are most in need or face disproportionate impacts.

CARB's equity projects also have the opportunity to support several complementary programs and strategies. With an emphasis on air quality, equity, and community engagement, staff continues to work across other CARB programs and with other entities to share lessons learned, maximize the benefits of each project, and ensure these benefits go to those communities with the greatest need.

## Staff Proposal

This year, staff is proposing several changes to CVRP to address continued growing demand and sharpen the overall effectiveness of the project. Pilot projects offered in the most disadvantaged and low-income communities remain critical to furthering our goals of increasing access to clean transportation and mobility options across the State. To improve consistency and clarity across CARB's vehicle purchase incentive projects (Financing Assistance, Clean Cars 4 All, and CVRP for Lower-Income Consumers), staff is recommending various changes to program policies and criteria and to align where possible and to streamline low-income consumer access to ZEVs. Staff's proposal for program changes is detailed later in this chapter.

New projects recommended for inclusion this year include the Sustainable Transportation Equity Project and funding to support implementation of additional SB 350 Guidance Document recommendations, such as outreach, technical assistance, and community transportation needs assessments. The Zero-Emission Assurance Project, established by AB 193 (Cervantes, Chapter 363, Statutes of 2018), will provide lower-income Californians who purchased used ZEVS and PHEVs financial support toward battery-related (or fuel cell-related) replacement or servicing costs. Staff's proposals for these projects are also described later in this chapter.

## Complementary Investments

Finally, CARB's light-duty vehicle and transportation equity investments are complemented by parallel California Energy Commission investments in ZEV charging and fueling infrastructure. To date, the Energy Commission has invested $94.9 million in electric vehicle charging infrastructure for 9,655 charging connectors and $140.6 million for 64 public hydrogen fueling stations through the Clean Transportation Program (formerly known as the Alternative and Renewable Fuel and Vehicle Technology Program).[6] The Energy Commission also provides funding to support the development of regional readiness plans, helping regions to prepare for and expedite the deployment of ZEVs and continued deployment of charging and refueling infrastructure.

[6] (https://ww2.energy.ca.gov/altfuels/2018-ALT-01/documents/

## Summary of the Updated Three-Year Plan for CVRP, the ZEV Market, Clean Transportation Equity Investments, and Outreach

As previously discussed, SB 1275 established the Charge Ahead California Initiative with the goals of placing one million zero-emission and near zero-emission vehicles in California by 2023, establish a self-sustaining ZEV market, and increase access to these vehicles for low-income consumers and consumers in disadvantaged communities. Among other requirements, SB 1275 required CARB to include a long-term plan for CVRP and related programs in the FY 2016-17 Funding Plan. The plan must include: a three-year forecast of funding needs to support the goals of technology advancement, market readiness, and consumer acceptance of advanced vehicle technologies, a market and technology assessment for each funded vehicle technology, and an assessment of when a self-sustaining market is expected and how existing incentives may be modified to recognize expected changes in future market conditions.

Appendix C of this Funding plan presents staff's Updated Three-Year Plan for CVRP, the ZEV Market, Clean Transportation Equity Investments, and Outreach. Below is a brief summary of the plan including findings, lessons learned, metrics, research, and coordination efforts.

### ZEV Market Findings

As part of the FY 2016-17 Funding Plan, staff in consultation with stakeholders, proposed a framework for the first three-year plan, which included a three-year funding need forecast along with a market and technology assessment. Staff also proposed a suite of indicators to measure ZEV market growth over time. Although SB 1275 required CARB to update the plan every 3 years, staff has provided updates to all components of the plan each year since. However, this year's plan will include a more in-depth and comprehensive update.

Since the introduction of the first Light-Duty Long-Term Plan in FY 2016-17, the ZEV market has grown tremendously and events over the last year, with the introduction of new vehicles (there are now over 40 eligible vehicles), have changed the ZEV market landscape. As new data have become available, staff have analyzed the impacts of these events and updated the assumptions, evaluations, and recommendations. Initial findings indicate a promising prospect for the ZEV market in the coming years, and major changes to incentive programs will be necessary to ensure project sustainability within a limited budget and to better foster market growth from harder to reach market segments.

## Clean Transportation Equity Investment Findings

The FY 2019-20 Funding Plan marks the sixth year of CARB allocating funding to clean transportation equity projects. With no precedent for any of these projects when they started, CARB pursued a pilot approach to allow for flexibility, feedback, and adjustments where needed. Each project is unique, and the pilot phase is critical to discovering how each can best achieve its specific goals and find solutions to the numerous barriers faced by low-income and disadvantaged communities. During these initial years a number of lessons have been learned and many implementation challenges overcome. Specifically:

- Project lead times and project implementation times were generally longer than expected, due to a number of factors, including partnership building, permitting needs, individual one-on-one support with consumers, etc.
- Coordination with a broad range of partners, including residences, businesses, local governments, etc., is critical for selecting project locations that need a physical presence, such as car sharing projects.
- These projects are often resource intensive due to the nature of working with a broad range of consumers and the level of coordination indicated above.

The next three years marks a second phase, where existing projects have adopted successful strategies that focus on maximizing participation and benefits. CARB's primary role in this new phase is to facilitate coordination across projects, to ensure best practices are shared, and to help projects operate on a larger scale. CARB is also making it a priority to help the clean mobility options projects identify pathways to sustainability where they'll ultimately be able to operate independently without the need for Low Carbon Transportation funding.

It's important to note that stakeholders and administrators have expressed a need for more predictable funding. Project administrators are hesitant to plan longer-term and fully commit their available resources if they're uncertain there will be money for them in future budgets. Also, budget statute currently requires each year's appropriation to be spent within four years. Given the long lead time and the lengthy administrative processes for many projects it can be difficult for administrators to meet these deadlines without having to make otherwise unnecessary changes to their projects.

## Vehicle Purchase Incentives

This section covers the three programs that aim to support ZEV deployment goals and ensure that the programs are administered equitably:

- CVRP
- Clean Cars 4 All
- Financing Assistance

The primary goal of CVRP is to accelerate the deployment of the cleanest feasible vehicle technologies to meet California's air quality, climate change, and petroleum reduction goals. As previously noted, these goals include deploying:

- 1 million ZEVs by 2023, as directed by SB 1275;
- 1.5 million ZEVs by 2025, as directed in Executive Order B-16-2012; and
- At least 5 million ZEVs by 2030, as directed in Executive Order B-48-18.

In order to achieve these goals, we must ensure that residents of low-income and disadvantaged communities can access these incentives and also embrace moving to the cleanest technologies available. The Increased Rebates for Lower Income Consumers in CVRP, Clean Cars 4 All, and Financing Assistance are designed to help make the purchase of advanced technology vehicles more affordable and realistic for those that otherwise might not be able to access newer, cleaner technologies. Clean Cars 4 All and Financing Assistance also support incentives for the secondary clean vehicle market, which is critical for both lower-income consumers who typically don't purchase new cars, and for the continued viability of a ZEV market.

## Clean Vehicle Rebate Project (CVRP)

Low Carbon Transportation Appropriation –
$238 million for CVRP of which at least $25 million is to be used to support increased CVRP rebates for Lower-Income Applicants

CVRP is designed to offer vehicle rebates on a first-come, first-served basis for light-duty ZEVs, plug-in hybrid electric vehicles, and zero-emission motorcycles. CVRP helps get the cleanest vehicles on the road in California by providing consumer rebates to reduce the initial cost of these advanced technologies. Current per-vehicle rebate amounts are based on consumers' income and vehicle technology as shown in Table 8. Increased rebates for low-income applicants were introduced in 2016. As discussed later in the chapter, due to increasing demand and in order to increase program cost-effectiveness, staff is proposing a suite of changes to the current program, including changes to the rebate amounts below.

**Table 8: Current CVRP Rebate Amounts and Income Limits**

| Rebate Type | Fuel Cell Electric Vehicle | Battery Electric Vehicle | Plug-In Hybrid Electric Vehicle[1] | Zero-Emission Motorcycle |
|---|---|---|---|---|
| **Increased Rebate for-Low Income Applicants**<br>Households with income ≤300% of federal poverty level | $7,000 | $4,500 | $3,500 | $900 |
| **Standard Rebate**<br>Available for:<br>• Individual tax filers whose income is >300% of federal poverty level but ≤$150,000<br>• Head-of-household tax filers whose income is >300% of federal poverty level but ≤$204,000<br>• Joint tax filers whose income is >300% of federal poverty level but ≤$300,000 | $5,000 | $2,500 | $1,500 | $900 |
| **Above Income Cap**<br>• Individual tax filers whose income is >$150,000<br>• Head-of-household tax filers whose income is >$204,000<br>• Joint tax filers whose income is >$300,000 | $5,000 | Not eligible | Not eligible | Not eligible |

[1]With an all-electric range of at least 20 miles

In 2016, the Legislature passed SB 859, which mandated a number of changes to CVRP, including:

- Increasing rebate amounts for low-income applicants with household incomes less than or equal to 300 percent of the federal poverty level to those shown in Table 8.
- Reducing the income cap to the levels shown in Table 8.
- Limiting plug-in hybrid electric vehicle eligibility to vehicles with at least 20 miles of electric range.
- Requiring outreach to low-income consumers.
- Requiring prioritized rebate payments for low-income consumers.

CARB incorporated all of these changes to CVRP as part of the FY 2016-17 Funding Plan. Senate Bill 615 (Cooper, Chapter 631, Statutes of 2017) extended these provisions through December 31, 2018. In addition, Assembly Bill 2885 (Rodriguez, Chapter 366, Statutes of 2018) extends the requirements for CARB to continue providing outreach to low-income households and low-income communities and prioritize rebate payments to low-income applicants until January 1, 2022.

While the statutory requirement for some of the above-mentioned provisions sunset at the end of 2018, staff proposes to keep them all in place for FY 2019-20 with the notable exception that we propose to further increase the PHEV all-electric range limit from 20 to 25 miles.

The Supplemental Report of the 2018-19 Budget Act requires CARB to submit an annual supplemental report through 2030 that updates the CVRP forecast and estimates the total state rebate investment necessary to reach the 2030 ZEV deployment goal of 5 million vehicles. The report will be included in the funding plan in Appendix C as part of the Updated Three-Year Plan for CVRP, the ZEV market, Clean Transportation Equity Projects, and Outreach.

**Current Project Status**

Through March 2019, CVRP has provided rebates for nearly 320,000 vehicles at a total of just over $720 million since the project's launch in 2010. Since March 2016, nearly 13,000 of these rebates have been increased rebates issued to lower-income consumers totaling over $50 million. About 60 percent of rebates went to battery electric vehicles, 37 percent for plug-in hybrid electric vehicles, and about 2 percent of rebates for fuel cell electric vehicles and zero-emission motorcycles. There are now over 40 eligible vehicle models available and more vehicle introductions are planned for 2019 and 2020. Additional project statistics are available on the CVRP website:

https://cleanvehiclerebate.org/eng/rebate-statistics.

Staff monitors CVRP participation rates by comparing rebate application data to California vehicle registration data to evaluate program trends. Historically, about 74 percent of plug-in electric vehicles purchased or leased in California received a rebate prior to the introduction of income-based consumer eligibility. Since the introduction of the CVRP income cap, roughly 50 percent of ZEVs purchased or leased in California have been rebated. This suggests that the income cap may be having the intended effect of directing the rebates to a smaller portion of the market and reducing the number of rebates issued to consumers who would have purchased an EV regardless of the additional incentive. Staff will continue to monitor these trends.

Rebate Now: Staff developed a pre-qualification mechanism to bring the CVRP rebate closer to the point of sale, which was approved as a part of the FY 2016-17 Funding Plan. The pre-qualification mechanism, called Rebate Now, launched on January 30, 2018 and is currently being piloted in San Diego County. Eligible residents in the county will have the opportunity to be preapproved for a CVRP rebate prior to purchasing or leasing an eligible vehicle. Rebate Now is aimed at increasing CVRP participation, and the initial pilot allows CARB and the CVRP administrator to test and refine implementation on a small scale, provide one-on-one dealer training and support, and gauge the effectiveness of the pilot before launching statewide.

A report on the status of the pilot and lessons learned was released in September 2019 and can be found on the CVRP Reports page. Staff is continuing to work with the CVRP administrator and stakeholders to refine the pilot so that it is easier to use and understand for consumers and dealers. Staff believes that the pre-approval mechanism is not yet suitable to expand statewide and will continue to adjust and test Rebate Now in San Diego County. Staff will keep stakeholders updated on pilot efforts through the work group process.

Low-Carbon Fuel Standard (LCFS) Clean Fuel Reward: Board Resolution 18-17 directed CARB staff to work with stakeholders to explore opportunities to offer point of sale ZEV incentives funded by the sale of LCFS credits. Electric utilities, who receive LCFS credits associated with residential charging of electric vehicles (EVs), are in the process of setting up a statewide point of purchase Clean Fuel Reward program using their LCFS value, which is expected to launch in 2020. CARB is working internally and with the utilities and auto makers to ensure that this effort will be closely coordinated with CVRP and other CARB light-duty incentive programs in a way that is easy for the consumer to understand and utilize and works synergistically with existing programs. At this time, it is not possible to determine the exact value of this point of sale incentive. As such, staff believes that it is critical to keep CVRP funded for as long into 2020 as possible to better coordinate with the launch of the Clean Fuel Reward and ensure some type of rebate is available throughout the year.

Outreach and Education in Disadvantaged and Low-Income Communities: CVRP continues to offer expanded outreach and public education efforts. The Center for Sustainable Energy (CSE or CVRP Administrator) is currently working with several community-based organizations (CBOs), including:

- Central Valley Asthma Collaborative
- Valley LEAP
- Central Valley Environmental Justice Network
- Valley Improvement Project
- Madera Coalition for Community Justice
- El Quinto Sol de America
- Community Resource Project
- MAAC Project

These organizations help support on-the-ground outreach efforts, including ride and drives, events, and presentations. CSE plans to expand these efforts to add an additional six to eight CBOs to support CVRP throughout California. These organizations also canvas for information, promote events, and provide assistance at local events.

Over the last year, there has also been an increase in the number of outreach events held in disadvantaged and low-income communities. Since the introduction of increased rebates for low-income consumers, over 380 outreach events have occurred in disadvantaged communities and low-income communities. These events include ride and drives, presentations, and community-specific events. CSE has also created a newsletter targeted to consumers in disadvantaged and low-income communities, in both English and Spanish. The addition of four separate videos within the community page of the CVRP website, also in English and Spanish, showcase the benefits of EVs to help break down barriers to EV adoption.

Additionally, the CVRP Administrator has increased outreach to dealerships in disadvantaged and low-income communities. Outreach efforts include phone calls, conference calls, and in-person outreach with dealerships. In the past six months, the CSE has provided outreach to over 550 dealerships located in areas designated as benefitting disadvantaged communities.

In terms of stakeholder education, a new tab focused on equity metrics and AB 1550 priority populations has been added to the CVRP rebate dashboard on the CVRP website. Additionally a growing amount of analysis of rebated consumers, including summaries of survey responses to CVRP's consumer survey that focuses on rebated consumers in disadvantaged communities, can be found on CVRP program reports page.

Lastly, the CVRP Community Incentive Assistance webpage offers tools such as a cost savings calculator to give low-income consumers a better understanding of available incentives. More information on cost savings and other tools are available on the

CVRP Community Incentive Assistance webpage.

Prioritized Rebates: In the FY 2016-17 Funding Plan, CARB introduced prioritized rebate payments to low-income applicants as directed by SB 859. Staff expects last year's allocation of $25 million for low-income applicant rebates to last through the end of 2019. This will keep CVRP's increased rebates up and running for low-income rebate applicants until the FY 2019-20 funding becomes available. Staff will continue to evaluate funding needs to ensure that low-income rebates are processed as soon as applications are reviewed and approved even though the project may be in a waiting list mode for other applicants.

Choose Your Incentive: AB 544, enacted in October 2017, limits incentives for consumers with an income greater than the thresholds outlined in Table 8 who purchase or lease an eligible FCEV on or after January 1, 2018. These consumers must choose between obtaining a CVRP rebate or receiving a decal under the Clean Air Decal Program administered by the DMV. Staff is working with the DMV to compare CVRP and Clean Air Decal applicant information to verify that affected participants are only utilizing one incentive. Consumers with an income below the thresholds outlined in Table 8 who purchase or lease a qualifying vehicle remain eligible for both the Clean Air Decal and CVRP rebate.

Federal Tax Credit Phase-Out: Internal Revenue Code Section 30D provides a credit of up to $7,500 for Qualified Plug-in Electric Drive Motor Vehicles, including passenger vehicles and light trucks, purchased after December 31, 2009. The credit begins a phase-out period for a manufacturer's vehicles when at least 200,000 electric vehicles have been sold for use in the United States. A reduced federal tax credit will be available to consumers during the year-long phase-out period which begins the second quarter after the threshold is reached. Staff continues to monitor monthly electric vehicle sales as Tesla has reached the 200,000 mark in quarter 3 of 2018 and General Motors (GM) hit the threshold in quarter 4 2018[7]. As such, the 12-month phase down for the federal tax credit has already begun for both Tesla and GM. Tesla's tax credit will fully expire at the end of 2019 and GM's will expire at the end of March 2020.

Public Fleet Incentives: Staff incorporated several provisions unique to the Public Fleet Pilot into CVRP. These included: the option for public fleets to reserve funds by submitting a pre-acquisition plan; a streamlined application process (e.g. one application for all vehicles); required annual vehicle usage reports; flexibility for assigning rebates and retaining ownership; and tribal government participation. Staff also included provisions that allow fleets up to 6 months to apply for pre-acquisition applications and up to 18 months to apply for regular applications (i.e. after the purchase is complete or vehicles are delivered). These changes apply to public fleets anywhere in California, not just those operating in disadvantaged communities. These

[7] Evarts, E. (2019, June 28). Federal tax credit on Tesla models set to ratchet down again July 1. Retrieved August 2, 2019, from Federal tax credit on Tesla models set to ratchet down again July 1.

are intended to make participation easier for public fleets by accommodating their typical procurement process.

Similar to the Public Fleet Pilot Project, CVRP Public Fleet funding maintains an increased incentive for fleets operating in disadvantaged communities. Staff aligned the increased incentives for fleets to match the incentives for low-income consumers of up to $7,000 as shown in Table 8. Eligibility for the extra incentive is limited to those vehicles domiciled in a disadvantaged community census tract consistent with the direction in AB 1550, rather than allowing vehicles in ZIP Codes containing disadvantaged community census tracts to qualify.

Additionally, rebates are provided to rental and car share fleets as they provide a unique opportunity for introducing eligible vehicles to a large consumer base. Public, rental, and car share fleets are capped at a maximum number of rebates per entity per calendar year. Rental car fleets and car share fleets are capped at 20 rebates per calendar year and public fleets participating in the CVRP process are limited to 30 rebates per calendar year.

## Staff Proposal for FY 2019-20

In the latter half of 2018, California's EV market saw rapid growth leading to a quicker draw down of FY 2018-19 CVRP funds than expected. The program saw record participation with average monthly application volume doubling to about 8,000-10,000 applications received per month from July-December 2018. Due to growth in the market, FY 2018-19 funds for standard rebates were fully reserved in July 2019 leaving a waitlist as shown in the section on CVRP projections in Appendix C.

In AB 74 (Ting, Chapter 23, Statutes of 2019), the Budget Act of 2019, the Legislature appropriated $238 million for CVRP of which at least $25 million is to be used to support low-income increased rebates.

Based on the projections presented below, staff expects that the budget appropriation of $238 million will only meet demand for the program for a portion of the upcoming fiscal year given the current program design. Accordingly, staff is proposing a suite of changes to the program at this time.

CVRP Demand Projections:

When staff began the process of developing the FY 2019-20 funding plan proposal for CVRP in March 2019, projections indicated a funding demand of about $400 million to cover the anticipated FY 2018-19 waitlist and to fund the program through August 2020 given the current program design. This estimate was derived using a similar methodology as FY 2018-19 but factoring in the most recent CVRP and registration data, updating the approach to better estimate Increased rebates for lower-income participants, and accounting for a rapid increase in EV sales during 2018.

Due to the large spike in Tesla deliveries in the latter half of 2018, staff and stakeholders were concerned that the corresponding increase in rebates may be skewing the projections for FY 2019-20. Additionally, the CVRP administrator was dealing with a large backlog of rebate applications, which limited the data available to run the projections at the time. Over the last six months, staff has worked with the CSE to update the projection methodology which has produced a projected funding need of about $300 million to cover the FY 2018-19 waitlist and fund the program through August 2020 given the current program design. A detailed description of the projection methodology and updated approach can be found in Appendix C.

As previously mentioned, funding for standard rebates ran out in July 2019, while funding remains available for increased rebates for low-income consumers. Table 9 shows the anticipated backlog of demand ("waiting list") of about 9,000 rebates totaling about $30 million between July 2019 and when the FY 2019-20 funding could be added to the program in September 2019. Table 9 also shows the projected surplus of low-income increased rebates expected during the same time period indicating that the program will remain open for increased rebates well into quarter 4 of 2019.

**Table 9: Projected FY 2018-19 Funding Status**

| Time Period | Standard Rebates Waitlist Demand | Low-Income Rebates Surplus |
|---|---|---|
| Jul – Aug 2019 (2 months) | $29 million ~9,000 rebates | $11 million ~2,500 rebates |

Table 10 shows estimated rebate demand for the FY 2019-20 funding cycle, which goes from September 2019 through August 2020, and the corresponding funding need, with projections for both standard rebates and low-income increased rebates. These projections assume no changes to the current program design. In previous years, we have shown these values as a range of low, middle, and high. For the purposes of program analysis, staff chose to use the middle value. For a detailed description of the projections for this year and the next two fiscal years, please see Appendix C.

**Table 10: Projected Rebate Demand for FY 2019-20 Funding Cycle (with no changes)**

| Time Period | All Rebates | Standard Rebates | Low-Income Rebates Only |
|---|---|---|---|
| Sept 2019 – Aug 2020 (12 months) | $264 million 101,000 rebates | $235 million 94,000 rebates | $30 million 7,000 rebates |

*Note: Standard rebate and low-income rebate columns don't exactly add to all rebates due to rounding.*

Since FY 2019-20 funds were available in September 2019, the time period covered by the 12-month projection has been adjusted accordingly. Based on current projections, the proposed $238 million allocation would not be sufficient to meet demand for the program through the FY 2019-20 funding cycle under the current program design.

Staff will reassess these projections throughout the upcoming fiscal year. In the event that the low-income applicant demand trends higher than projected, staff would reallocate funding from standard rebates to low-income rebates to ensure that funding is available to low-income applicants until the FY 2020-21 CVRP funds are available.

Proposed Changes for FY 2019-20

One focus of the rebate is to induce behavior change in vehicle purchasing decisions and incentivize consumers who wouldn't otherwise purchase an electric vehicle. Because of this, staff strives to take the steps necessary to further target the rebate towards consumers who view it as essential to their ZEV purchase, thereby improving the cost-effectiveness of the program, and believes that the following changes are an effective approach to meet this goal.

Staff is proposing five key changes to CVRP to ensure that this year's funding allocation provides a meaningful incentive to encourage EV purchases while maintaining a program that is viable for a longer portion of the upcoming fiscal year than the current program design would allow. Having CVRP open through the fiscal year would also allow the project to better align with the launch of the Low-Carbon Fuel Standard Clean Fuel Reward Program and send a clear signal to the market.

It is important to note that because CVRP re-opened in September 2019, once FY 2019-20 funding was available, applicants on the waitlist and those who apply for a rebate between early September 2019 and when changes are implemented in early December 2019 are subject to the eligibility requirements in place for FY 2018-19. Since the following proposed changes will not be heard before the Board until late-October and time is needed to implement any approved changes, they will not be effective until early December 2019. Further, only certain changes, such as rebate limit, the length of the application window, and vehicle eligibility, all of which are discussed in more detail below, would impact low-income applicants for increased rebates.

Staff worked with stakeholders through public working groups to discuss various program changes and to determine how to design the program to fit within a $238 million budget. After receiving input from stakeholders during public work group meetings, staff is proposing the following changes:

Proposed Changes to Rebate Amounts: In order to provide a program that remains open for a meaningful period of time during the fiscal year, staff is proposing to

reduce standard rebate amounts for all eligible vehicle types, as shown in Table 11, below. Increased rebates for lower-income consumers would remain at their current levels of $7,000 for fuel cell electric vehicles (FCEVs), $4,500 for battery electric vehicles (BEVs), and $3,500 for plug-in hybrid electric vehicles (PHEVs). Of all changes proposed, this change provides the largest cost-savings, though it will be the most noticeable to consumers. Rebate amounts have not been changed in the project since 2012.

**Table 11: Proposed Standard Rebate Amounts for FY 2019-20**

| Vehicle Type | Current Standard Rebate Amount | Proposed Standard Rebate Amount |
|---|---|---|
| Fuel Cell Electric Vehicle (FCEV) | $5,000 | $4,500 |
| Battery Electric Vehicle (BEV) | $2,500 | $2,000 |
| Plug-In Hybrid Electric Vehicle (PHEV) | $1,500 | $1,000 |
| Zero Emission Motorcycle (ZEM) | $900 | $750 |

<u>Proposed Changes to Vehicle Eligibility:</u>

- Increase the all-electric range requirement for eligible PHEVs
    - The current minimum all-electric range requirement for eligible PHEVs is 20 miles as determined by the Urban Dynamometer Driving Schedule (UDDS). Staff is proposing to increase this requirement to 25 miles in an effort to focus this limited funding on the vehicles with the highest all-electric range. An increase in the all-electric range requirement to 25 miles UDDS would result in the elimination of 4 of the 18 eligible PHEV models – BMW 530e, Audi A3 Sportback e-tron, Volvo XC90 T8, and Volvo XC60 T8. A complete list of available models and their associated range can be found in Appendix C.
    - In the long-term plan for CVRP in Appendix C, staff is recommending an incremental increase in minimum all-electric range over several years with this proposed change being the first step.

- Introduce a base MSRP cap for vehicle eligibility
    - Staff is proposing to incorporate a maximum base MSRP of $60,000 for vehicle eligibility. Staff is looking at the base MSRP of each trim level or model variant available for eligibility purposes. As part of our ongoing efforts to target the rebates where they have the most impact, we aim to limit the rebates to vehicles where the rebate is a greater percent of the purchase price and where program data indicate the rebate is more essential to enabling clean-vehicle acquisition. Through discussion with stakeholders, staff determined that a maximum base MSRP of $60,000 is

a limit that would help meet this goal while not eliminating a significant number of vehicles from the program or discourage introduction of new models.
    - Fuel-Cell Electric Vehicles (FCEVs) will not be subject to this program change as this technology is still in the early phases of deployment and an MSRP cap of $60,000 would be too limiting.
    - This change would eliminate two of the eligible 18 PHEV models, one of which would already be ineligible under the proposed minimum all-electric range requirement of 25 miles. The affected vehicles are the Volvo S90 T8 and Volvo XC90 T8.
    - This change would also eliminate three of the 20 eligible BEV models – Tesla Model X, Tesla Model S, and Jaguar I-PACE.

<u>Proposed Changes to Rebate Participant Eligibility:</u>

- Limiting consumers to one rebate per person
    - Currently, rebate participants are eligible to receive up to two rebates per person for the life of the program. Staff is proposing to decrease this limit to one per person for the life of the program *going forward* in an effort to increase the number of unique applicants the program can serve. Consumers that have already received one rebate would still be eligible to receive another, as staff recommends this change should not impact past participants. Currently, about 7 percent of program participants return for a second rebate so this change is expected to have a minimal impact on participants.
    - The project currently also allows for a third rebate when a consumer moves from a BEV or PHEV to a FCEV. Staff proposes to maintain this practice, thus allowing a second rebate for the purpose of moving to a FCEV.

- Limiting consumers to a 3-month application window after vehicle purchase
    - Currently, rebate participants have 18 months from the date of vehicle purchase to apply for a rebate. This was established because many participants early on in the project understood CVRP to be an annual tax incentive. Staff is proposing to decrease the application window to 3 months from the date of vehicle purchase. Approximately 90 percent of applicants since November 2016 applied for their rebate in the first 3 months after vehicle purchase. Since CVRP has been around for almost ten years, consumers have a better understanding that the project to exists as a rebate program. Staff believes that having a shorter application window helps to ensure that we are rebating consumers who consider the rebate essential to their ZEV purchase.

Collectively, these proposed changes, implemented in early December 2019, would reduce projected funding need for the FY 2019-20 funding cycle from about $300

million to roughly $240 million (~$30 million for the waiting list and an additional ~$210 million to meet the estimated 12-month demand between early September 1, 2019 and August 31, 2020) as shown in Table 12 below. This means the $238 million budget appropriation is expected to fund the program through June 2020 and possibly further into the summer. The proposed $238 million appropriation is forecasted to fund standard rebates through at least June 2020 and increased rebates for low-income consumers through at least August 2020 given the above-mentioned changes. If demand for increased rebates increases beyond $25 million, then the available funding for standard rebates will correspondingly decrease below $213 million and the standard rebate funds may be exhausted more quickly than June 2020.

**Table 12: FY 2019-20 Projected Funding Need with Program Changes**

| Scenario | FY 2018-19 Waitlist Cost | Sept 2019 – Aug 2020 Cost | Savings | Total Funding Need |
|---|---|---|---|---|
| **Project Funding Need with No Program Changes** | $29 million | $264 million | $0 million | $293 million |
| **Project Funding Need with Proposed Changes** | $29 million | $208 million | -$56 million | $237 million |

Once funds are expended for standard rebates, staff proposes closing the program to these applicants until FY 2020-21 funding becomes available. Funding a waitlist in future years may no longer be feasible due to increasing demand and a limited budget. Staff would still like to retain the option to open a waitlist should funding conditions allow for it. However, projections indicate that the program will have sufficient funding for increased rebates for lower-income consumers through the full FY 2019-20 funding cycle given the proposed changes.

Although this year's proposal contains many changes, it is staff's goal to keep changes to a minimum going forward. This would likely mean a program that does not last a full twelve months. Staff will continue working with stakeholders throughout the next year on determining how the design and communication plan for a limited time program would work in future years.

*Funding for Veloz to Encourage the Purchase of Zero-Emission Vehicles:* Staff is proposing to use $1 million of CVRP's FY 2019-20 allocation to support outreach through various media outlets that encourage the purchase of zero-emission vehicles. This outreach may include advertising via television, newspaper, magazine, blog or websites. To implement this outreach, staff is proposing that CSE, which administers the CVRP partner with Veloz, a non-profit organization which has an electric vehicle campaign underway and which has matching funds from Electrify America to expand the reach of this campaign. It is also CARB's intent that Veloz

partner with an outreach organization with experience in providing information related to the benefits of driving electric vehicles, to underserved and disadvantaged communities stakeholders. Staff believes that this is a cost-effective approach that will help expand our reach statewide, especially in disadvantaged and low-income communities, and translate to an increase in ZEV vehicle purchases. (Note that the projections do not account for the effect of this marketing support.)

*Funding for Public Fleets through DGS:* Staff previously set aside $1 million of CVRP's FY 2017-18 allocation so that fleets can acquire CVRP-eligible vehicles through DGS's procurement process, allowing fleets to utilize the incentive at the point of sale. The interagency agreement process and time necessary for DGS to implement this program has taken longer than initially anticipated. In order to avoid $1 million in FY 2017-18 funds reverting, staff added the funds back into the general CVRP funding pot for fleets. Staff is proposing to set aside $1 million of CVRP's FY 19-20 allocation for DGS as this should give CARB and DGS ample time to launch the program while meeting expenditure deadlines. Fleets that do not use the DGS procurement process are allowed to use the normal CVRP process to obtain funding for vehicles. Staff also proposes maintaining flexibility to move the funding back to the general CVRP grant should implementation with DGS be deemed infeasible. (Note that the projections described do not account for this set-aside.)

*AB 1550 Disadvantaged Community and Low-Income Household/Community Benefits:* CVRP will continue to be implemented on a first-come, first-served, statewide basis, so it is not possible to estimate in advance exactly how much funding will be spent in and benefit disadvantaged communities, low-income communities, and low-income households. In the 2018 reporting cycle, about 9 percent of CVRP funding went to applicants in disadvantaged communities and an additional 14 percent went to applicants living in low-income communities that don't overlap with disadvantaged communities. As reported in the March 2019 Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds, nearly a quarter of CVRP funding is now benefitting priority populations. Further details are available on the CVRP website's rebate dashboard in a new Equity Stats tab focusing on equity metrics and AB 1550 priority populations.

Staff expects that the AB 1550 benefits for the FY 2019-20 funding should increase with the changes to increase the equity-focused components of CVRP. These include the higher rebates for low-income consumers, a dedicated funding allocation for low-income rebates, refinement of the Rebate Now prequalification pilot, and increased outreach for disadvantaged communities and low-income households, all of which should help low-income consumers make these purchases.

*Terms and Conditions*: When CVRP was established, CARB and the project administrator developed Terms and Conditions to highlight the policies set forth by the Board in more detail for consumers, and ensure a fair, equitable, and responsible project. More specifically, the Terms and Conditions are intended to notify consumers

of the core requirements of the program prior to submitting an application. Additionally, CARB and the project administrator developed an Implementation Manual to further define these rules and define roles and responsibilities.

These documents are incorporated into the proposed Funding Plan by reference and updated periodically throughout the year to reflect project changes after the Board adopts each funding plan and as other changes are necessary to provide further clarity.

*Solicitation Process*: CARB selected a grantee to administer FY 2016-17 CVRP funds via a three-year competitive solicitation. As the current grant comes to a close, staff proposes to forgo a solicitation for a new grant this fiscal year and instead re-solicit for a new grant for FY 2020-21. Staff believes holding a competitive solicitation this fiscal year will add further disruption to the program as it undergoes changes to meet growing consumer demand. The next competitive solicitation is planned for FY 2020-21 and staff plans to incorporate sufficient funding from the FY 2020-21 appropriation into the FY 2019-20 grant to ensure CVRP continues without interruption during the solicitation period.

**Outcomes**

Staff estimates that the $213 million allocated for standard rebates would fund about 100,000 rebates and provide 622,000 metric tons of carbon dioxide ($CO_2$) equivalent GHG emission reductions. The allocation would also provide 46 tons of NOx, 32 tons of PM 2.5, and 10 tons of reactive organic gas (ROG) emission reductions.

The $25 million allocated for increased rebates for low-income consumers would fund about 5,600 rebates and provide 33,000 metric tons of $CO_2$ equivalent GHG emission reductions. The allocation would also provide 2.4 tons of NOx, 1.9 tons of PM 2.5, and 0.3 tons of reactive organic gas (ROG) emission reductions. After the funding is expended, CARB will report on the number of rebates issued, emission reductions achieved, and disadvantaged community benefits as part of future Annual Reports to the Legislature on California Climate Investments.

The ZEV market is continuing to grow dynamically. Although it is still early in the ZEV market's development, there is a clear need to evaluate the effectiveness of investments toward CVRP and other light-duty vehicle incentives. Staff provided an update to the long-term plan for the Three-Year Plan for CVRP, the ZEV Market, Clean Transportation Equity Investments, and Outreach in Appendix C of this funding plan. The update to the long-term plan covers this fiscal year and the next two fiscal years (2019-20, 2020-21, and 2021-22). This includes a review of market and technology indicators and a determination of if and when additional changes need to be made to CVRP. These indicators include, but are not limited to: ZEV sales as a fraction of the new car market; technology advancement such as vehicle range; battery cost and vehicle price; vehicle diversity and number of manufacturers producing ZEVs; growth

of the used ZEV market; and consumer awareness about ZEVs.

As part of the Supplemental Report of the 2018-19 Budget Act, CARB is required to submit an annual supplemental report, until January 1, 2030, that includes a forecast of the total state rebate investment necessary to reach the goal of placing at least 5 million ZEVs in service on California's roads. Development of the first report occurred alongside the development of the update to the long-term plan for CVRP and light-duty incentives. The first report is provided in this funding plan as part of Appendix C and will be included in the funding plan annually thereafter until 2030.

## Clean Cars 4 All

| |
|---|
| Proposed Low Carbon Transportation Allocation<br>Up to $40 million in funding from previous years' remaining allocations |

### Project Overview

Clean Cars 4 All (formerly known as the EFMP Plus-up Pilot Project) provides incentives for lower-income consumers living in and near disadvantaged communities who scrap their old vehicles and purchase new or used hybrid, plug-in hybrid, or ZEV replacement vehicles. Instead of purchasing a replacement vehicle, participants also have the option of choosing an alternative mobility incentive voucher (referred to as the mobility option) to use on public transit and other clean transportation options. In addition, buyers of plug-in hybrid and battery electric vehicles are also eligible for incentives of up to $2,000 that cover home charging infrastructure for electric vehicles. Participants must live in a ZIP code containing a disadvantaged community census tract and have a household income of no more than 400 percent of the federal poverty limit. Measures of success include participation rates by lower-income consumers and disadvantaged communities, number of vehicles funded in total and by replacement vehicle technology type, and number of participants who choose the alternative mobility option.

### Current Project Status

Since FY 2014-15, CARB has allocated $112 million for Clean Cars 4 All, including $102 million of Low Carbon Transportation funding and $10 million of Volkswagen funding. Of that total, CARB has allocated $82 million ($41 million each) to the South Coast Air Quality Management District (AQMD) and the San Joaquin Valley Air Pollution Control District (APCD). A total of $16 million has been reserved for other air districts to launch new programs, and an additional $14 million remains in a general reserve to allocate to any air district(s) based on demonstrated need. Overall, about $72M of the $112M is under grant agreement with air districts. To date, about $36M has been spent, meaning there is still over $70 million left to spend. That is why no additional funding is proposed for 2019-20.

The Clean Cars 4 All Program launched in July 2015. To date, South Coast AQMD has expended about $26.5 million of $41 million to replace 3,240 vehicles (about 15 percent battery electric, 50 percent plug-in hybrid, 35 percent hybrid). San Joaquin Valley APCD has expended about $9 million of $41 million to replace 1,450 vehicles (about 15 percent battery electric, 35 percent plug-in hybrid, 50 percent hybrid). [8]

[8] These figures reflect vehicles funded only with Low Carbon Transportation funding allocated in previous Funding Plans.

The Bay Area AQMD launched a new program in May 2019 with a total of $10 million in grant funding ($5 million from FY 16-17 GGRF funding and $5 million from FY 17-18 Volkswagen settlement funding). The Sacramento Metropolitan AQMD project is expected to launch in late 2019 or early 2020, initially with a $5 million grant from FY 17-18 Volkswagen settlement funding.

CARB staff are working closely with each air district to ensure their programs continue to progress and increase participation. Staff anticipates that the One-Stop-Shop and Financing Assistance programs will help to further increase participation and streamline the application process.

Recent legislation broadens the scope of what alternative transportation options can be funded within the program's mobility option. SB 400 (Umberg, Chapter 271, Statutes of 2019) adds bike sharing and electric bicycles to the mix of eligible, clean mobility options participants can choose in lieu of the purchasing a replacement vehicle. The bill's effective date is January 1, 2020 and CARB will discuss this change in more detail in future work group meetings.

**Staff Proposal for FY 2019-20**

Staff estimates the total funding need for FY 2019-20 to be $25 - $35 million. Staff estimates that nearly $70 million of the total allocation to-date will still be available at the start of the fiscal year. As such, staff is not proposing any new funding be allocated to Clean Cars 4 All in FY 2019-20.

Instead of allocating new funding, staff is proposing modifications to the previous year's allocations in the following manner:

- All funding not yet encumbered in existing grants will be reallocated to a general reserve. This amounts to $40 million, which is sufficient to cover projected expenditures for FY 2019-20.
- The $40 million will be allocated to air districts based on periodic evaluations to determine consumer demand. This will ensure that each air district will receive the necessary funding to serve their residents, and ensure the funding will be spent as quickly as possible to meet statutory expenditure deadlines.

Staff also proposes to provide increased flexibility with how the $2,000 for home electric vehicle supply equipment (EVSE) installation can be used to help participants eliminate any barriers to charge their replacement vehicles. This flexibility will help the program benefit a wider pool of eligible participants. Staff is not proposing any changes beyond those included in the guidelines finalized in June 2019, which are an increase in the mobility option incentive from $4,500 to $7,500, and setting the minimum fuel economy threshold for conventional hybrid replacement vehicles to 35 MPG. As stated in the regulation, staff's proposed program requirements for Clean Cars 4 All are provided in Appendix C.

*AB 1550 Disadvantaged Community and Low-Income Household/Community Benefits*: Clean Cars 4 All requires that recipients must reside in ZIP codes containing a disadvantaged community census tract. For FY 2017-18 and later, AB 1550 imposed new investment criteria and goals for projects funded by GGRF. Staff considered whether it should change the geographic eligibility requirements in response to AB 1550, such as limiting participation to disadvantaged community census tracts rather than ZIP codes containing disadvantaged community census tracts. However, feedback from stakeholders indicated such a change would create unnecessary implementation barriers. As such, rather than downsizing the program to meet AB 1550 requirements, staff proposes continuing the existing ZIP code eligibility and low-income eligibility requirements for the Low Carbon Transportation funding.

Using historic project data, staff estimated at least 75 percent of allocated funds would meet one of the AB 1550 criteria (see Table A-61 in Appendix A), but staff expects to exceed this minimum estimate.

Finally, staff considered expanding geographic eligibility to also include low-income communities, as defined by AB 1550. Such a change could help facilitate expansion of the program to new air districts that have a limited number of zip codes containing disadvantaged communities. Before making this change, however, staff prefers to first monitor the progress of the pilot programs in new air districts once they launch to further assess whether expanding the geographic eligibility requirements is necessary.

*Terms and Conditions:* Last year, the Board approved guidelines for the Clean Cars 4 All Program as required by AB 630 (Cooper, Chapter 636, Statutes of 2017). The intent of AB 630 was to codify the EFMP Plus-up Pilot Project into a formal, stand-alone program. The Office of Administrative Law approved CARB's guidelines for Clean Cars 4 All with an effective date of June 7, 2019. As stated in the regulation, staff's proposed program requirements for Clean Cars 4 All are provided in Appendix C.

More information on the Clean Cars 4 All guidelines can be found here: https://ww2.arb.ca.gov/rulemaking/2018/proposed-guidelines-clean-cars-4-all-and-enhanced-fleet-modernization-programs

*Grant Award Process*: Consistent with previous years' allocations, CARB would award Clean Cars 4 All funding non-competitively through grant agreements with the San Joaquin Valley APCD, South Coast AQMD, Bay Area AQMD and Sacramento Metropolitan AQMD. This project will continue to require outreach, education, and consumer protections for lower-income consumer recipients living in or near disadvantaged communities. The small set aside to cover the cost of developing a data reporting system would be awarded via a competitive grant solicitation.

**Outcomes**

Staff is not proposing to use any new funding for this fiscal year, and implementing air districts are still using previous years' funding allocations. As such, clean air and climate change benefits for these funds are estimated in previous Funding Plans.

Participating air districts will continue to report project information on a quarterly basis based on project administration and consumer surveys. With this information, and through continued interaction with stakeholders and analysis of the state of the light-duty vehicle market, CARB will be able to determine the participation rate and advancement of clean vehicles for disadvantaged communities and lower-income consumers, assess future funding needs, and evaluate other opportunities for making program enhancements.

CARB will report in Annual Reports and future Funding Plans the outcomes of this project including GHG reductions achieved or anticipated using the appropriate CARB quantification methodology; progress in meeting or exceeding SB 535 and AB 1550 targets for investment in and benefits to disadvantaged communities; updates on economic, environmental, and public health co-benefits achieved or anticipated; and transaction locations. Metrics to measure progress for this project includes information on the types of vehicles utilized, the number of participants, and clean mobility improvements experienced by participants.

## Financing Assistance for Lower-Income Consumers

| Proposed Low Carbon Transportation Allocation – $10.9 million |
|---|

### Project Overview

The Financing Assistance for Lower-Income Consumers pilot project (Financing Assistance) is designed to increase access to clean transportation for lower-income Californians, with ZEV deployment, air quality improvements, and greenhouse gas reductions as secondary goals. The project is designed to help consumers overcome the barrier of obtaining vehicle financing by providing low interest loans and vehicle price buy-downs at point-of-sale. One method to encourage lenders to participate is by offering funds for a loan loss reserve to mitigate risk. In addition, buyers of plug-in hybrid and battery electric vehicles are also eligible for EVSE. This pilot is meant to complement CVRP and Clean Cars 4 All by providing low-interest loans to participants in those programs. Administrators provide financial literacy and advanced vehicle technology training to ensure consumer protection, increase the chance of successful loan repayments, and ensure that the vehicles chosen by participants adequately meet their transportation needs. Measures of success include the number of consumers who participate, their income level and residency location, costs and types of vehicles purchased, and loan repayment status.

### Current Project Status

Since Fiscal Year 2014-15, CARB has allocated $35.9 million to Financing Assistance. A total of $2.9 million has been allocated to the Community Housing Development Corporation (CHDC), a community-based organization, to run a local Financing Assistance pilot project for low-income residents in the Bay Area. A total of $23 million has been allocated to Beneficial State Foundation (BSF) to run the statewide Financing Assistance project (also known as the Clean Vehicle Assistance Program). There is $10 million (FY 2018-19) remaining to be allocated to a project. Given the demand shown by the local project, staff plans to allocate $2 million of these funds to the local project and $8 million to the statewide project.

CHDC launched the local project in December 2015 with $932,457 (FY 2014-15). Funds were fully expended by February 2019, helping 80 participants into clean vehicles (about 9 percent battery electric, 64 percent plug-in hybrid, 27 percent hybrid). CHDC was awarded $2 million (FY 2017-18) in expansion funding in April 2019. In addition to more dependable transportation options, participants have experienced co-benefits such as improved credit scores, more and better housing options, better job opportunities, and improved access to services.

BSF launched the Clean Vehicle Assistance Program in June 2018 with $5 million (FY 2016-17). By November 2018, the project had received enough applications to commit the funds, so BSF closed the program to new applicants in November 2018. This unprecedented demand was in part due to robust outreach efforts. To date, BSF

has helped 440 participants purchase a clean vehicle (about 41 percent battery electric, 46 percent plug-in hybrid, and 13 percent hybrid). Most vehicles purchased were used vehicles. The program is expected to reopen to new applicants statewide in late 2019, with $18 million awarded through a competitive solicitation process. BSF is supporting the One-Stop-Shop pilot project by participating in field testing.

Key lessons learned for both the local and statewide financing assistance programs include clear and consistent messaging on public-facing materials and strategically planning outreach when funding is limited. Project implementation is resource intensive however, working directly with consumers to increase clean transportation access aligns with CARB's equity principles. Consumer protection mechanisms and financial education is crucial to the long-term success of these programs. In addition, barriers to EVSE charging for consumers who rent their home or live in multi-unit dwellings continues to be challenging. BSF and CHDC are currently in the process of adapting the local and statewide financing assistance programs to incorporate lessons learned from the first round of funding.

## Staff Proposal for FY 2019-20

Staff proposes a $10.9 million allocation to expand the existing projects, issue a competitive solicitation for another administrator(s), or some combination of these options. If funding is not fully awarded, staff proposes flexibility to shift the funding to other transportation equity projects that are experiencing increased demand. Staff proposes that FY 2019-20 funds for Financing Assistance be split between the local and the statewide project, and proposes to use a portion of the funds to incorporate a small pilot of the Zero-Emission Assurance Project (ZAP)[9] into one or both projects.

Flexibility has proven to be important in equity pilots to enable project administrators to adapt to novel situations. For this reason, staff proposes having the flexibility to seek feedback on, and implement changes to the Financing Assistance program through the public work group process. This will ensure that project administrators can nimbly respond when adaptation is needed, reducing disruption and confusion for consumers.

To improve consistency and clarity across CARB's various lower-income consumer vehicle incentive projects (which include Financing Assistance, Clean Cars 4 All, and CVRP for Lower-Income Consumers), staff has been working to evaluate and align various program policies and criteria. Resulting changes from program alignment may include but are not limited to adjustments to vehicle incentive amounts, household and income definitions used, and other program criteria and requirements.

In FY 2019-20, proposed changes specific to the Financing Assistance Program include: increased flexibility for the EVSE incentive, adjusted vehicle incentive amounts, other changes related to program alignment, and changes to the vehicle

[9] The Zero-Emission Assurance Project is mandated by AB 193 (Cervantes, Chapter 363, Statutes of 2018).

loans offered through the program such as adjustments to the loan loss reserve set-aside and the interest rate cap. Implemented changes will be made in the context of the program's primary goal to increase access to clean transportation and be responsive to the needs of lower-income consumers.

In the FY 2018-19 Funding Plan, staff proposed expanding the flexibility of the EVSE incentive to include participants who choose a plug-in hybrid vehicle, expand the equipment eligible for funding (i.e. electrical panels, etc.), and provide opportunities to help residents who are unable to have EVSE installed at their residence. After soliciting feedback in public work groups, staff approved inclusion of alternative charging options (for example, Level 2 portable chargers or public charging network cards) of equivalent value to the home charger incentive to address residential EVSE installation barriers. Demonstrated high costs associated with site evaluation and installation of EVSE may justify increasing the upper funding limit for the EVSE incentive, but further analysis is needed. CARB staff will continue to work with administrators and seek public feedback to evaluate the feasibility and suitability of this change.

Staff proposes to implement changes to the Financing Assistance vehicle grant incentive amounts in FY 2019-20, which would affect funding allocations from FY 2017-18 and FY 2018-19 as well as FY 2019-20 and FY 2020-21 (see Appendix C, the Updated Three-Year Plan for CVRP, the ZEV Market, Clean Transportation Equity Investments, and Outreach). In conducting the analysis to determine appropriate incentive amounts, staff considered vehicle prices on the used market, affordability for lower-income consumers, and the potential for program alignment. Stakeholder and administrator feedback on program alignment and incentive amounts was solicited through public work groups. Key considerations behind the proposed adjustments are the need to increase access to high quality clean vehicles for the lowest-income consumers, gradually phase out conventional hybrid technology to focus on zero- and near-zero emission vehicles, and ensure that incentive funding is spread as far as reasonably possible. Ongoing analysis of the program will be conducted to determine if further adjustments to vehicle incentive amounts are justified, so that incentive amounts continually reflect community-identified needs and lessons learned from the local and statewide projects.

*AB 1550 Disadvantaged Community and Low-Income Household/Community Benefits:*
This proposed funding would be available statewide, so it is not possible to estimate in advance exactly how much funding will be spent in and benefitting disadvantaged communities, low-income communities, and low-income households. However, based on the solicitations, program design, and existing program data, staff expects that much of this funding will be spent in and will benefit these communities and households. As part of the Cap-and-Trade auction proceeds reporting requirements, CARB will track where funds are spent and report the portion that meets AB 1550 investment criteria. As of May 2019, nearly 90 percent of the funds met AB 1550 investment criteria.

*Terms and Conditions:* As with CVRP, when this project was established, CARB and the project administrators developed terms and conditions to highlight the policies set forth by the Board in more detail for consumers, and to ensure a fair, equitable, and responsible project. More specifically, the terms and conditions are intended to notify consumers of the core requirements of the program prior to submitting an application. CARB and the project administrators developed an Implementation Manual, which includes the terms and conditions, to further define these rules, roles, and responsibilities.

The Implementation Manuals are linked on the websites for each program:

Statewide Project (Beneficial State Foundation): Clean Vehicle Assistance Program
https://cleanvehiclegrants.org/

Local Project (Community Housing Development Corporation):
https://www.communityhdc.org/transportation-department/

These documents are incorporated into the proposed Funding Plan by reference and updated periodically throughout the year to reflect project changes after the Board adopts each funding plan and as other changes are necessary to provide further clarity.

*Project Solicitation:* Staff proposes that this grant funding be awarded to expand the existing projects, issue a competitive solicitation for another administrator(s), or some combination of these options. If funding is not fully awarded, staff proposes the flexibility to shift the funding to other transportation equity projects that show demand.

## Outcomes

CARB will continue to use program and survey data from the current CHDC project and Clean Vehicle Assistance Program as it becomes available to better understand the costs, types, and issues associated with vehicles purchased or leased, how well participant needs are met, how well the financing mechanisms work, and opportunities to continue or expand this project.

For FY 2019-20, the goal is to provide $10.9 million to expand the statewide and local projects. The projects will continue to use a loan loss reserve model that is designed to minimize the lender risk for loans made to lower-income consumers. The loan loss reserve works in conjunction with the consumer-facing portion of the incentive: a low-cost loan and vehicle price buy-down that makes a clean vehicle purchase more affordable. The FY 2019-20 allocation is estimated to fund about 1,200 vehicle incentives.

Because implementation of this project is in its early stages, staff has limited data upon which to estimate emission benefits. Based on the assumptions described in Appendix A, the proposed allocation of $10.9 million is estimated to result in 7,440

metric tons of CO2 equivalent GHG emission reductions, 0.68 tons of NOx, 0.38 tons of PM 2.5, and 0.13 tons of ROG reductions. Staff will refine these estimates as more data become available.

CARB will report in Annual Reports and future Funding Plans the outcomes of this project, including GHG reductions achieved or anticipated using the appropriate CARB quantification methodology; progress in meeting or exceeding SB 535 and AB 1550 targets for investment in and benefits to disadvantaged communities; updates on economic, environmental, and public health co-benefits achieved or anticipated; and project locations. Together, the local and statewide projects address barriers that disadvantaged communities' experience, such as the inability to finance a clean vehicle, lack of affordability, and lack of infrastructure, as identified in the draft SB 350 Guidance Document. Metrics to measure progress for this project may include the percentage of participants who follow through with a vehicle purchase, information on the loans made, types of vehicles utilized, the number of participants and their demographic information, and changes in access to mobility experienced by participants.

## Clean Mobility Projects

This section of the Funding Plan describes staff's draft considerations for a suite of clean mobility projects. Complementing the various vehicle purchase incentives, clean mobility projects focus on providing clean transportation options in low-income and disadvantaged communities, such as car and bike sharing, van pooling, clean school buses, or a combination of these options. Existing clean mobility investments projects include:

- Clean Mobility Options
- Clean Mobility in Schools
- Agricultural Worker Vanpools Pilot Project
- Rural School Bus Pilot Project

This year CARB is introducing a new clean mobility project called the Sustainable Transportation Equity Project (STEP). This new project will take a community-based approach to collaboratively identify and address the unique mobility needs of a given community. It will provide a critical example of how clean transportation equity projects can work with local planning and transportation agencies to develop innovative strategies that achieve SB 375 GHG reductions.

## Clean Mobility Options

| Proposed Low Carbon Transportation Allocation – $10 million |
|---|

### Project Overview

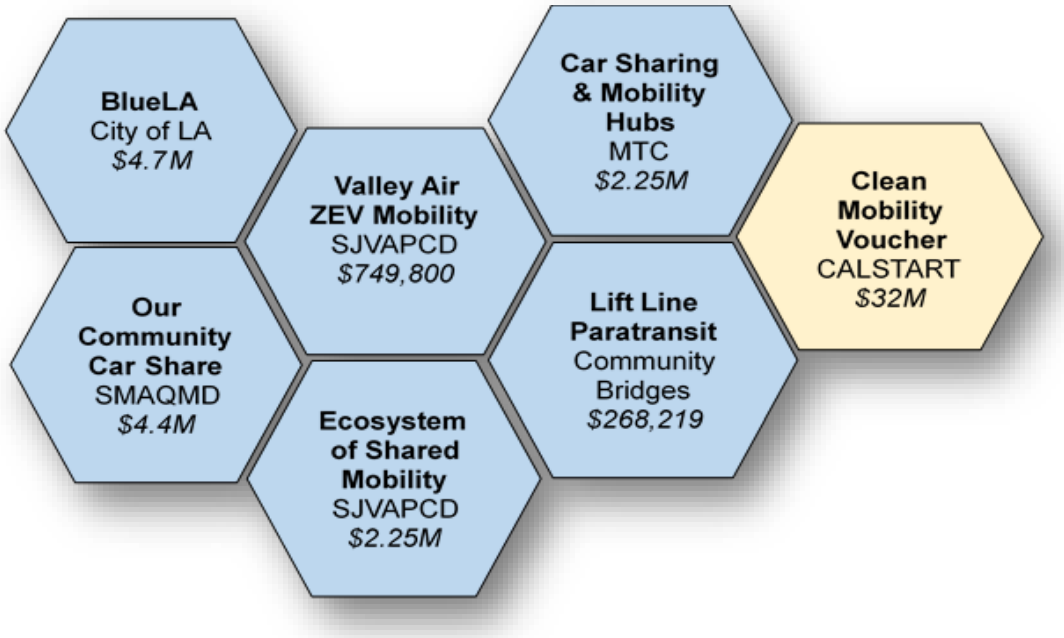
The Clean Mobility Options pilot project consists of grant projects designed to improve clean transportation access and increase zero-emission and near zero-emission mobility choices for the residents of disadvantaged and low-income communities. Consistent with the recommendations in the SB 350 Low-Income Barriers Study, this project aims to address the barriers and assess specific transportation needs of the communities. Using these transportation needs assessments, the projects will then provide various clean mobility options (other than vehicle ownership) in order to increase access to electric car sharing, regular bicycle and electric bicycle sharing, scooter sharing, vanpools and carpooling, innovative transit services, and other clean mobility options. The project will also help to address key challenges outlined in CARB's 2018 SB 150 Progress Report for California's Sustainable Communities and Climate Protection Act (SB 375) by offering an opportunity to reduce driving while expanding overall access to destinations.

CARB will continue to encourage these projects to link with current or future innovative mobility hub concepts to promote multimodal trips, including co-located passenger rail, bus/shuttle, ride-hailing, public charging, and first mile/last mile transit solutions. CARB staff will continue to work in close coordination with other clean mobility options projects funded by the Energy Commission, the Strategic Growth Council, and other local government agencies to use the lessons learned from each to help guide future investment decisions.

### Current Project Status

Figure 2 summarizes CARB's investments in the clean mobility options pilot projects benefiting disadvantaged and low-income communities. These pilot projects feature strong support from local and regional government agencies, private sector operators, and community-based organizations that together will help to ensure that the health, economic, and social benefits of advanced technology car sharing and clean mobility reach disadvantaged and low-income neighborhoods.

**Figure 2: Summary of the Clean Mobility Options Pilot Projects**




- L.A. City Car Sharing Pilot Project (BlueLA): In FY 2014-15, the City of Los Angeles received $1.7 million for a zero-emission car share pilot project in four Los Angeles disadvantaged communities. Project partners include the Shared Use Mobility Center, several City of Los Angeles departments, and community-based organizations including the Coalition for Clean Air, Communities for a Better Environment, East LA Community Corporation, LA Mas, Korean Immigrant Workers Alliance, Move LA, PATH Ventures, and T.R.U.S.T. South LA. Phase 1 of the project launched in April 2018 with 25 electric vehicles and 35 chargers in 7 locations, and has grown since then to 135 chargers and 82 vehicles in operation as of July 2019. An additional $3 million in expansion funds from the FY 2017-18 funding was awarded to expand the BlueLA project. Starting in late-fall 2019 and through June 2022, up to 390 additional chargers will be installed and 200 additional electric vehicles will be deployed as part of Phase 2 serving further disadvantaged communities located in South Los Angeles, East Hollywood, and Boyle Heights. Phase 2 will also include a shared fleet of at least 600 electric bicycles and/or scooters at or proximal to current charging stations.

- Our Community CarShare Sacramento Pilot Project: Sacramento Metropolitan Air Quality Management District received $1.4 million from FY 2014-15 funding for electric car sharing services for residents in participating affordable housing communities located in disadvantaged communities within the Sacramento Metropolitan Statistical Area. Project partners include the City of Sacramento, Sacramento Housing Redevelopment Authority, Mutual Housing California, Sacramento Metropolitan Utility District, and Zipcar. Phase 1 of the project launched in April 2018 with 8 electric vehicles, 8 level 2 chargers and 1 DC fast

charger in 4 locations. An additional $1 million in expansion funds from the FY 2016-17 funding was awarded to expand the Sacramento car sharing pilot project. Phase 2 of the project launched in early 2019, expanded the project to 6 additional electric vehicles and chargers for 3 more subsidized multi-unit housing communities, and a subsidized ride-hailing pilot to increase access to more mobility options. In FY 2017-18, an additional $2 million in expansion funds was awarded to further expand the Sacramento car sharing pilot project. As of June 2019, the project has over 460 approved members, more than 20,000 reservations and over 290,000 miles driven, and a 30 to 35 percent utilization rate (higher than the typical public utilization rate). Phase 3 of the project is under development and will serve between 4 and 6 additional affordable housing communities, while expanding the ride-hailing pilot to residents in all of the participating communities, and incorporate electric bike (e-bike) sharing in the Phase 3 communities.

- Valley Air ZEV Mobility Pilot Project: San Joaquin Valley Air Pollution Control District (APCD) was awarded $749,800 from FY 2016-17 funding for electric car sharing, vanpool, and e-bike sharing project serving approximately 1,000 disadvantaged community residents of Merced, Bakersfield, and West Fresno County. The project is planning to fully launch in fall 2019 and will include 12 electric vehicles, 30 level II chargers, 5 DC fast chargers, and 16 e-bikes, offering a mix of mobility options for daily commuting as well as casual trips. Partners include Green Commuter, Swiftmile, and CALSTART.

- Ecosystem of Shared Mobility Services in the San Joaquin Valley: San Joaquin Valley APCD was awarded $2.25 million from FY 2016-17 funding for electric car sharing project and unique ride-matching application serving 8 disadvantaged community affordable housing complexes in Tulare and Kern counties. The project is planning to launch in fall 2019 and will include 24 electric vehicles, 17 chargers, ride-hailing service to expand the reach of existing transit, and a smartphone application that aggregates the demand and supply of available services to improve cost-effective mobility choices for residents. Partners include the Shared Use Mobility Center, UC Davis Institute of Transportation Studies, Sigala, Inc., Self Help Enterprises, and MOVE.

- Car Sharing and Mobility Hubs in Affordable Housing Pilot Project: the Metropolitan Transportation Commission was awarded $2.25 million from FY 2016-17 funding for electric car sharing and e-bike sharing pilot project serving about 2,800 disadvantaged community residents at 3 affordable housing sites in San Jose, Oakland, and Richmond. The project provides mobility hubs that include 24 electric vehicles for car sharing, 18 e-bikes and/or scooters, and subsidized public transit and ride-hailing. Partners include Bay Area AQMD, TransForm, GIG Car Share, Shared Use Mobility Center, AC Transit, Santa Clara Valley Transportation Authority, and the Greenlining Institute. The initial transportation needs assessment was conducted in summer

2019 to tailor the specific mix of mobility options offered at each site based on residents' feedback.

- Lift Line Paratransit Dial-A-Ride Electric Vehicle Transition Program: Community Bridges received a $268,219 grant from FY 2016-17 for 2 electric ADA Wheelchair lifts-equipped shuttle vans replacing internal combustion engine for Lift Line service in the Watsonville community. The community-based partner for this project is Regeneracion. The project launched in late summer 2019, includes 2 chargers and serves about 700 disadvantaged community residents, offering free rides to elderly and disabled passengers seeking door-to-door transportation to medical appointments and meal sites.

- Statewide Administrator for Clean Mobility Options Projects for Disadvantaged Communities (Clean Mobility Voucher Pilot Program): CALSTART, Inc. was awarded $17 million from FY 2017-18 funding for administering a statewide pilot program to award funding on a first-come, first-served basis for small-scale car sharing and clean mobility options projects serving low-income and disadvantaged communities. This program was designed to meet the pressing needs of low-income residents and those living in and near disadvantaged communities and provide access to clean transportation funding. The statewide administrator team is developing a streamlined funding application system for eligible communities to apply and qualify for clean mobility voucher funds. In addition, the program will assist community organizations and interested stakeholders in building capacity to design and implement clean mobility options projects, such as zero-emission car sharing, vanpooling, active transportation, such as bike or e-bike sharing, innovative transit services, and other clean mobility options based on specific needs of the communities. Partners include the Shared Use Mobility Center, GRID Alternatives, and Local Government Commission. CALSTART, Inc. is planning to launch an outreach and education effort in late-fall 2019 in anticipation of opening up a streamlined voucher application system in early 2020. CARB allocated an additional $15 million from FY 2018-19 funds to expand funding for the statewide administrator pilot program to continue to award funding on a first-come, first-served basis for various clean mobility projects serving low-income and disadvantaged communities. Staff believes that the demand for these types of projects will be met by this additional allocation as a result of the analysis done as part of the three-year projections in the FY 2016-17 Funding Plan. Staff will review the progress of this program in early 2020 to evaluate if funds should be provided for expansion, or if funds should be shifted to other clean mobility projects.

*Implementation Challenges and Lessons Learned*

During the pilot phase each project had to overcome a number of implementation challenges. Some of the most prominent challenges and lessons learned are summarized below:

- The lead time for many projects was longer than expected, due to a number of factors. For example, each project relies on creating a new, strong partnership network, which takes time to build and formalize. It also takes substantial time for a project administrator to learn about their target communities and the unique barriers to clean transportation they face. These challenges often required changes to the initial project outreach plan and the way community members were engaged and enrolled into the programs.

- Complying with the various local land-use and transportations authorities, and unforeseen underground complications during construction can create considerable delays and/or increase costs. Site selection can also be a lengthy process since it requires the input and buy-off from residents, businesses and local officials, which takes time since the impacts from the projects are initially unknown. Community engagement, early collaboration between city departments and council districts on suggested site selections, and developing a streamlined permitting process can speed up the review and offset delays on approval of sites.

- In addition, administrative processes also contribute to long project lead times and unexpected delays. Before CARB can award a project grant, staff must develop a solicitation documents that often take up to a year to complete. For these projects in particular, CARB will require a longer time period for expenditures. The FY 2019-20 Low Carbon Transportation allocation provides for a longer expenditure period; however, this was not available in prior years. Staff may need to pursue extensions for some of these projects.

- By allowing flexibilities within these pilot projects, CARB staff worked with the program administrators in coming up with solutions that allowed for the projects to continue moving forward and making adjustments to help ensure they were successfully launched and implemented. CARB staff will continue to work with all program administrators, especially as the new projects come on board, to ensure that lessons learned will be shared and project models can be flexible and respond to the needs to of their targeted community residents.

**Staff Proposal for FY 2019-20**

Staff proposes a $10 million allocation for FY 2019-20 to expand the Clean Mobility Options pilot providing expansion funding to existing car sharing and clean mobility

options projects including the statewide administrator program, if the projects are substantially meeting the required milestones and show additional demand.

In addition, staff proposes to provide funding for transportation needs assessments that can inform how investments in clean mobility options should be implemented in neighborhoods and communities. This proposal is a priority recommendation from the SB 350 Guidance Document. For example, the statewide administrator would use funds for these assessments prior to awarding funds for the clean mobility options projects. These assessments will also incorporate outreach and education to inform residents of potential clean mobility options.

Furthermore, staff proposes to do an initial review of current projects to assess the need and verify demand for additional funding to ensure projects can continue. As a result of various factors mentioned before, these projects have taken more time than initially anticipated to develop and launch, and funds may have been exhausted for some components, including implementation and outreach. Grantees will need to demonstrate funding need and provide this information to CARB in order to receive additional funding.

In addition, staff proposes that Clean Mobility Options be expanded to projects that benefit low-income communities within AB 1550 designated areas as well as tribal communities.

Finally, in previous funding years, mobility enhancement options such as transit or on-demand travel subsidies, and para-transit enhancements were required to be part of a car sharing or ridesharing project as an additional component. Staff is proposing that funds be available for mobility enhancement options without the requirement to be tied to a vehicle. For example, if the neighborhood has a need for ride-hailing subsidies to allow residents to access public transit, this could be funded without requiring a vehicle to be purchased and placed within communities.

These recommendations may be applied retroactively to all the pilot projects funded since the FY 2014-15 grant solicitations and with the funds associated with these previous fiscal years.

*AB 1550 Disadvantaged Community and Low-Income Household/Community Benefits*: Consistent with FY 2018-19 Clean Mobility Options for Disadvantaged Communities project requirements, staff proposes that funding be eligible for projects that may be outside of disadvantaged communities, but will benefit them by providing better access to the residents of these communities. After analyzing barriers administrators faced in the current projects and in talking with stakeholders during the public work group meetings, staff proposes that Clean Mobility Options be expanded to projects that benefit low-income communities within AB 1550 designated areas and to tribal communities. This recommendation may be applied retroactively to all the pilot projects funded since FY 2014-15 grant solicitations. Because AB 1550 prohibits

"double counting" investments for determining compliance with minimum disadvantaged community and low-income household/community targets, staff will not count any of the Clean Mobility Options funding as being within and benefiting low-income communities or benefiting low-income households even though staff expects some of the funds will meet those criteria as well.

*Terms and Conditions:* CARB and the program administrator have developed terms and conditions to highlight the policies set forth by the Board in more detail for funding applicants, and ensure a fair, equitable, and responsible program. More specifically, the terms and conditions are intended to notify applicants of the core requirements of the program prior to submitting an application. CARB and the program administrator developed an Implementation Manual, which includes the terms and conditions, to further define these rules and define roles and responsibilities.

The Terms and Conditions and the Implementation Manual for the Clean Mobility Voucher Pilot Program will be linked on the program webpage in October or November: http://www.cleanmobilityoptions.org/

This document will be incorporated into the proposed Funding Plan by reference and will be updated periodically throughout the year to reflect program changes after the Board adopts each funding plan and as other changes are necessary to provide further clarity.

*Project Solicitation:* Staff proposes that this grant funding be awarded to expand the existing pilots including the statewide administrator program, if the projects are substantially meeting required milestones and demonstrate additional demand, or via a competitive solicitation for a new statewide administrator, or a combination of these options. Staff will analyze the status of the statewide administrator program in early 2020 to determine the best option to ensure funds are provided to the communities successfully. In addition, staff proposes the flexibility to direct any funding that is not awarded for Clean Mobility Options projects to fund other transportation equity projects that show demand.

**Outcomes**

The statewide Clean Mobility Voucher Pilot Program will create a platform to further test clean shared mobility concepts, develop standardized metrics, share the best practices and lessons learned, and build a knowledge base to apply these lessons for future clean mobility projects. CARB will continue to use data from the current projects as it becomes available to better understand the costs, strategies, and issues associated with introducing clean mobility options to low-income residents and disadvantaged communities. In addition, CARB will continue to collaborate with the California Energy Commission and the Strategic Growth Council along with local governments to better understand these projects, review lessons learned, and look for

opportunities for expanding and/or duplicating existing successful clean mobility projects.

Staff cannot estimate the exact emission benefits until projects are fully deployed and implemented. Measures of success include the numbers and types of clean vehicles, chargers, and clean mobility options introduced into disadvantaged 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. Staff provides an example of the magnitude of anticipated benefits by quantifying the emission reductions associated with a "sample" project based on assumptions described in Appendix A. The proposed allocation of $10 million is estimated to provide 1,500 metrics tons of CO2 equivalent GHG emission reductions, 0.11 tons of NOx, 0.07 tons of PM 2.5, and 0.03 tons of ROG reductions.

CARB will report in Annual Reports and future Funding Plans the outcomes of this project including GHG reductions achieved or anticipated using the appropriate CARB quantification methodology; progress in meeting or exceeding SB 535 and AB 1550 targets for investment in and benefits to disadvantaged and low-income communities; updates on economic, environmental, and public health co-benefits achieved or anticipated; and project locations.

## Clean Mobility in Schools Pilot Project

| Proposed Low Carbon Transportation Allocation – $5 million |
|---|

### Project Overview

The Clean Mobility in Schools pilot project, first funded in FY 2018-19, provides funding for zero-emission school buses and other school district vehicles, installation of supporting charging/fueling infrastructure, other clean mobility options such as creation of an electric vehicle car sharing service for school district employees and/or a bike sharing program for school staff and students, zero-emission lawn and garden equipment, and outreach and education for kindergarten through 12th grade public school district(s) in disadvantaged communities. The project is intended to introduce disadvantaged community students, teachers, parents, and staff to advanced clean transportation options and benefits, and to encourage and accelerate the deployment of new zero-emission school buses, medium- and light-duty white fleet vehicles, passenger cars, and lawn and garden equipment in California.

The project will provide immediate GHG emissions reductions, and reduces schoolchildren's and community members' exposure to cancer-causing and smog-forming pollution. Measures of success will include reduced fuel expenditures, numbers of vehicles and equipment placed, reduction in vehicle miles traveled, numbers of school district employees, staff, and students using the zero-emission vehicles and equipment, and numbers of students and other school community members engaged through outreach and education efforts.

### Current Project Status

Staff released the solicitation for the Clean Mobility in Schools Pilot Project in August 2019. CARB will announce the grant award(s) once the grant agreement(s) is/are executed.

### Staff Proposal for FY 2019-20

Staff recommends allocating $5 million for this project for FY 2019-20 to improve understanding how to best implement such a program for the benefit of schools in disadvantaged communities, by enabling experiences from additional school district(s). As school districts have a variety of needs and uses for clean mobility, it would be beneficial to fund pilot projects in at least two distinct school districts. Funds would be awarded to applicants from the competitive solicitation released in August 2019. Though not expected, if funding is not fully awarded, staff recommend the flexibility to shift the funding to other equity projects that are experiencing increased demand.

*AB 1550 Disadvantaged Community and Low-Income Household/Community Benefits:*
In FY 2018-19 Funding Plan, staff proposed that all funds allocated for the Clean Mobility in Schools Pilot Project be located in and benefitting disadvantaged communities, and staff proposes to continue this focus with FY 2019-20 funds. Because
AB 1550 prohibits "double counting" investments for determining compliance with minimum disadvantaged community and low-income household/community targets, staff will not count any of the Clean Mobility in Schools Pilot Project funding as being within and benefiting low-income communities or benefiting low-income households where they overlap even though staff expects some of the funds will meet those criteria as well.

*Project Solicitation*: A competitive solicitation for FY 2018-19 Clean Mobility in Schools Pilot Project funds was released in August 2019. As noted above, staff has proposed that FY 2019-20 funds be awarded as part of that solicitation.

**Outcomes**

This project encourages holistically reducing GHG emissions on school campuses by transforming the transportation systems in and around schools. The proposed $5 million allocation is estimated to provide 2,380 metric tons of $CO_2$ equivalent GHG emission reductions. Appendix A provides additional details on the emission estimates. Criteria pollutant and toxic air contaminant emission reductions are also expected as the advanced technology vehicles and equipment replace conventionally-fueled engines. Metrics such as zero-emission miles travelled will be used to assess the success of these incentives.

This pilot project provides the opportunity to reduce GHG and other air pollution emissions, meet zero-emission vehicle deployment goals, and provide familiarity with zero-emission vehicle technology and other advanced mobility options for the next generation. There are over 10,000 schools throughout California that could adopt similar clean technologies and practices. Additional funding will be needed to continue financially supporting schools to make this transformation possible.

## Agricultural Worker Vanpools

| Proposed Low Carbon Transportation Allocation – $5 million |
|---|

### Project Overview

The Agricultural Worker Vanpools Pilot Project provides safe, convenient and reliable transportation for agricultural workers living in disadvantaged and low-income communities, while achieving emission reduction benefits through deployment of clean technology vehicles. The project meets a basic transportation need of agricultural workers and reduces vehicle miles travelled (VMT) by single occupancy passenger vehicles to job sites. The use of shared mobility transportation combined with clean technology vehicle deployment results in immediate emission reduction benefits in areas disproportionally burdened by poor air quality. This project also promotes increased acceptance and understanding of clean, advanced technology vehicles.

### Current Project Status

Project allocations for FY 2016-17 and FY 2017-18 were combined into one, $6 million grant solicitation, and the California Vanpool Authority (CalVans) was competitively selected as the grantee. CalVans $1.5 million cash match combined with CARB's grant funding supported the purchase and outfitting of 154 15-passenger hybrid vans. Vans were deployed for the spring 2019 harvest season, with approximately 75 percent of the fleet serving agricultural workers in the San Joaquin Valley and the remaining vans serving workers in the Coachella and Salinas Valleys, Santa Maria, and other disadvantaged and low-income communities statewide. In mid-2019, CalVans received $4.7 million in FY 2018-19 expansion grant funding to support the deployment of vans to additional disadvantaged communities, while also expanding to include low-income agricultural communities. The expansion grant funding, combined with CalVans match funding, expands the hybrid van fleet by approximately 111 vans, for a total of 265 vans.

All phases of this project incorporate strong community outreach and education components, and include ridership surveys, vehicle telematics, and other participant feedback used to maximize project benefits and incorporate lessons learned. The hybrid vanpools have proven to be a highly desirable mode of transportation for agricultural workers, resulting in a waiting list for vehicle placements, and a sharp increase in demand. Demand projections indicate a steady increase as the project gains visibility and popularity among workers and agricultural employers.

## Staff Proposal for FY 2019-20

Staff proposes $5 million for FY 2019-20, with an emphasis on transportation benefits for agricultural workers living in disadvantaged communities, while dedicating a minimum of 25 percent of project funds to support agricultural vanpool programs in low-income communities. Stakeholder feedback and current project data indicate this level of funding will largely meet the immediate demand, but future funding will be needed to meet expected increases in demand over the next three years.

*AB 1550 Disadvantaged Community and Low-Income Household/Community Benefits:* Staff proposes that funding be prioritized to increase access for agricultural workers working in disadvantaged communities and then low-income communities. AB 1550 prohibits "double counting" investments for determining compliance with minimum disadvantaged community and low-income household/community targets. Staff will count any of the Agricultural Worker Vanpools pilot project funding as benefiting low-income and disadvantaged communities. Staff's approach is consistent with legislation, AB 2006 (Eggman, Chapter 364, Statutes of 2018), which requires that the project serve disadvantaged communities and low-income communities, as defined, and to allocate a minimum of 25 percent of the moneys appropriated for agricultural vanpool programs to those programs serving low-income communities.

*Project Solicitation*: Staff proposes the flexibility to extend CalVans' current grant agreement by three years to incorporate project expansion funding through FY 2021-22. Continuation of the existing grant is predicated on project demand, the grantee meeting project milestones, and the grantee providing an acceptable plan for each funding year's expansion.

## Outcomes

The proposed allocation is expected to fund about 110 vans, meeting demand and providing an estimated 5,400 metric tons of CO2 equivalent GHG emission reductions from advanced technology vehicles replacing conventional gasoline vehicles. The project would also provide about 0.17 tons of NOx, 0.43 tons of PM 2.5, and 0.03 tons of ROG emission reductions. These estimates are conservative and based only on the conversion to cleaner technology vans; additional benefits are gained through reductions in vehicle miles traveled from the displacement of single occupancy vehicles, however, sufficient user survey data are not yet available to quantify these emission reductions. Appendix A contains a description of the quantification methodology and analysis.

CARB will report in Annual Reports and future Funding Plans the outcomes of this project, including GHG reductions achieved or anticipated using the appropriate CARB quantification methodology; progress in meeting or exceeding SB 535 and AB 1550 targets for investment in and benefits to disadvantaged communities;

updates on economic, environmental, and public health co-benefits achieved or anticipated; and project locations.

Metrics and assessments to measure progress for this project include, but are not limited to, utilization rates by agricultural workers, survey feedback from vanpool users, vehicle miles traveled and number of trips taken per van, and worker and agricultural employer demand for vanpool services. These metrics and assessments will help guide adaptive management decisions and future shared mobility investments.

## Rural School Bus Pilot

| Proposed Low Carbon Transportation Allocation – $4.45 million |
|---|

### Project Overview

The Rural School Bus Pilot Project helps California school bus fleets turnover to lower carbon transportation choices by funding new zero-emission school buses, or new conventionally-fueled school buses that use renewable fuels. The project prioritizes small- and medium-sized air districts (as defined by the California Air Pollution Control Officers Association) because those air districts have less access to funding from Department of Motor Vehicle fees and other local sources. Also prioritized are older school buses with higher mileage. School buses in large air districts are eligible if projects in small and medium air districts do not use all of the funding.

The project provides immediate GHG emission reductions and reduces schoolchildren's exposure to cancer-causing and smog-forming pollution. Measures of success include reduced fuel expenditures, number and technology type of vehicles placed, reduction in vehicle miles traveled, and number of disadvantaged and low-income communities benefitted by the project.

### Current Project Status

The project was first awarded funding in FY 2016-17. Since then, CARB has cumulatively awarded $55 million, over three grants, to the North Coast Unified AQMD (NCUAQMD) to administer the project statewide. NCUAQMD held two competitive solicitations for school districts to apply for grant funding in March 2017 and June 2018. The 2018 solicitation garnered nearly 600 applications, with requested funds totaling approximately $185 million. To date, the project has funded 43 school buses, including 32 zero-emission and 11 internal-combustion renewable fueled buses. Approximately 120 additional school buses are expected to be awarded with remaining funds.

### Staff Proposal for FY 2019-20

Staff is proposing two changes to the program, starting with FY 2019-20 funds. The first change is requiring dismantling of all old school buses replaced by this program. In previous years, dismantling of the old school bus was required for school districts receiving a new conventionally-fueled school bus, but the school district was allowed to keep their old school buses as back-up buses (operated less than 1,000 miles per calendar year) if they received one or more zero-emissions school buses. This approach helped ease school districts' potential apprehension about trying new technology in their fleets, and helped ensure they could reliably meet their primary responsibility to transport pupils. However, a significant number of school districts

have chosen to dismantle their old bus even if it was not required, and requiring dismantling would permanently ensure the maximum amount of emissions reductions.

The second change is checking the old school buses' compliance status with the Truck and Bus Regulation as part of the project ranking criteria or eligible award amount determination. School buses are regulated under 13 CCR 2025(k), the school-bus-specific section of the Truck and Bus Regulation. The section essentially requires that any diesel school bus over 14,000 lbs. gross vehicle weight rating, either have a diesel particulate filter (either original from the factory or as an add-on retrofit), or operate less than 1,000 miles per calendar year. School buses (individually, not as a fleet) that do not meet this requirement would receive a lower project ranking or lower funding amount. This change helps ensure that those school districts that have not complied with the regulations are not prioritized over fleets that are in compliance. During the workgroup process, CARB received two comments from stakeholders opposing the proposed changes. They believe that the changes would create barriers to deploying electric school buses, and delay replacement of the oldest, dirtiest school buses. Staff has noted these concerns and will monitor the effect of these changes as the project continues.

*AB 1550 Disadvantaged Community and Low-Income Household/Community Benefits:*
Rural school bus funding is prioritized first to applicants in small air districts, medium air districts, and then large air districts. Staff is not proposing a minimum disadvantaged community investment target for these funds because rural areas in small air districts infrequently meet the definition of disadvantaged communities, despite their lack of access to school bus replacement funds. The priority air districts do contain a large number of low-income communities, so staff expects a significant portion of this funding may be spent in low-income communities. As part of the Cap-and-Trade auction proceeds reporting requirements, CARB will track where funds are spent, in order to calculate and report the portion that meet AB 1550 investment criteria. To date, approximately 58 percent of project funds have been spent in areas benefitting priority populations.

*Project Solicitation*: Staff proposes to continue implementing this project for the FY 2019-20 allocation with the North Coast Unified AQMD as the project administrator. The air district may continue to fund projects from the waiting list generated from the June 2018 solicitation, or hold a new solicitation.

**Outcomes**

This project continues to encourage turnover of California school bus fleets to lower carbon transportation choices. The proposed $4.45 million allocation for FY 2019-20 could fund approximately 13 additional new school buses. Depending on the technology and school bus size purchased, nearly 3,860 metric tons of $CO_2$ equivalent GHG emission reductions could result from this project. Criteria pollutant and toxic air contaminant emission reductions are also expected as the advanced-technology

school buses replace conventionally-fueled engines. Appendix A provides additional details on the emission estimates.

With about 20,000 diesel-fueled or gasoline-fueled school buses operating throughout California, this project provides opportunities to transform California's school bus fleet and meet zero-emission vehicle deployment goals along with near-term and long-term air quality goals. Additional funding will be needed to continue this work as staff expects demand for advanced technology school buses to continue for years as the existing fleet continues to age.

## Sustainable Transportation Equity Project

| Proposed Low Carbon Transportation Allocation – $22 million |
|---|

### Project Overview

The Sustainable Transportation Equity Project (STEP) is a multi-faceted pilot project that supports community capacity building and project implementation to increase mobility and facilitate reductions in vehicle miles traveled and GHG emissions. The pilot intends to help connect people to places equitably and sustainably, and takes a community-based approach to help overcome barriers identified in CARB's SB 350 Guidance Document and help address key challenges outlined in CARB's 2018 SB 150 Progress Report for California's Sustainable Communities and Climate Protection Act (SB 375).

STEP aims to establish new or strengthen existing partnerships between community members, technical experts, private companies, and local public agencies to identify and address the unique mobility needs in their communities, including the transportation, accessibility, and land use barriers that affect residents of disadvantaged and low-income communities. Through facilitated collaboration and capacity building, the pilot also aims to develop context-specific solutions for a cleaner, more accessible, and more integrated transportation system that benefits the community residents who need it most. This effort entails accelerating the identification of mobility planning and transportation needs, as well as the availability and adoption of transportation modes beyond single-occupancy vehicles, and continuing to align local planning and implementation efforts with regions' Sustainable Communities Strategies and Regional Transportation Plans.

### Staff Proposal for FY 2019-20

CARB staff proposes an allocation to STEP of $22 million in grant funds for FY 2019-20. Through this allocation, CARB will fund two different grant types: planning grants and implementation block grants. CARB staff will develop project parameters for both grant types through a public work group process.

Staff proposes that STEP use about $2 million to fund multiple planning grants, intended to improve local understanding of residents' transportation needs and prepare communities to implement clean transportation and land use projects. Recipients may use planning grants to conduct a variety of planning and capacity building efforts that ready communities for implementation, such as:

- Community transportation needs assessments,
- Community and stakeholder engagement,
- Land use and mobility plans, and

- Feasibility studies.

Staff also proposes that STEP use about $20 million to fund approximately one to three transformative, place-based implementation block grants, intended to increase community residents' access to and use of their mobility system so they can get where they need to go without the use of a personal vehicle. Recipients would use implementation block grants on a suite of transportation and land use projects, which would need to include infrastructure and capital projects that increase mobility, reduce vehicle miles traveled, and connect to each other to form an integrated transportation system, such as:

- Procurement of zero-emission vehicles and supporting infrastructure for shared services, such as car share, bike share, vanpools, and microtransit; and
- Complete streets infrastructure, including active transportation infrastructure and bus-only lanes.

The suite of components may also include planning, policy, operations, and behavior change projects that facilitate increases in mobility and reductions in vehicle miles traveled, such as:

- Land use plans for transit-oriented and transit-ready development,
- Zoning code updates to prioritize increased proximity to destinations,
- Curbside and overall parking management to prioritize clean/shared transportation modes,
- Public transit operations improvements, and
- Targeted travel behavior change campaigns.

Though not expected, if funding is not fully awarded, staff recommends the flexibility to shift the funding to other equity projects that are experiencing increased demand.

*AB 1550 Disadvantaged Community and Low-Income Household/Community Benefits:* Staff expects funded planning projects to provide meaningful benefits to residents of low-income and disadvantaged communities, and funded implementation projects to provide meaningful benefits to residents of disadvantaged communities. These benefits include improving air quality and public health, increasing opportunities for safe access to transportation and mobility options, and increasing access to economic opportunities.

*Project Solicitation:* CARB staff will allocate these funds for both planning and implementation block grants through a single, competitive solicitation process open to local governments, community-based organizations, and federally recognized tribal authorities as lead applicants, representing a broader coalition of community, nonprofit, public agency, and private partners. If STEP receives additional funds in future years, staff proposes that these funds may be administered to applicants as part of the FY 19-20 solicitation. CARB staff may update the solicitation process based on stakeholder feedback obtained through a public work group process.

**Outcomes**

STEP encourages the development and use of clean transportation modes meant to fulfill the dual goals of increasing mobility and decreasing vehicle miles traveled. Staff expects the planning grant funds to facilitate GHG emission reductions by readying communities to implement GHG emission-reducing projects and programs. Staff will use a variety of metrics to evaluate the success of the planning grants, such as reported increased understanding of residents' transportation needs, prioritization of projects according to those needs, and level of engagement with community residents – particularly hard-to-reach residents.

Staff also expects criteria pollutant and toxic air contaminant emission reductions as a result of the zero-emission transportation modes funded through this pilot. At this time, however, not enough is known about what STEP will fund to make the valid assumptions needed to quantify benefits. Staff will use a variety of metrics to evaluate the success of the implementation block grants, such as vehicle miles traveled per trip taken, integration of transportation options (e.g., number of trips using more than one mode of transportation), number of clean transportation choices available, access to destinations, mode shift (away from single-occupancy vehicles), and public health (e.g., number of transportation-related injuries, air pollution exposure, physical activity).

CARB will report in Annual Reports and future Funding Plans the outcomes of this project including GHG reductions achieved or anticipated using the appropriate CARB quantification methodology; progress in meeting or exceeding SB 535 and AB 1550 targets for investment in and benefits to disadvantaged and low-income communities; economic, environmental, and public health co-benefits achieved or anticipated; and project locations.

## Outreach, Community Transportation Needs Assessments, Technical Assistance and the One-Stop-Shop

Recommended Low Carbon Transportation Allocation – $7 million

### Project Overview

Effective outreach is an essential element to support the successful launch and implementation of Low Carbon Transportation Investment pilot projects. The goal of the outreach, community transportation needs assessments, technical assistance and the One-Stop-Shop is to work with local community-based organizations and trusted community leaders to help increase awareness of Low Carbon Transportation funding opportunities, build local community capacity, and streamline access to this funding for community-identified clean mobility projects. This pilot proposes to provide funding and technical assistance to community-based organizations for outreach on Low Carbon Transportation funding, conducting community transportation needs assessments, strengthening partnerships, developing projects, and applying for CARB's clean transportation incentive projects.

### Current Project Status

Funding for outreach related to Low Carbon Transportation projects has typically been part of each individual project, such as CVRP, Clean Cars 4 All, etc., and in the past has been conducted somewhat disparately by each program administrator. The SB 350 Guidance Document outlines key recommendations to help reduce the barriers low-income residents face in accessing clean transportation and mobility options, including increasing awareness of clean transportation and mobility options and funding, expanding community transportation needs assessments, and developing regional one-stop shops to streamline access to clean energy, transportation and other consumer-based incentives.

CARB is leading implementation of an Outreach Roadmap that identifies strategies for effectively coordinating, streamlining, and delivering tailored clean transportation outreach. CARB is also working with Caltrans to expand community needs assessments to ensure state transportation funding supports community-identified mobility project, and has also recently completed a joint agency pilot project with the Strategic Growth Council to provide technical assistance to ten community-based organizations to increase outreach. For the One-Stop-Shop pilot project, field testing is currently underway and is being done in conjunction with the project outreach partners and participating CARB Low Carbon Transportation Equity Project administrators (project administrators). GRID Alternatives, who was selected as the project administrator, has developed a "Community of Practice" for purposes of the One-Stop-Shop, to serve as a space for outreach partners, project administrators, GRID Alternatives, and CARB staff to share lessons learned, and best practices when

conducting outreach in their respective communities. All of these efforts are being integrated into three new and one existing mobility project, and are proposed to be expanded as outlined below.

**Staff Proposal for FY 2019-20**

Due to the need for increased funding specifically for these activities, CARB is proposing to allocate $7 million to help fund these efforts at the community level and by community-based organizations. $2 million of this includes, but is not limited to, additional program support for existing project administrators to further integrate these activities, as well as the potential to solicit a statewide administrator to coordinate technical assistance and capacity building for priority populations through funding to local community-based organizations. Funding will be used to increase awareness of Low Carbon Transportation equity projects, support community transportation needs assessments, convene networking sessions to strengthen partnerships and develop community-identified projects, and provide application technical assistance to prospective applicants. For the One-Stop-Shop, staff propose an allocation of up to $5 million to augment and potentially expand the current One-Stop-Shop project. This includes, but is not limited to, additional program integration support for project administrators, building a limited centralized income verification process, and expanding capacity building for community-based organizations that serve priority populations.

Community Transportation Needs Assessments (NEW):
This activity will consist of a voucher provided to community-based organizations to engage community members in assessing:

- Transportation and mobility option accessibility and gaps/needs
- Outreach gaps/needs
- Community assets and resources for needed mobility projects

Outreach, Education and Awareness – Delivery of Information on Low Carbon Transportation Funding (Expanded/Ongoing):
This activity will include the following provided to community-based organizations to increase awareness within the community:

- Train-the-trainer sessions for community-based organizations, local ambassadors, and youth/school programs on Low Carbon Transportation programs, including:
    - Consumer-based incentives available through the One-Stop Shop
    - Community mobility projects and funding, including but not limited to:
        - Clean Mobility Options for Disadvantaged Communities
        - Clean Mobility in Schools
- Voucher to support local outreach events (securing venue, translation services, childcare, etc.)

Technical Assistance and Capacity-Building for Clean Mobility Projects (NEW):
This activity would include support for community-based organizations to build local capacity and enable increased access to clean mobility funding through:

- Round table workshops and networking sessions to:
    - Bring together potential project partners
    - Develop project scope
    - Leverage local/community resources
    - Provide event/venue support

One-Stop-Shop Pilot Project (Ongoing):
This project is designed to streamline access to clean energy, transportation, and other related consumer-based incentives increase awareness for low-income residents and expand existing outreach and education efforts on clean transportation and mobility options:

- Develop and maintain a single application for low-income consumers to apply and qualify for CARB's Transportation Equity Projects:
    - Host training sessions and field test the application tool and technology platform in phases to collect real world feedback
    - Conduct outreach efforts

*AB 1550 Disadvantaged Community and Low-Income Household/Community Benefits:*
This project is intended to make it easier for low-income households and low-income and disadvantaged communities to access LCTI funding and thus supports the AB 1550 goal of increasing investments in priority populations. All of these elements will ultimately help to increase ZEV adoption by low-income residents through CARB's incentive projects, such as CVRP and Financing Assistance, as well as support development of clean mobility options in disadvantaged communities through CARB's clean mobility projects, such as Clean Mobility Options for Disadvantaged Communities and STEP. Staff is estimating about half of the proposed $7 million will directly benefit priority populations through capacity and partnership building.

*Project Solicitation*: Funding may be added to existing grant programs conducting outreach and technical assistance, such as the One-Stop-Shop and clean mobility options projects, may be administered statewide through a single entity as a new "technical assistance and capacity-building" project, or a combination of both.

**Outcomes**

This project will be designed to increase awareness and enable more efficient implementation of CARB's Low Carbon Transportation Equity projects, and expand participation by low-income households and low-income and disadvantaged communities. Because this is an "enabling" project, CARB staff is not quantifying any direct emission reductions for this funding. Rather, this project will help achieve the emission reductions anticipated for Clean Cars 4 All, Financing Assistance, and CVRP, as well as the various clean mobility equity projects, which are quantified in those

sections of the Funding Plan. However, it is still important to measure the success of this project. CARB will report the outcomes of this project in Annual Reports and future Funding Plans. Staff proposes to use metrics such as number of outreach events, training sessions, and networking workshops, as well as capacity building metrics, such as the increase in low-income residents and priority populations accessing LCTI project funds. CARB will also encourage or perhaps require the grantee to develop surveys of participants as a way to determine how well the project is working and determine whether refinements are needed.

# CHAPTER 4: HEAVY-DUTY VEHICLE AND OFF-ROAD EQUIPMENT INVESTMENTS

California has ambitious air quality and climate change goals, which will require a transformation of the on-road and off-road fleet to one that utilizes zero-emission technologies wherever feasible and near zero-emission technologies operating with the cleanest, lowest carbon fuels everywhere else. CARB staff's proposed investments for heavy-duty vehicles and off-road equipment are intended to support this transformation by demonstrating emerging technologies, advancing commercial viability through pilot deployment projects, and catalyzing further technological development by the private sector. CARB's investment in this transformation also supports progress towards creating the jobs of the future and achieving and maintaining healthy and sustainable communities for all Californians.

This section of the Funding Plan summarizes progress on current projects, then presents staff's proposed allocations and recommendations for heavy-duty vehicle and off-road equipment investments. This includes investments for the following projects:

- Clean Truck and Bus Vouchers (HVIP)
- Heavy-Duty Demonstration and Pilot Projects
- Truck Loan Assistance Program

As was discussed in the introduction, the Low Carbon Transportation Program and AQIP are part of a much larger clean transportation funding portfolio, and the intent of this program is to move the needle in terms of advancing technologies and to improve near- and long-term air quality in California.

## Portfolio of Incentives

The development and commercialization of advanced heavy-duty technologies requires a portfolio of incentives that provide funding for the range of technologies needed to achieve both near-term and long-term emission reductions. Programs such as the Carl Moyer Program, the Proposition 1B Goods Movement Emission Reduction Program, FARMER, and the AQIP-funded Truck Loan Assistance Program achieve near-term emission reductions through incentivizing fleet turnover. These programs commonly require scrap, are based on cost-effectiveness, and because of this have traditionally funded technologies that are more widely available and low risk for fleet adoption. These programs complement the Volkswagen Appendix D investments and Community Air Protection Program (CAPP), which fund technologies more on the early commercial side of the scale, are still somewhat cost-effective, that have a higher perceived risk for adoption, but still have a scrap component requirement. Because all of the programs mentioned above have requirements for scrap, and in the case of truck loans are intended to support small fleets with compliance challenges, the Low Carbon Transportation program is the only program in CARB's portfolio and one of

the only programs in the state available to support the demonstration, pilot, and early market deployment of emerging and zero-emission technologies. Low Carbon Transportation and AQIP investments have traditionally funded multiple technologies at different points on their commercialization arcs, overcoming deployment barriers, reducing production costs, promoting consumer acceptance, and accelerating technology transfer to other sectors. For more information on the broader CARB portfolio, the status of current technologies, and a three-year projection of need for the Low Carbon Transportation program, please see Appendix D.

The transition toward cleaner, more efficient heavy-duty vehicles and off-road equipment will require a substantial financial commitment from the public and private sectors. The relatively low price of diesel fuel, current lack of high-volume advanced technology manufacturing, and resulting large price differential are all obstacles to making this happen. The Low Carbon Transportation investments made thus far have had a positive impact, moving towards achieving lifecycle cost parity between conventional and advanced technology. For example, the costs associated with zero-emission transit buses, both battery electric and fuel cell electric, have dropped in recent years due to early commercial deployment pilot projects such as the Zero-Emission Truck and Bus Pilot Commercial Deployment Projects and HVIP. As this happens, technologies and vocations will "graduate" from one incentive program and move into another one that provides a better fit for its current status. Transit buses are an example of this, having graduated from demonstration and pilot projects into HVIP. Additionally, as technologies continue to advance, technology transfer to new applications, such as drayage trucks and off-road equipment, will be supported by projects such as Advanced Technology Demonstration Projects and the Clean Off-Road Equipment Project.

As costs decline and technologies prove themselves, incentives phase out as the market matures. Regulations that require cleaner vehicle technologies provide long-term market certainty and continue growth in the market. Examples of technologies California has fostered through incentive programs to kick-start the market include zero-emission trucks and buses and Low-NOx engines. These technologies are now being supported by regulatory action through the following regulations:

- Innovative Clean Transit regulation, adopted December 2018
- Zero-Emission Airport Shuttle Bus regulation, adopted June 2019
- Upcoming Advanced Clean Trucks rulemaking, board consideration in December 2020
- Upcoming Heavy-Duty Low-NOx Omnibus rulemaking, board consideration in early 2020
- Upcoming zero-emission fleet rules, including a zero-emission drayage truck rule, board consideration expected in 2022

## Summary of Changes to the Heavy-Duty Investment Strategy

In the FY 2017-18 Funding Plan, staff developed the first "Three-Year Investment Strategy for Heavy-Duty Vehicles and Off-Road Equipment from Low Carbon Transportation and the Air Quality Improvement Program" (now called the Heavy-Duty Investment Strategy) in which staff provided a framework for the effective investment of Low Carbon Transportation funds to ensure that CARB continues to meet its goal of advancing technology and establishing sustainable markets for technologies. The Heavy-Duty Investment Strategy is built upon three connected principles: maintaining momentum from previous investments across the commercialization arc, prioritizing investments in the three technology pathways (zero-emission, low NOx, and efficiencies), and overlaying the organizational concept of beachheads.

The Heavy-Duty Investment Strategy has helped signal CARB's focus for clean technology investments and sparked dialogue with other agencies to stretch public funding further with greater impact. The efficacy of these investments has been bolstered by identifying beachheads that can be built upon, much like a foundation, to enable further expansion of a given technology into follow-on applications later.

In FY 2018-19, the Strategy underwent minor updates that were intended to reflect current technology statuses and make recommendations based on the best available information.

While the Heavy-Duty Investment Strategy was initially developed independent of mandate, in 2018, the governor signed into law SB 1403, which codified the Heavy-Duty Investment Strategy and Three-Year Recommendations for Low Carbon Transportation Investments. Among other things, SB 1403 directed CARB to produce annually a three-year investment strategy for Low Carbon Transportation and AQIP investments beginning in FY 2019-20. The Heavy-Duty Investment Strategy should describe the role of public investments in supporting the demonstration and deployment of advanced technologies, provide an assessment of available funding and the investment needed, and provide a description of CARB's portfolio of investments. The bill also requires that the Heavy-Duty Investment Strategy contain a report on the State's school bus fleet. This report, developed in consultation with CEC, is to include information related to milestones achieved by the state's school bus incentive programs, and the projected need for funding taking into consideration the state's school bus inventory, turnover, and useful life (described in more detail in Appendix E of this document).

The Strategy has been more thoroughly updated and expanded this year and updates include: a more comprehensive discussion on the "theory of investment" that drives decisions for CARB incentive programs; potential metrics to help identify when technologies are ready to graduate through CARB incentive programs; updates to the technology status snapshots; a new three-year funding priorities table; enhanced consideration of off-road technologies and updated beachheads; and a more

expansive exploration of the various barriers facing the advancement and adoption of advanced technology heavy-duty vehicles.

Staff has engaged stakeholders on these topics, holding three public workgroups, conducting one-on-one meetings, and releasing a draft of the technology assessments to stakeholders for comment. Additionally, responding to stakeholder concerns and board direction, staff held a focused full-day workgroup with a broad stakeholder group in late 2018. The Heavy-Duty Advanced Technology Implementation Work Group was purposed with elucidating, understanding, and proposing potential solutions to the large number of barriers facing fleets deploying advanced technology heavy-duty vehicles. A summary of the work group and its outcomes can be found in Appendix D on page 64.

## Table 13: Recommendations for Low Carbon Transportation Investment Priorities

| THREE-YEAR RECOMMENDATIONS FOR LOW CARBON TRANSPORTATION* | | | |
|---|---|---|---|
| | **FY 2020-21** | **FY 2021-22** | **FY 2022-23** |
| **Demos** | *$60-$85 Million*<br>Focus: ZE/PHEV HD Regional Delivery, ZE/Hybrid Ag-Construction Equipment, ZE/Hybrid Heavier Cargo Handling Equipment, ZE/Hybrid Marine | *$50-$90 Million*<br>Focus: ZE/PHEV Longer Range HD Goods Movement, ZE/PHEV Ag- Construction Equipment, ZE/Hybrid Heavier Cargo Handling Equipment, ZE/Hybrid Marine | *$50-$90 Million*<br>Focus: ZE Longer Range HD Goods Movement, ZE Construction Equipment, ZE Heavier Cargo Handling Equipment, ZE Rail, ZE/Hybrid Marine |
| **Pilots** | *$185-$310 Million*<br>Focus: ZE/PHEV Drayage and Regional Delivery, Advanced Powertrains, ZE/Hybrid Heavier Cargo Handling Equipment, ZE Facilities | *$200-$325 Million*<br>Focus: ZE/PHEV Drayage and Regional Delivery, Advanced Powertrains, ZE/Hybrid Ag- Construction-Heavier Cargo Handling Equipment, ZE/Hybrid Marine, ZE Facilities | *$200-$325 Million*<br>Focus: ZE Longer Range Goods Movement, Advanced Powertrains, ZE Ag-Construction-Heavier Cargo Handling Equipment, ZE/Hybrid Marine, ZE Facilities |
| **Commercial** | *$220-$320 Million*<br>Focus: ZE Delivery, ZE Transit, Ground Support Equipment, ZE/Hybrid Heavier Cargo Handling Equipment | *$300-$400 Million*<br>Focus: ZE/PHEV Drayage and Regional Delivery, ZE Delivery, ZE Transit, ZE/Hybrid Heavier Cargo Handling Equipment | *$340-$460 Million*<br>Focus: ZE/PHEV Drayage and Regional Heavy-Duty Delivery, ZE Delivery, ZE Transit, ZE/Hybrid Heavier Cargo Handling Equipment, ZE/Hybrid Marine |
| **Total Funding** | **$610-$940 Million*** | **$670-$995 Million*** | **$675-$1,000 Million*** |

*The vehicle and equipment types listed in the table above are a prioritized selection of the project types that CARB would invest in, given sufficient available funds. These focus areas are identified following the strategy laid out in this document and take into consideration a wide number of factors. This is not an exhaustive list of technologies or applications that Low Carbon Transportation would fund and indeed funding numbers are inclusive of a much broader set of vehicle and equipment investments CARB hopes to make.*

** The funding amounts listed here represent a critical down payment towards meeting the total funding need and the minimum investment necessary to continue technology advancement, but does not meet the entire need.*

## Proposed Project Allocations for Heavy-Duty Vehicle and Off-Road Equipment Investments

SB 1403 guides CARB's heavy-duty vehicle investments funded with Cap-and-Trade auction proceeds. SB 1403 extended the California Clean Truck, Bus, and Off-Road Vehicle and Equipment Technology Program created under SB 1204, which utilizes cap and trade revenues for the development, demonstration, pre-commercial pilot, and early commercial deployment of zero- and near zero-emission truck, bus, and off-road vehicle and equipment technologies. SB 1403 prioritizes certain types of heavy-duty projects, including those that provide a benefit to disadvantaged communities.

SB 1403 also requires that no less than 20 percent of truck funding be used to support early commercial deployment of existing zero- and near zero-emission heavy-duty truck technology. For the purposes of this funding plan, CARB, in consultation with the California Energy Commission, has defined near zero-emission as vehicles that have a duty-cycle that include zero-emission operation, including ePTOs and hybrids with an all-electric range. Currently, ePTOs represent a technological improvement that support the pathway towards zero-emission technologies. In the immediate term ePTOs are considered a near zero-emission vehicle, however, as the technology evolves, CARB may modify the definition of near zero-emission to include only those technologies that achieve a specified all-electric range. This definition is consistent with SB 1403, which requires that near zero-emission vehicles reduce greenhouse gas emissions and improve air quality when compared to conventional or fully commercialized alternatives. Focusing on vehicles that include zero-emission operations as part of its duty-cycle ensures that funding is available for those technologies that will create a pathway to zero-emissions. The goal to move towards zero-emission technology is consistent with the goals set forth in legislation and executive orders—for example SB 1275 sets a goal of deploying 1 million ZEVs by 2023, and Executive Orders B-16-2012 and B-48-18 set ZEV deployment goals of 1.5 million by 2025 and 5 million by 2030 respectively. This definition ensures that program investments fund projects that assist the state in reaching its climate goals beyond 2020, consistent with SB 1403.

For FY 2019-20, the Legislature directed a total of $182 million from the Greenhouse Gas Reduction Fund, through Low Carbon Transportation Program for Clean Trucks, Buses, and Off-Road Freight Equipment. Staff is proposing to split this allocation with $142 million going to the Clean Truck and Bus Vouchers and $40 million going to Heavy-Duty Demonstration and Pilot Projects. The proposed heavy-duty vehicle and off-road equipment projects support SB 1204's overarching vision, described in Appendix B, for the phases of technology development and deployment, with a focus on moving technologies through the commercialization process. Additionally, staff will continue the implementation of the Clean Off-Road Equipment Project, which is funded with FY 2017-18 Low Carbon Transportation investments.

AQIP funding is directed to continue the criteria pollutant and air toxics-focused Truck Loan Assistance Program to support small fleet turnover. The truck loan program is expected to see an increase in demand for compliance as a result of SB 1, which will only allow cleaner compliant trucks to be registered by the DMV. In response, all of the AQIP funds would be directed to the Truck Loan Assistance Program to meet the expected increase in fleet demand.

Further details of the projects are included in this chapter. The update to the Heavy-Duty Strategy is included in Appendix D of this Funding Plan, and the report on the State's school bus fleet is included in Appendix E. A summary of the projects and their respective proposed funding FY 2019-20 Low Carbon Transportation and AQIP allocations is shown in Table 14.

**Table 14: Summary of Proposed Heavy-Duty Vehicle and Off-Road Equipment Project Allocations**

| Project Category | Project Allocation by Funding Source (millions) |
|---|---|
| **HEAVY-DUTY VEHICLE AND OFF-ROAD EQUIPMENT INVESTMENTS (SB 1204)** | |
| Advanced Technology Heavy-Duty Demonstration and Pilot Projects | $40 |
| Clean Truck and Bus Vouchers (HVIP) | $142 |
| Clean Off-Road Equipment Project | $0[10] |
| **AQIP-FUNDED HEAVY-DUTY INVESTMENTS** | |
| Truck Loan Assistance Program | $48 |
| **Total** | **$230** |

[10] The Clean Off-Road Equipment Project (CORE) is currently being implemented with $40 million in Low Carbon Transportation Funding from FY 2017-18.

## Advanced Technology Demonstration and Pilot Projects

| Proposed Low Carbon Transportation Allocation – $40 Million |
|---|

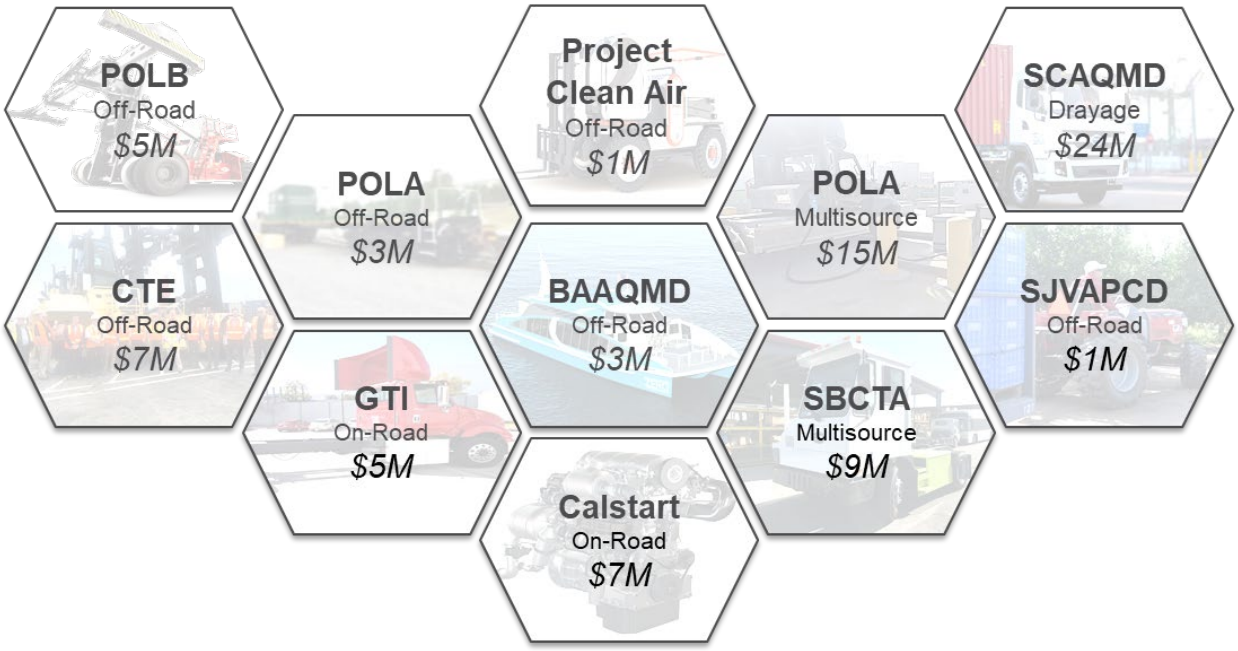
### Project Overview

The role of Advanced Technology and Demonstration Pilot Projects is to provide funding to help further develop technologies that are on the cusp of commercialization, bringing them to commercialization faster than would have happened without incentivizing their development and deployment. Additionally, funding demonstration and pilot projects keeps the innovation pipeline functioning, resulting in a more focused development of the advanced technologies that CARB has identified in the Three-Year Heavy-Duty Strategy. These demonstration and pilot projects are an important element to advance the technologies needed to achieve the State's climate change, criteria and toxic pollutant emission reduction goals. This Advanced Technology Demonstration and Pilot Projects category is the only source of CARB funding that can be focused on precommercial demonstrations and pilot projects of nascent technologies. Continued investment is needed to help seamlessly move successful demonstration projects into the next stage and towards widespread commercialization.

### Current Project Status

The Advanced Technology Demonstration and Pilot Projects category has been supported over the last several years with significant levels of Low Carbon Transportation funding. Figures 3, 4, and 5 summarize CARB's investments in the demonstration and early commercial deployment of important technologies and applications critical in helping California meet its long-term air quality and GHG goals.

**Figure 3: Summary of Advanced Technology Projects**

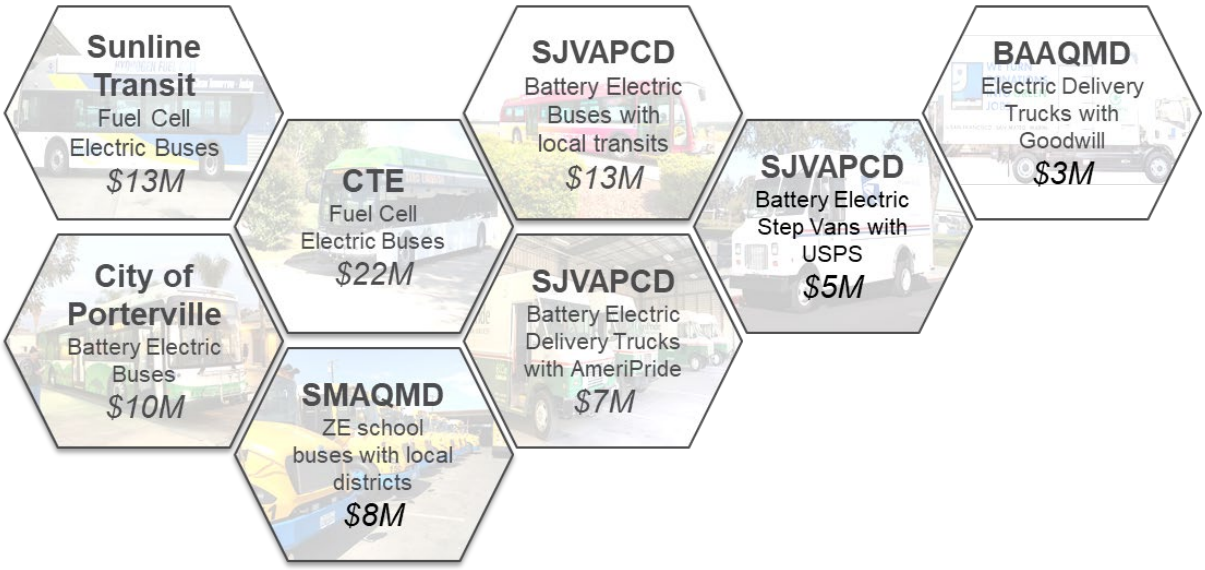



- **City of Long Beach Harbor Department (Port of Long Beach) -** $5M - Two main elements: First, demonstrate three battery-electric top handlers with collaboration between BYD and Taylor Machine Works. Second, perform a head-to-head comparison of a battery electric yard truck and a fuel cell yard truck. The battery electric yard truck will be developed by TransPower and Kalmar, and the fuel cell yard truck will be developed by LOOP Energy and China National Heavy-Duty Truck Group. All of the equipment will be demonstrated at the Port of Long Beach at two different terminals. Grant was executed in May 2018 and expected deployment in Q3 of 2019. Leverages $3M for a project total of $8M.
- **Center for Transportation and the Environment (CTE) –** $7M - Develop and deploy a fuel cell range extended electric top loader with wireless inductive charging. Nuvera, WAVE, and Hyster-Yale Group are all working together to develop this advanced piece of equipment, and it will be operated at the Port of Los Angeles by Eagle Marine Services. Grant was executed in May 2018 and expected deployment in Q3 of 2019. Leverages $2M for a project total of $9M.
- **Los Angeles Harbor Department (Port of LA) –** $3M - Demonstrate a battery-electric switcher locomotive in freight service. The project will involve integrating battery and electric components developed by VeRail to the currently ongoing "Near-Zero Emissions Locomotive Demonstration Project" under the Port Technology Advancement Program (funded in collaboration with SCAQMD, United States Environmental Protection Agency, and Port of Long Beach). Grant was executed in May 2018 and expected deployment in Q2 of 2019. Leverages $1M for a project total of $4M.

- **Gas Technology Institute (GTI) –** $5M - Demonstration of fuel cell class-8 on-road trucks in two phases with Hydrogenics and Loop. Grant was executed in June 2018 and the project is in progress. Leverages $1M for a project total of $6M.
- **Project Clean Air –** $1M - Develop and deploy four 50-hp all-electric agriculture tractors and an electric Class 6 truck, which will be outfitted with the ability to charge the tractors at remote locations, essentially becoming a mobile charger for the tractors. The technology will be developed by HummingbirdEV and demonstrated at various sites in the San Joaquin area. Grant was executed in May 2018 and expected phased deployment of two electric tractors in Q3 of 2019 and two more electric tractors in Q4 of 2019. Leverages $1M for a project total of $2M
- **Bay Area Air Quality Management District (BAAQMD) –** $3M - Develop and deploy a hydrogen fuel cell ferry providing passenger service between the Port of San Francisco, Port of Oakland, Port of Redwood City, and the City of Martinez. Grant was executed in May 2018 and expected deployment in Q3 of 2019. Leverages $2M for a project total of $5M.
- **CALSTART –** $7M - Demonstration of an opposed-piston engine on two Class-8 On-Road Trucks. Achates is developing engines and Walmart and Tyson foods will demonstrate. Grant was executed end of January. Project is in progress. Leverages $9M for a project total of $16M.
- **Los Angeles Harbor Department (Port of LA) -** $15M - Multiple zero- and near zero-emission technologies installed at the port. This includes microgrid, battery storage, and energy management systems to power the various port infrastructure components. Two drayage trucks and two yard tractors have been delivered, and three forklifts are to be delivered by the end of the year. Microgrid system has been installed and additional infrastructure components, such as the ShoreKat system, have been commissioned. Leverages $11M for a project total of $26M.
- **San Bernardino County Transportation Agency (SBCTA)** - $9M – Demonstrate 23 Class 8 battery-electric yard trucks and four Class 5 battery-electric service trucks at 2 rail yards and a freight distribution center. As of June 2018, nine Class 8 battery yard trucks, and three Class 5 battery service trucks have been deployed. Leverages $10M for a project total of $19M.
- **South Coast Air Quality Management District (SCAQMD) -** $24M – Demonstrate 44 battery-electric, plug-in hybrid electric, and range-extending Low NOx Trucks at the ports of LA, Long Beach, San Diego, and Oakland. Thirty battery-electric trucks and one plug-in hybrid electric truck have been deployed along with supporting EVSE infrastructure with five different trucking fleets serving the different ports. Leverages $16M for a project total of $40M.
- **San Joaquin Valley Air Pollution Control District (SJVAPCD) –** $1M – Deploy two new battery-electric 30,000-pound capacity forklifts with additional cargo handling attachments (off-road cargo truck bed and scissor lift), which will be demonstrated at the Port of Stockton. Grant was executed in June 2018 and

expected deployment in Q4 of 2019. Leverages $200K for a project total of $1.2M.

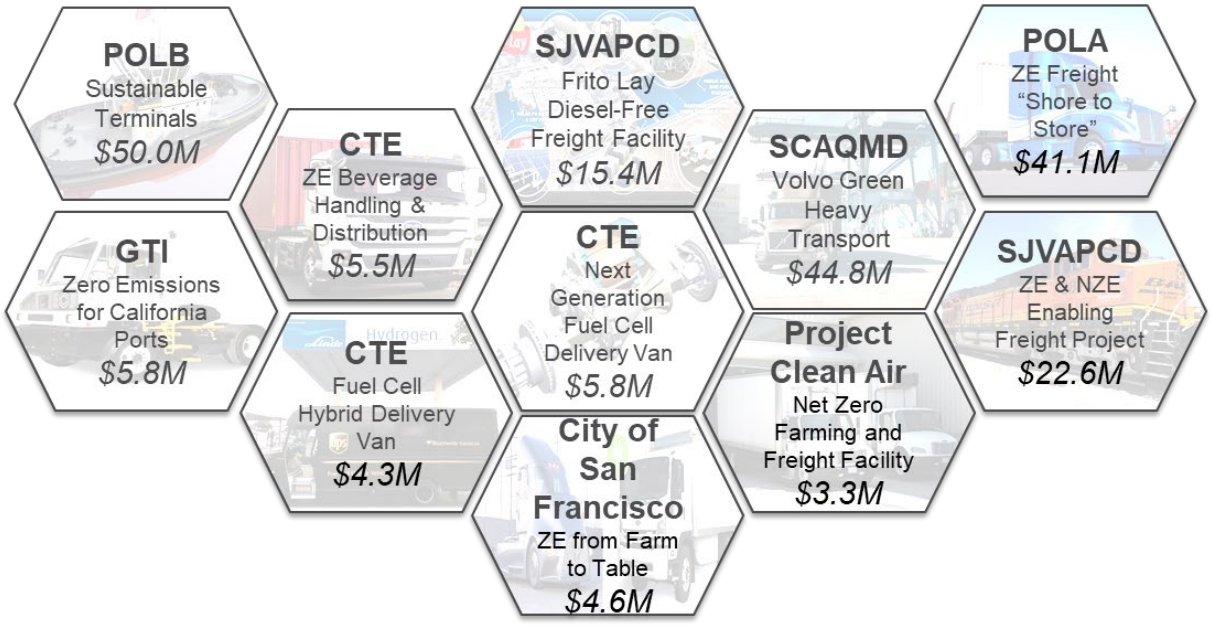
**Figure 4: Summary of Truck and Bus Pilot Commercial Deployment Projects**




- **Sunline Transit Agency–** $13M - 5 New Flyer Fuel Cell buses operated out of 1000 Palms and new H2 station by NelH2/Proton OnSite. Buses will be delivered to SunLine by the end of 2018, and the hydrogen station will be operational by March 2019. New buses will fuel at SunLine's existing hydrogen station. Leverages $4M for a project total of $17M.
- **City of Porterville–** $10M –10 GreenPower battery transit buses deployed throughout Porterville; depot chargers and five buses have been delivered for limited deployment, with full deployment pending installation of charging infrastructure, which is anticipated to be complete by the end of 2019. The remaining 5 buses will be delivered by the end of 2018. Leverages $7M for a project total of $17M.
- **Center for Transportation and the Environment (CTE) –** $22M - 20 New Flyer Fuel cell bus project, 10 to be deployed by OCTA and 10 to be deployed by ACTransit; new Trillium/Air Products H2 station at OCTA and upgraded H2 station at ACTransit. OCTA will receive the first bus in September 2018, with the remaining 9 buses delivered before the end of 2019. The new OCTA hydrogen station will be operational at the end of 2019. AC Transit will receive their first bus in October 2018, with the remaining buses delivered by March 2019. Leverages $23M for a project total of $45M.
- **Sacramento Metropolitan Air Quality Management District (SMAQMD) –** $8M – deploy 29 state-of-the-art zero-emission school buses with 29 Electrical Vehicle Supply Equipment charging ports in disadvantage communities in the Greater Sacramento Region, including Elk Grove, Sacramento City, and Twin Rivers Unified School Districts. Leverages $6M for a project total of $14M.

- **San Joaquin Valley Air Pollution Control District (SJVAPCD) –** $13M – 15 Proterra battery transit buses deployed in 5 transit agencies; depot and in-route chargers. Fresno County Rural Transit Agency received 5 buses, Visalia Transit Agency received 3 buses, and San Joaquin Regional Transit District received 2 buses. Modesto Transit Agency received their 3 buses in October 2018. Charging infrastructure was being installed prior to vehicle deployment in fall 2018. Leverages $9M for a project total of $22M.
- **San Joaquin Valley Air Pollution Control District (SJVAPCD) –** $7M – 20 battery linen delivery trucks (with Motiv power drive) operating out of 4 CV hubs; depot chargers. AmeriPride facility in Stockton received 4 trucks, Fresno facility received 2 trucks, and Merced facility received 4 trucks for a total of 10 trucks that are waiting for infrastructure to be installed before deployment. The second batch of 10 trucks delivered last fall along with infrastructure. Leverages $5M for a project total of $12M.
- **San Joaquin Valley Air Pollution Control District (SJVAPCD) –** $5M – 15 battery-electric class 4 mail step vans (Motiv and EDI powertrains) operating out of 2 USPS hubs; depot chargers. Leverages $2M for a project total of $7M.
- **Bay Area Air Quality Management District (BAAQMD) – $**3M - 10 BYD Class 6 delivery trucks and 1 BYD Class 8 debris hauler deployed by Goodwill Industries in SF area; depot chargers. Project is in progress with chargers will be installed in September 2019. Leverages $1M for a project total of $4M.

**Figure 5: Summary of Zero- and Near Zero-Emission Freight Facilities Projects**




- **Port of Long Beach (POLB) –** $50M - 102 pieces of zero-emissions terminal equipment and trucks at three California seaports; including development of a near zero-emissions tugboat; two American-flagged Jones Act container vessels

with some of the cleanest available engines; and advance workforce development programs. Leverages $52M for a project total of $102M.

- **Gas Technology Institute (GTI) –** $5.8M –deploy two hybrid fuel cell –electric yard trucks at the Port of Los Angeles, operated by TraPac for 12 months. Leverages $6.3M for a project total of $12M.
- **Center for Transportation and the Environment (CTE) –** $5.5M – 21 BYD Class 8 Day Cab (8TT) trucks and charging infrastructure in beverage handling and distribution services at four Anheuser-Bush (AB) distribution facilities in the LA region. Includes construction of solar energy generation at one of the locations to offset energy demand from the chargers. Leverages $5.8M for a project total of $11.3M.
- **Center for Transportation and the Environment (CTE) –** $4.3M – 15 fuel cell hybrid electric delivery vans vehicles will be demonstrated in regular UPS delivery service. Hydrogenics will supply each of the HD30 (30-kW) fuel cell engines; and hydrogen fuel will be provided at a fueling station local to UPS's customer center in Ontario, CA. Leverages $5.1M for a project total of $9.4M.
- **San Joaquin Valley Air Pollution Control District (SJVAPCD) –** $15.4M – 15 Tesla heavy-duty battery electric tractors, 6 Peterbilt 220e battery electric trucks, 3 BYD battery electric yard trucks, 12 BYD Lithium-Ion battery electric forklifts, and 38 Volvo VNL tractors with ISX12N low-NOx engine will be deployed to completely replace the use of all diesel-powered freight equipment within one of Frito-Lay's largest food production, warehouse and regional distribution facilities. Leverages $15M for a project total of $30M.
- **Center for Transportation and the Environment (CTE) –** $5.8M – 4 fuel cell hybrid-electric walk-in delivery vans will be demonstrated in regular UPS delivery service for one year. Hydrogen fuel will be provided at a fueling station local to UPS's customer center in Ontario, CA. Leverages $5.8M for a project total of $11.6M.
- **City of San Francisco– $4.6**M - 21 medium-and 9 heavy-duty electric trucks to deliver produce from and within the Central Valley, Sacramento Valley, and coastal urban hubs. Includes deployment of Level 2 and Direct Current Fast Chargers to support demonstration fleets in San Francisco and Sacramento. Also includes a 240-kilowatt solar photovoltaic array. Leverages $4.4M for a project total of $9M.
- **South Coast Air Quality Management District (SCAQMD) –** $44.8M – 23 Heavy-duty battery electric trucks (HDBET), 29 Off-road battery electric tractors, 58 Non-proprietary Level 2 and DC fast chargers, and1.9 million kWh annual solar energy to create a zero-emission goods movement system connecting the Ports of Long Beach and Los Angeles to four freight handling facilities in disadvantaged communities. Leverages $45M for a project total of $90M.
- **Project Clean Air–** $3.3M – 5 zero emission, all electric battery class 7 trucks with all-electric transport refrigeration units (eTRUs) for the Moonlight Companies in Reedley, California. Leverages $3.2M for a project total of $6.5M.

- **Port of Los Angeles (POLA) –** $41.1M – Ten hydrogen fuel cell Class 8 on-road trucks and two large capacity hydrogen fueling stations in Wilmington and Ontario California will form the basis of a network of hydrogen infrastructure in Southern California. Also includes two electric yard tractors at the Port of Hueneme, the first pieces of zero-emission equipment at their facility. Leverages $41M for a project total of $82M.
- **San Joaquin Valley Air Pollution Control District (SJVAPCD) –** $22.6M –a single Battery Electric Locomotive (BEL) running from Stockton to Barstow in commercial operations and Mi-Jack hybrid-electric rubber-tire gantry (RTG) cranes at both the Stockton and San Bernardino facilities. The San Bernardino facility will also deploy an all-electric side loader and a Class 8 drayage truck. The project also includes electrical upgrades and electric vehicle supply equipment (EVSE) to charge the zero and near-zero equipment and vehicles. Leverages $22M for a project total of $45M.

**Staff Proposal for FY 2019-20**

Staff proposes $40 million for FY 2019-20, with a focus on three project types:

- **Zero-emission drayage truck pilot:**
  - $20 million allocation for large-scale deployment of zero-emission trucks as part of one or two fleets that can operate in drayage or regional haul service. Large scale deployments for the purpose of this project will be more than 50 trucks in a single fleet. Only zero-emission technologies and their supporting infrastructure will be eligible for funding. Zero-emission technologies include battery-electric, fuel cell-electric and must not have tailpipe emissions of GHGs or criteria pollutants. The goal of this drayage truck pilot will be to deploy zero-emission trucks in larger numbers than previous demonstration and pilot projects, in order to assess the ability to produce larger numbers of zero-emission trucks and to assess the ability of fleets to recharge or refuel large numbers of trucks on a daily basis - sometimes multiple times per day.
- **Ocean-going vessels at berth capture and control system:**
  - $10 million for a project to demonstrate a capture and control system for oil tankers to capture at-berth vessel emissions. Capture and control systems are designed to capture vessel exhaust either at the stack or when diverted directly to a connection point, and treat that exhaust in an emission control system targeting criteria pollutants. Eligible projects will also need to mitigate the emissions of GHGs and criteria pollutants that are generated by the operation of the capture and control system. Capture and control systems for oil tankers will showcase innovative solutions to address the unique safety requirements of tanker vessels. Projects will also demonstrate expanded capability to the existing barge-

based capture and control technologies for container vessels by controlling higher flow rates of emissions from the large boiler and auxiliary engine loads of oil tankers with additional potential to demonstrate capturing emissions diverted directly to the control system instead of at the vessel stack.

- **Golden State Carbon Challenge:**
    - $10 million to facilitate the Golden State Carbon Challenge. An inducement challenge is a funding technique that provides a significant return on the initial investment. Historically, inducement challenges have been used by governments and companies to promote the development of technologies that are needed to further economic growth or environmental goals. Inducement challenges function by setting a technological goal and provide a monetary incentive to the first eligible participant to meet that milestone. The first eligible participant to reach the final milestone will receive a one-time payment upon completion. To facilitate multiple organizations competing concurrently, a stage gate system may be used to issue monetary incentives for achievement of milestones that are steps toward the final technological achievement. The usage of stage gates and the end goal of the Golden State Carbon Challenge will be determined through the work group process after Board approval of the funding plan. With many of the projects in this Funding Plan focused on heavy-duty, zero-emission, on-road trucks, staff recommends that the goal of the inducement prize incorporate zero-emission off-road equipment and be focused on the freight sector, and could include such equipment types as cargo handling equipment, locomotives, yard trucks, transportation refrigeration units, ocean going vessels, commercial harbor craft, on-road trucks, and other vehicle and equipment types where a technological breakthrough could have the largest potential for widespread deployment. In addition, it would utilize the following guiding principles:
        - Technology focused
        - Statewide applicability
        - Focus on transformative freight technologies
        - Projects be located in Disadvantaged Communities
        - Advance multiple CARB priorities and goals

*AB 1550 Disadvantaged Community and Low-Income Household/Community Benefits:*
Consistent with past Funding Plans staff proposes that 90% of the funding for Advanced Technology Demonstration and Pilot Projects be in or benefitting priority populations. AB 1550 prohibits "double counting" investments for determining compliance with minimum disadvantaged community and low-income household/community targets.

*Project Solicitation*: Staff proposes that Advanced Technology Demonstration and Pilot Projects utilize a competitive process where only eligible applicants can apply for funding. Eligible applicants are public agencies, and California based non-profits. Specific details regarding solicitation requirements will be developed thru the public workgroup process after Board approval of the Funding Plan.

Staff proposes that the Golden State Carbon Challenge utilize a solicitation process to select a project administrator. A public work group process will be utilized to develop the solicitation to select a project administrator. Once an administrator is selected, project end goals, timelines and any stage gating requirements and other relevant requirements for a successful project will be developed via a public process.

Staff proposes to shift funding between the Advanced Technology Demonstration and Pilot projects and the Golden State Carbon Challenge as needed to fulfill the goals of each of these programs.

**Outcomes**

The primary goal of Advanced Technology Demonstration and Pilot Projects is to feed the innovation pipeline to ensure that the technologies needed to meet the State's 2030 goals are commercially available. Over the past several years, the learnings from Advanced Technology Demonstration and Pilot Projects have provided crucial feedback to manufacturers, fleets, and government agencies. Staff continues to work with stakeholders to develop metrics to capture the benefits associated with these projects.

As an additional benefit, these projects will produce emission reductions. Staff cannot estimate the exact emission benefits for the Ships at Berth Capture and Control System or the Golden State Carbon Challenge until solicitations have been completed and specific project elements have been selected. Staff estimates that the $20 million for the Zero-Emission Drayage Truck Pilot project could provide an additional estimated 96,000 metric tons of CO2e emission reductions and 196 tons of NOx, 1.83 tons of PM 2.5, and 2.93 tons of ROG emission reductions, based on the assumptions provided in Appendix A.

CARB will report in Annual Reports and future Funding Plans the outcomes of this project, including GHG reductions achieved or anticipated using the appropriate CARB quantification methodology; progress in meeting or exceeding SB 535 and AB 1550 targets for investment in and benefits to disadvantaged communities; updates on economic, environmental, and public health co-benefits achieved or anticipated; and project locations.

## Clean Truck and Bus Vouchers (HVIP)

| *Proposed Low Carbon Transportation Allocation* - $142 million |
|---|

### Project Overview

The Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) is the cornerstone of advanced technology heavy-duty incentives, providing funding since 2010 to support the long-term transition to zero-emission vehicles in the heavy-duty market, as well as supporting investments in other emerging technology to help meet health-based ambient air quality standards, and achieve substantial greenhouse gas reductions. Voucher incentives complement other programs in CARB's heavy-duty funding portfolio by providing a streamlined application process without requiring scrapping of an existing vehicle.

HVIP currently provides vouchers of up to $220,000 for California purchasers and lessees of battery electric trucks and buses, up to $300,000 for fuel cell trucks and buses, up to $30,000 for eligible hybrid trucks and buses, and up to $52,000 *[EDITORIAL NOTE: 52k is for repowers with the 11.9 liter engine]* for low NOx engines on a first-come, first-served basis. In addition, HVIP provides increased incentives up to $15,000 for fleets purchasing zero-emission vehicles located in disadvantaged communities.

Building on the success of past HVIP investments, we are now seeing new manufacturers enter the market with zero-emission technologies available in heavier weight classes, such as 60-foot transit buses and class 8 trucks. For low NOx engines, the release of the 11.9-Liter Low NOx Cummins Westport Engine expanded low NOx technology availability to class 8 trucks. Currently, all Cummins Westport 8.9- and 11.9-Liter natural gas engines meet the cleanest optional low NOx standard. These successes have resulted in an increased market demand that the HVIP budget for this fiscal year will not be able to match. Therefore, this Funding Plan proposes significant changes to realign limited funding to HVIP's core purpose of supporting the cleanest advanced technologies.

HVIP will continue to support the statutory goals of SB 1204 and SB 1403 by prioritizing funds for early commercial clean heavy-duty vehicles. The proposed HVIP funding will ensure that at least 20 percent of Low Carbon Transportation truck funding supports early commercial deployment of zero- and near zero-emission heavy-duty truck technology.

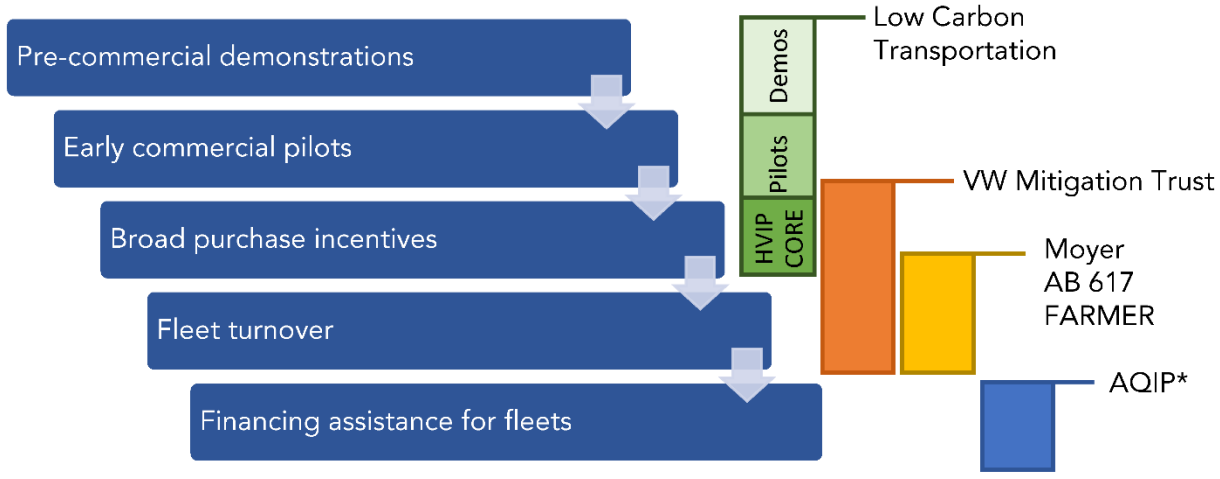
HVIP will continue to be implemented on a first-come, first-served, statewide basis. To date, over half of awarded HVIP funding has benefited disadvantaged communities, as reported in the Annual Report to the Legislature on California Climate Investments,

March 2019[11]. CARB staff uses historical data to project how much of this funding will go to vehicles domiciled in disadvantaged and low-income communities. As part of the reporting requirements associated with Low Carbon Transportation funding, CARB will track where these funds are spent so the portion that is spent in disadvantaged and low-income communities can be calculated and reported in annual reports to the Legislature.

## HVIP's Role in the CARB Incentive Portfolio

HVIP is a unique project in the CARB portfolio. As the only project that supports advanced technologies with high adoption barriers, it provides the bridge between the Low Carbon Transportation demonstrations and pilots to the scrap and replace programs and regulations. HVIP also plays an important role in preparing the market for regulations by increasing market adoption and decreasing vehicle costs prior to regulatory deadlines such as the zero-emission bus purchase requirements of the Innovative Clean Transit rule or the promulgation of planned regulations such as the Advanced Clean Trucks rule. The Carl Moyer Memorial Air Quality Standards Program, Community Air Protection Incentive Funds, Volkswagen Mitigation Trust, Truck Loan Assistance Program, LCFS, and FARMER Program all provide funding for heavy-duty vehicles adopting clean technology. Figure 5 shows HVIP's place in CARB's larger incentive funding portfolio.

Figure 6




*Statutorily, AQIP funding can be used to support technologies through the whole commercialization pathway. But AQIP is the only program that is able to offer financing assistance to fleets to purchase cleaner vehicles. As the effective date of SB 1 approaches and the need for financing assistance increases, CARB has focused AQIP dollars towards this area, allowing other programs within the portfolio to fund the earlier stages of the commercialization path.

The portfolio is robust– in FY 2017-18, the total CARB funding to support clean heavy-duty vehicles was over $800 million. The guidelines of other CARB incentive programs

[11] http://www.caclimateinvestments.ca.gov/annual-report/

are covered in separate documents, such as the Beneficiary Mitigation Plan for the Volkswagen Environmental Mitigation Trust, and the Proposed Community Air Protection Incentives 2019 Guidelines and Staff Report, but summaries of key programs offering funding are included in Appendix D.

When considering funding allocations, CARB strives to maintain a balanced portfolio of available investments to meet the State's air quality and climate goals. Programs such as Carl Moyer, the Truck Loan Assistance Program and the FARMER Program all aim to turn over the legacy fleet to achieve near-term emission reductions in support of SIP, air toxics, and community protection goals by requiring scrappage of existing vehicles. The Carl Moyer program puts particular emphasis on achieving these goals in a cost-effective manner.

Yet, if all CARB programs were to only focus on projects that are most cost-effective today, we would miss the opportunity to accelerate deployment of zero-emission technologies that will enable the State to meet its 2030 and 2050 goals and set California up to benefit from the green economy. While many of the other programs within the portfolio focus on cost-effective, near-term reductions of criteria pollutants, HVIP looks to the long-term. HVIP fills a gap within the portfolio by sending a market signal and moving the needle in terms of advancing technologies. While CARB's overall investment strategy is balanced across all of its programs, the proposed funding for HVIP is focused on zero-emission technologies because of their relatively higher cost at this early stage of development compared to combustion technologies. It is necessary and appropriate to fund enough vehicles and equipment to move the market and have a real impact in accelerating zero-emission technologies towards broader commercialization.

Resource constraints highlight the importance of critically evaluating the goals of each program in the portfolio and the need to strategically fund those technologies that best advance each program's unique goals. As technologies mature it becomes necessary to move them out of HVIP and into other programs within the portfolio to ensure that HVIP achieves its objective of supporting early commercial clean vehicles, and helping reap the benefits of economies of scale. Focusing HVIP on this primary objective, while allowing other programs to support near-term emission reduction goals creates a balanced and diverse portfolio that considers both California's near- and long-term needs. This strategic investment is necessary to achieve California's air quality and climate goals with the limited resources available.

## Current Project Status

Continued funding allocations from the Legislature and direction from CARB's Board have allowed demonstration and pilot projects, as well as HVIP to provide funding to incentivize manufacturers to advance zero-emission heavy-duty technology. Medium-duty zero-emission vehicles are transitioning into the early commercialization market. Class 8 zero-emission trucks are available in HVIP but present challenges on their duty-

cycle. Manufacturers of class 8 zero-emission trucks, offering trucks that have a much more robust duty-cycle, are on the cusp of commercialization. Major manufacturers have stated that commercial offerings could be available next year. CARB currently has almost 100 BEV class-8 trucks under demonstration or pilot projects. Tables 14 and 15 show the number of HVIP vouchers issued to date.

Incentives for engines meeting the optional 0.02g/bhp-hr NOx standard (low NOx engines) began in 2016, corresponding with the introduction of the first engine certified to the optional low NOx standard. Funding of low NOx engines through HVIP became possible with the requirement that vehicles be fueled with renewable natural gas (RNG). With HVIP requiring fleets to use 100 percent RNG, reductions in GHGs were achievable. Low NOx natural gas engines have gained market acceptance with several large original equipment manufacturers (OEM), such as Peterbilt, Kenworth, Freightliner, Mack Trucks, and Volvo offering the Cummins Westport low NOx engines. With these OEM's acceptance of low NOx natural gas engine technology, production volumes have increased. Fleets have several well-known manufacturers to choose from. Fleets are more comfortable purchasing trucks from these OEMs and are more confident knowing their investment will be supported; thus posing less perceived risk to the end-user. When compared to zero-emission vehicles, currently no large OEM offers a commercially available zero-emission truck. Until well-known OEMS enter this space, class-8 zero-emission trucks remain ripe for State support.

**Table 15: HVIP Vouchers Issued by Vocation**

| Vehicle Type | Vouchers Issued | Total Voucher Funds | Average Voucher | % of Total Vouchers |
|---|---|---|---|---|
| Parcel Delivery | 1,425 | $40,603,500 | $28,494 | 19% |
| Beverage Delivery | 468 | $15,248,000 | $32,581 | 6% |
| Other Truck | 812 | $38,934,702 | $47,949 | 11% |
| Food Distribution | 253 | $8,013,500 | $31,674 | 3% |
| Uniform/Linen Delivery | 112 | $2,800,000 | $25,000 | 2% |
| Tow Truck | 80 | $2,456,000 | $30,700 | 1% |
| LP Pick-up & Delivery | 47 | $942,000 | $20,043 | <1% |
| Refuse Hauler | 1,008 | $14,045,796 | $13,934 | 14% |
| School Bus | 150 | $26,487,350 | $176,582 | 2% |
| Shuttle Bus | 244 | $17,040,776 | $69,839 | 3% |
| Utility Truck | 206 | $7,229,260 | $35,093 | 3% |
| Urban Bus | 653 | $44,870,240 | $68,714 | 9% |
| Dump Truck | 4 | $103,000 | $25,750 | <1% |
| Not Yet Defined | 1,991 | $149,012,000 | $74,843 | 27% |
| EVSE | | $13,108,546 | $12,928 | |
| **Total** | **7,453** | **$380,894,670** | **$51,111** | **100%** |

Through June 30, 2019

Since its inception in 2010, HVIP has supported the purchase of 2,559 zero-emission trucks and buses, 2,631 hybrid trucks, 2,068 low NOx engines, and 195 trucks with electric power take off systems (ePTOs) by California fleets through June 30, 2019. Market demand for battery-electric trucks and buses continue to increase. Voucher requests for low NOx engines and trucks with ePTOs remained strong. Over the past year, HVIP experienced a significant increase in overall voucher demand, growing to over $15 million in voucher requests per month, and CARB received the largest single voucher request in HVIP history of nearly 1,000 zero-emission trucks.

**Table 16: HVIP Vouchers Issued by Gross Vehicle Weight Range**

| Gross Vehicle Weight Range | Vouchers Issued | Total Voucher Funds | % of Total Vouchers |
|---|---|---|---|
| 5,001 – 6,000 | 51 | $653,000 | <1% |
| 6,001 - 10,000 | 118 | $680,000 | 2% |
| 10,001 – 14,000 | 109 | $5,260,000 | 1% |
| 14,001 – 19,500 | 3,251 | $158,182,350 | 44% |
| 19,501 – 26,000 | 500 | $20,557,915 | 7% |
| 26,001 – 33,000 | 1,254 | $52,432,358 | 17% |
| ≥33,001 | 2,170 | $130,020,501 | 29% |
| EVSE | | $13,108,546.00 | |
| **Total** | **7,453** | **$380,894,670** | **100%** |

Through June 30, 2019

The proposed HVIP budget represents a slight increase over last year, while demand has grown substantially. HVIP entered into a waitlist on July 23, 2019. At current rates, we estimate HVIP will have a $55 million waitlist by the end of the year, and we anticipate a further $200 million demand for FY 2019-20. Staff estimates that HVIP will see a budget shortfall of over $100 million for this fiscal year if no policy changes are made. As one of the primary goals of HVIP is to stabilize and expand the market for advanced heavy-duty technologies, providing funding certainty is important for both fleets and manufacturers. Waitlists can have an adverse effect on the market, artificially starting and stopping demand undermining manufactures' ability to integrate advanced technologies into mass production.

*Component Cost Analysis:* CARB has begun the process of developing a component cost analysis. The component cost analysis will provide staff with much needed information regarding the actual cost of advanced technology vehicles. CARB staff are working with vehicle manufacturers and other partners to obtain accurate cost information. The component cost analysis will continue to be updated annually in order to reflect the most accurate costs associated with the manufacturing of advanced technology vehicles. Once the analysis is complete, staff will use the results to better determine voucher incentives. Voucher incentive will most likely change this year or next fiscal year. The analysis might lead to funding vouchers based on vehicle efficiency, battery size or other variables. Funding vouchers based solely on gross vehicle weight rating (GVWR) or bus length may not be the best approach for providing future voucher funding. This effort further supports staff efforts to ensure that HVIP strategically invests funds to promote California's climate and air quality goals.

*Wait List Provision:* A wait list was implemented on July 23, 2019, after all available HVIP funding was fully allocated. All approved vouchers requests that were included on the wait list will adhere to the policy that was in place during FY 2018-19. Additional voucher requests that are part of the wait list received the day after the Board meeting and thereafter will be required to follow the newly adopted policy under the FY 2019-20 Funding Plan.

## Staff Proposal for FY 2019-20

While the advanced clean heavy-duty vehicle sector is growing rapidly, many technologies are still in the early stages of commercialization and others have advanced to later stages. As a result, staff continues to refine HVIP and make adjustments to build on the momentum HVIP has generated in bringing these vehicles to market.

Early commercialization of zero-emission heavy-duty vehicles will help to meet the administration's goal of deploying five million zero-emission vehicles by 2030. HVIP was designed to provide funding to assist in bringing advanced technology into the marketplace. Over time, like HVIP's light-duty counterpart CVRP, technology is expected to graduate from HVIP as it gains market acceptance and becomes more affordable. HVIP's limited funding should be concentrated in incentivizing manufacturers to produce zero-emission vehicles and send the signal to manufacturers that zero-emission vehicle advancement is a key priority, and technologies that have reached a sufficient level of maturity should graduate from HVIP.

Last year's budget called out two separate categories: one for clean truck and bus vouchers and one for freight demonstration and pilot projects. This year's budget only included a single heavy-duty category of $182 million. To achieve California's long-term goals, it will require continued investments in demonstration and pilot projects. These projects feed the innovation pipeline and ensure that technology will

continue to move through the commercialization path. It is imperative to designate a portion of the heavy-duty allocation for demonstration and pilot projects. Staff's proposal is to allocate $142 million to HVIP and $40 million to demonstration and pilot projects. The $142 million represents a modest increase from the initial January budget proposal of $132 million.

Proposed Changes for FY 2019-20

Significant changes need to be made to HVIP to provide funding for the fiscal year and ensure that HVIP can continue to provide meaningful incentives to promote the adoption of early-commercial advanced technologies.

After receiving input from stakeholders during public work group meetings, staff is proposing the following changes:

- Graduate 8.9-liter and 11.9-liter natural gas low NOx engines from HVIP
- Graduate hybrid vehicles and hybrid conversions from HVIP
- Discontinue voucher enhancements for infrastructure
- Discontinue all vehicle voucher enhancements except for the disadvantaged community plus-up
- Clarify policies surrounding stacking/combining other State funds with HVIP
- Reinstate fleet limits for zero emission vehicles

Below is a description of each proposed modification with the rationale for the modification:

***Graduate 8.9-Liter and 11.9-Liter Natural Gas Low NOx Engines from HVIP:***
Currently, HVIP provides funding to offset the incremental cost of some 8.9-liter and 11.9-liter natural gas engines that are certified to meet the optional 0.02 g/bhp-hr NOx standard. In FY 2018-19, CARB discontinued vouchers for the purchase of new low NOx refuse trucks in existing natural gas fleets and all transit buses because low NOx engines had become the only natural gas engine available on the market for these vehicle vocations.

Staff proposes to graduate all 8.9-liter and 11.9-liter natural gas low NOx engines from HVIP and no longer offer vouchers for either engine under the HVIP program.

Staff made the determination that natural gas low NOx engines have reached the necessary level of maturity to graduate from this specific advanced technology incentive program by evaluating the market acceptance, technology readiness, barriers to adoption, and economic factors facing natural gas low NOx engines.

First, there is a relatively high degree of market acceptance of natural gas low NOx engines. Cummins Westport no longer sells conventional 8.9-liter or 11.9-liter natural gas engines. The low NOx engines also represent a significant share of new vehicles

sold in some market segments such as that for transit buses and refuse trucks. The low NOx engine advances the natural gas engine technology through the use of a three-way catalyst and engine control technologies. This has supported modest enhancements to traditional emission control technologies. The majority of the value of the HVIP voucher amount covers the cost of compressed natural gas (CNG) tanks on the vehicle—a technology which is fully commercial and continued participation in the HVIP program is unlikely to further reduce the cost or otherwise advance this technology.

Because of the similarities to conventional natural gas engines, barriers to adoption for low NOx engines are relatively low compared to that of early commercial advanced technologies. For example, natural gas engines have been in the market for over 20 years. According to the manufacturer, Cummins produced its first heavy-duty natural gas engine in 1991, and Cummins Westport has over 80,000 engines in service.[12] Currently, there are over 300 natural gas fueling stations serving medium- and heavy-duty vehicles in California, 115 of which are publicly accessible and serve class 8 vehicles.[13].

The most significant hurdle to wider adoption of natural gas low NOx engines is likely the significant incremental cost, which is largely driven by the cost of fuel tanks. However, this alone does not support continued funding for natural gas low NOx engines through HVIP. At their current stage of development, low-NOx engines more clearly match the goals of other programs within CARB's greater incentive portfolio. Low NOx engines typically are more cost-effective, fitting well within the Carl Moyer Program, the Volkswagen Environmental Mitigation Trust, and the Community Air Protection Incentive Programs. Revenue generated from LCFS credits for fueling with renewable natural gas can further reduce the total operating cost of low NOx engines. In 2018, renewable natural gas (RNG) generated over $120 million in LCFS credits.[14] While fuel providers receive the credits, they can pass on savings to customers, resulting in potential fleet savings of $1.00 per gallon of gasoline equivalent (gge) and $6.45 per gge for landfill gas and natural gas sourced from animal waste respectively.[15] Savings can be even higher for fleets that produce renewable natural gas onsite, such as landfills that use digesters to produce RNG to fuel their refuse trucks. While LCFS does not reduce the upfront cost of the vehicle technology, it plays an important role in motivating business decisions to switch to natural gas trucks.

***Graduate new hybrid vehicles and hybrid conversions from HVIP eligibility:***
Manufacturers of new hybrid vehicles have not significantly advanced existing commercial hybrid technology, such as incorporating all-electric range into their vehicles, and still utilize combustion engines. Hybrids have been commercially

[12] https://www.cumminswestport.com/about-us
[13] https://afdc.energy.gov/stations/#/analyze
[14] https://ww3.arb.ca.gov/fuels/lcfs/dashboard/dashboard.htm
[15] https://ww3.arb.ca.gov/fuels/lcfs/dashboard/dashboard.htm

available for many years with no significant technological improvements or cost reductions. As demand for zero-emission trucks and buses continues to grow, staff is proposing to graduate new trucks and buses equipped with hybrid systems without all-electric range and hybrid conversions from HVIP.

To support technology improvements and innovation, staff proposes to retain vouchers for new hybrid vehicles that will achieve at least 35 miles of all-electric range. The 35-mile all-electric range requirement is consistent with the Board approved Innovative Technology Regulation (ITR). ePTO (electric power take-off) systems will remain as an eligible near zero-emission technology due to their ability to provide zero-emission operation at worksites while using combustion engines for motive power. These vehicles create a pathway to zero-emissions and help to ensure that funding supports early commercial deployment of zero- and near zero-emission heavy-duty truck technology per the requirements of SB 1204 and SB 1403.

***Discontinue voucher enhancements for infrastructure:***
In the FY 2016-17 Funding Plan, funding was approved to help offset infrastructure costs for battery-electric and fuel cell heavy-duty vehicles. This voucher enhancement was structured as a short-term solution to help fleets overcome non-vehicle cost barriers until other more suitable funding sources became available. HVIP was designed to offer a streamlined approach to funding advanced technology vehicle purchases through a simple first-come, first-served program. However, funding for infrastructure is complex and requires case-by-case evaluation, which is incongruous with HVIP's simplified system and need to expend funds in a timely manner. The timeline to plan for and install infrastructure is generally much longer than the timeline to deliver vehicles. Staff proposes to discontinue voucher enhancements for electric vehicle supply equipment and hydrogen fueling infrastructure to focus funding on vouchers for vehicles though HVIP's streamlined and simplified approach. Since infrastructure remains a major barrier for hydrogen fuel cell vehicle adoption, staff may consider reinstating hydrogen fueling infrastructure voucher enhancements on a case-by-case basis if it appears that there will be sufficient funding to do so. Funding for electric vehicle supply equipment and hydrogen fueling infrastructure may be available through other programs in CARB's incentive portfolio as well as the California Energy Commission and utilities. Staff will continue to monitor and evaluate other funding sources and support fleets by providing information on potential infrastructure funding opportunities.

***Discontinue all vehicle voucher enhancements except for the disadvantaged community plus-up:***
HVIP vehicle voucher enhancements were designed to provide additional funding to help overcome barriers other than initial vehicle cost or to promote specific technology advancements. Currently, HVIP offers the following voucher enhancements.

- Exportable Power - HVIP eligible plug-in utility vehicles or vehicles below 10,001 lbs GVWR that are equipped with exportable power are eligible for an additional $2,000 voucher.
- Extended Warranties - HVIP allows vehicle manufacturers to apply for an extended warranty voucher enhancement of: $2,000-$6,000 depending on warranty terms.
- Inductive Charging - Vehicles equipped with inductive charging are eligible for a voucher enhancement of $10,000-$20,000 depending on vehicle size.

As noted above, HVIP offers a streamlined approach to funding advanced technology vehicle purchases on a simple first-come, first-served basis. The voucher enhancements add another level of complexity with limited effectiveness in influencing vehicle purchases. Staff proposes to remove the above vehicle voucher enhancements. The disadvantaged community voucher enhancement of up to $15,000 will remain unchanged.

***Clarify policies surrounding stacking/combining other funds with HVIP:***
Incentives for some technologies in HVIP may be "stacked" or combined with other public incentives, to further support fleet purchase decisions. Currently, different policies regarding stacking exist for numerous programs, often creating confusion about when stacking is allowed. HVIP's intent is to substantially offset the cost of new technology, without exceeding the amount of public funding needed to influence a purchase decision. HVIP will keep in place the public fleet option of combining funds up to 100 percent of the vehicle cost (excluding taxes and fees), since public fleets rely almost exclusively on public funding. However, staff proposes to not allow state-funded incentives be combined with HVIP funding (such as the Energy Commission's School Bus incentives program and Carl Moyer Program). Stacking with local incentive funds would continue to be allowable, so long as each incentive program is not paying for the same incremental costs. Historically only a few projects have stacked HVIP funding with other State funding programs, so this recommendation is unlikely to impact HVIP demand in the coming year. This change is proposed as a proactive measure meant to clarify HVIP's stacking policy and ensure that the benefits of State funds are maximized across all funding programs.

***Reinstate fleet limits:*** CARB removed the 200-voucher limit per fleet per calendar year in the FY 2017-18 Funding Plan to support vehicle cost reductions through economies of scale and accelerate the placement of vehicles on California roads. However, orders over 200 vehicles per fleet result in longer vehicle manufacturing and delivery times, which reduces the budget available for other fleets and manufacturers. Staff proposes to reinstate the 200-voucher limit per fleet per calendar year to prevent a single fleet or manufacturer from reserving a large portion of project funds.

*Effective Date:* Upon approval, all proposed changes to HVIP will become effective the day after the Board meeting.

Contingency Proposal

***Reduce all voucher amounts by 20 percent:***
HVIP experienced a significant increase in voucher demand and entered into a waitlist on July 23, 2019. At current rates, staff estimates a total funding need of $255 million for FY 2019-20, which includes $55 for the FY 2018-19 waitlist and $200 million in FY 2019-20 voucher demand. As a result, staff anticipates a funding shortfall of over $100 million for the upcoming fiscal year. In order to align the anticipated funding demand for vouchers with the budget, staff proposes that the Board grant authority to the Executive Officer to reduce some or all voucher amounts by up to 20 percent. Reducing funding amounts by 20 percent may reduce the risk of funding shortfalls and HVIP entering into a waitlist for vouchers in FY 2019-20 and beyond. Budget shortfalls and frequent waiting lists adversely impact the market for advanced technologies by creating uncertainty and artificially starting and stopping demand. As a primary goal of HVIP is to support the market for these technologies, staff consider stability in funding voucher availability to be paramount. Staff will continue to monitor vehicle prices through the component cost analysis, described below, to inform voucher amounts and future adjustments may be made.

*AB 1550 Disadvantaged Community and Low-Income Household/Community Benefits*:
HVIP will continue to be implemented on a first-come, first-served, statewide basis, so it is not possible to estimate in advance exactly how much funding will be spent in disadvantaged and low-income communities. In the 2018 reporting cycle, about 52 percent of HVIP funding was spent in disadvantaged communities and an additional 18 percent in low-income communities that don't overlap with disadvantaged communities as reported in the March 2019 Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds.

Currently, a higher HVIP incentive is offered for zero-emission vehicles domiciled and operating in disadvantaged communities as a way to encourage HVIP participation from fleets operating in these communities. As part of the Cap-and-Trade auction proceeds reporting requirements, CARB will track where HVIP funds are spent, so it can calculate and report AB 1550 investment criteria.

*Terms and Conditions:* HVIP Terms and Conditions are intended to notify potential participants of the requirements of the program prior to submitting an application. Additionally, CARB and the project administrator developed an Implementation Manual to further define these rules and explain roles and responsibilities. The current Terms and Conditions and Implementation Manual for HVIP are available at https://www.californiahvip.org/resources/#implementation-manuals

*Project Solicitation:* CARB selected a grantee to administer FY 2016-17 HVIP funds via a three-year competitive solicitation. As the current grant comes to a close, staff will conduct a competitive solicitation to select a grantee for the next three years. While the solicitation would encompass up to three fiscal years, the grant agreement would

initially cover one fiscal year with the option to renew for each of the following two fiscal years. The solicitation would be released in late 2019. Staff anticipate having a grant in place for the FY 2019-20 funds by the end of January 2020.

## Outcomes

While certain metrics, like cost-effectiveness, are commonly used to evaluate the effectiveness of programs, near-term emissions reductions are not the primary goal of HVIP. Rather, technology evolution and ensuring that advanced technology will be commercially available at the scale to meet California's long-term goals remain the primary objectives of HVIP. Staff continue to work with stakeholders to develop metrics that can be used to quantify HVIP's progress towards these goals.

While not the primary goal, HVIP does produce emission reductions. As noted above, a significant portion of the FY 2019-20 allocation will be used to fund vouchers from the wait list and will follow the policy that was in place during FY 2018-2019. Staff expect to fund about 1,140 zero-emission, hybrid, and low NOx vehicle vouchers, providing an estimated 370,000 metric tons of CO2 equivalent GHG emission reductions. Staff also estimates about 483 tons of NOx, 11.4 tons of PM 2.5, and 3.53 tons of ROG emissions will be reduced as the advanced technology vehicles replace conventional diesel trucks and buses. Appendix A provides additional details on the emission estimates.

In addition to the benefits outlined above, the changes proposed by staff will result in cost-savings to HVIP during the next fiscal year. The cost savings associated with each recommendation are estimated in Table 17 below.

**Table 17: Summary of Staff Recommendations for HVIP**

| Staff Recommendation | Estimated Cost Savings |
|---|---|
| Graduate Low NOx Engines | $34 million |
| Graduate Hybrids | $2 million |
| Discontinue Infrastructure Voucher Enhancement | $14 million |
| Discontinue All Voucher Enhancements except DAC | <$1 million |
| Reinstate Fleet Limits | $25 million |
| **Total Savings** | **~$76 million** |

Though the proposed changes were recommended because they further HVIP's program goals, the cost savings come as an added benefit at a critical time. Without these changes, staff anticipate that HVIP will face a shortfall of over $100 million, making a waitlist in FY 2019-20 inevitable. Even after proposed changes, staff still anticipate a shortfall of nearly $25 million. Yet, these savings substantially reduce the shortfall and will reduce the length and market impacts of a waitlist in FY 2019-20.

As a technology transformation program, it should be expected that technologies will graduate out of HVIP as they become more established in the market. This is not to

say that CARB does not continue to support, or invest in these technologies, but rather that the technology has matured and achieved a high enough level of commercialization and acceptance in the market that its continued funding in HVIP is no longer congruent with program goals. After graduating a technology from HVIP, the technology will generally continue to see support from other programs within CARB's broader portfolio where emission reductions can be directly counted for meeting Federal ambient air quality standards. Further support may also be available from other State, local and federal programs.

Graduating technologies from HVIP is essential to ensure that the program is effective and able to continue to focus on its core mission—accelerating the deployment of early commercial technologies. Retaining a technology in HVIP for too long will lead to a disproportionate amount of HVIP dollars being spent on a technology that is already widely accepted, thereby limiting CARB's ability to invest in the technologies that would benefit the most from HVIP's unique structure.

CARB must holistically consider a set of criteria to understand technology readiness, its acceptance in the market, economic factors, and continued barriers to adoption.

To understand the technology readiness, CARB considers a number of factors such as:

- Whether the technology has entered into mass production and been integrated into OEM manufacturing lines;
- Whether the advanced technology is compatible with typical duty-cycles;
- What the technology readiness level is; and
- What the potential for further technological development or technology transfer is.

To evaluate market acceptance CARB considers factors such as:

- Volume in the marketplace,
- Presence of an established secondary market;
- Established reliability for the technology;
- Consumer confidence and acceptance; and
- Whether the technology has replaced conventional technologies or is it the only available option in the vehicle vocation or engine category for a majority of OEMs.

CARB recognizes that factors external to the technology may also present significant barriers to adoption and proliferation. In assessing barriers to adoption, CARB considers factors such as:

- The existing infrastructure and ease of infrastructure expansion;
- Whether the technology is supported by an adequate service workforce;
- Whether the vehicle and infrastructure technology is standardized and unimpeded by certification or code requirements, and
- How well the technology is known and understood by potential consumers.

CARB also considers economic factors such as:

- Whether or not the technology achieves cost-effective emissions reductions, which is critical in evaluating whether the technology will be successful in other programs such as the Carl Moyer program.

CARB may consider other economic indicators such as:

- The incremental cost;
- Total cost of ownership; and
- Whether the technology has a sustainable market, but does not expect that a technology will have achieved parity with the conventional technology on these measures before graduating from HVIP.

The metrics described above serve as a guideline to determine if a technology is ready to graduate from HVIP to another CARB funding program. While CARB recognizes the importance of evaluating all technologies across a standard set of criteria, it also acknowledges that a given technology may face unique obstacles which may warrant special consideration. While CARB has broadly outlined the metrics it takes into consideration in this Funding Plan, we expect to further refine these criteria in future years with feedback from stakeholders in future workgroup meetings.

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

Proposed Low Carbon Transportation Allocation
$40 million in funding from previous years' remaining allocations

## Project Overview

The Clean Off-Road Equipment Voucher Incentive Project (CORE) is a voucher project analogous to HVIP, but for advanced technology off-road equipment. It is targeted toward commercialized products and is designed to accelerate deployment of cleaner technologies by providing a streamlined way for fleets ready to purchase specific advanced technology equipment to receive funding to offset the higher cost of such technologies. This project will operate on a first-come, first-served basis supporting a wide variety of private and public fleets.

Some advanced technology off-road applications are already commercially available, and their main barrier to widespread adoption is that production volumes are too low for the equipment to be cost competitive. Serving these applications with off-road voucher incentives would help to bring about greater adoption of cleaner, commercially available off-road technologies throughout California, particularly in areas such as ports, railyards, airports, and warehouses, that are most impacted by emissions from off-road equipment.

The project also includes voucher enhancements, designed to provide additional funding in order to address other barriers to adoption such as infrastructure and technology-support costs. Furthermore, staff has proposed higher voucher amounts for equipment used at facilities located in disadvantaged communities, encouraging participation from fleets operating in those communities. Due to the nature of first-come, first-served vouchers, the funding to be spent in and benefitting disadvantaged communities, low-income communities, and low-income households is difficult to determine, but with the enhanced voucher amounts and the presence of many freight facilities in these communities, staff expects a significant amount of funding will meet the AB 1550 benefitting criteria.

## Current Project Status

The FY 2017-18 Funding Plan allocated $40 million to support zero-emission freight equipment through CORE. A competitive solicitation process to select a third-party administrator was completed in March 2019 and CARB is currently working with the administrator to launch the project in late 2019.

## Staff Proposal for FY 2019-20

Staff is not requesting a funding allocation at this time, because the $40 million already allocated is expected to meet demand through the FY 2019-20 funding cycle. Once the project has launched and more information on equipment demand is available, staff will evaluate funding requests and existing funding sources to determine the total demand for commercially available clean off-road equipment in the CORE program. Staff also recommends flexibility in determining other equipment types and technologies as eligible in the CORE program based on commercial availability and operational needs. In particular, staff recommends expanding the scope of the project to include hybrid off-road technology with zero-emission capabilities as potentially eligible technology types in CORE. Staff would perform an analysis to determine whether hybrid technology with zero-emission capabilities helps achieve CORE's goals, what funding levels would be appropriate, and how this addition of eligible technology types would impact the third-party administrator's duties.

## Outcomes

Staff is not proposing to use any new funding for this fiscal year and will still be using FY 2017-2018's funding allocations during FY 2019-20. As such, clean air and climate change benefits for these funds are estimated in previous Funding Plans.

The FY 2017-18 funding is expected to further drive wide-scale adoption of commercially available clean off-road freight equipment and development of zero-emission infrastructure, which in turn will drive down costs and strengthen the supply chain to support a broader zero-emission market. This project supports building on successful beachhead technology applications, and staff anticipates expansion to additional off-road applications as the technology matures.

CARB will report in Annual Reports and future Funding Plans the outcomes of this project including GHG reductions achieved or anticipated using the appropriate CARB quantification methodology; progress in meeting or exceeding SB 535 and AB 1550 targets for investment in and benefitting disadvantaged communities; updates on economic, environmental, and public health co-benefits achieved or anticipated; and transaction locations.

## Truck Loan Assistance Program

Proposed Low Carbon Transportation Allocation – $48 million

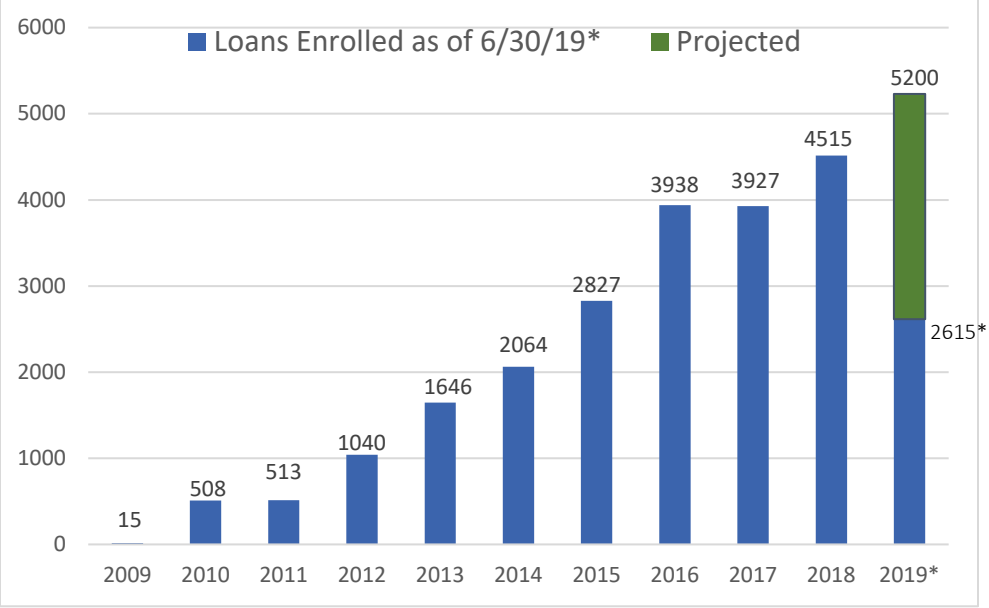
### Project Overview

Launched in 2009, the Truck Loan Assistance Program utilizes AQIP funds to help small-business fleet owners, affected by CARB's In-Use Truck and Bus Regulation, to secure financing for upgrading their fleets with newer trucks. The program is implemented in partnership with the California Pollution Control Financing Authority (CPCFA) through its California Capital Access Program (CalCAP) and leverages public funding with private funding from participating lending institutions. The program is available for small fleets with 10 or fewer trucks at the time of application. Lenders use their traditional underwriting standards to establish loan terms; however, the program currently includes an interest rate cap of 20 percent. Because the program primarily reduces criteria and toxic air contaminant emissions, AQIP is the only source of CARB funding available for this program.

### Current Project Status

As of June 30, 2019, about $113.2 million in Truck Loan Assistance Program funding has been expended to provide about $1.5 billion in financing to small-business truckers for the purchase of approximately 26,000 cleaner trucks, exhaust retrofits, and trailers. Demand by truck owners has increased nearly every year as shown in Figure 7. Program growth is driven by increased lender and borrower awareness and utilization of the program and increased enforcement of the Statewide In-Use Truck and Bus Regulation.

**Figure 7: Loan Activity by Calendar Year**



To meet consumer demand and to ensure that the program would remain fully funded, CARB allocated $25.6 million for the program for FY 2018-19 and $20 million for FY 2017-18. Due to concerns from forecasted funding shortfalls, at the end of FY 2017-18, CARB allocated an additional $15 million of its own funds to the Truck Loan Assistance Program.

CARB staff and CPCFA successfully established incremental recapture procedures in 2017. This mechanism redirects older contributions back to the Truck Loan Assistance Program to support future enrollments and makes the program more self-sustaining by reinvesting funds from matured loans. A total of approximately $8 million in recaptured funds has been redeposited into the truck loan program account. The quantity of recaptured funds from matured loans is determined after the conclusion of each fiscal year.

Table 18 provides a summary of financing provided to date. About 45 percent of enrolled loans have been issued to owner operators with one truck, and about 96 percent of enrolled loans have been issued to fleet owners with 10 or fewer employees.

**Table 18: Truck Loan Assistance Program Status –Vehicles/Equipment Financed**

| Number of Loans Issued[1] | Number of Projects Financed | Project Type | State Funding (millions) | Total Amount Financed (billions) |
|---|---|---|---|---|
| 23,600 | 24,800 | Truck Purchases | $113.2[2] | $1.5 |
| | 620 | Exhaust Retrofits | | |
| | 580 | Trailers | | |

Based on data through June 30, 2019.

1 Total number of loans issued does not equal the number of projects financed because some loans included multiple projects.

2 Total funds allocated only; does not include the $8 million in recaptured funds.

Truck Filter Replacements Project Status

The FY 2018-19 Funding Plan included $3 million in AQIP funding to pay for truck filter substrate replacements on a first-come, first-served basis for existing heavy-duty vehicles equipped with a certified Cleaire Advanced Emission Controls diesel PM filter system. The project is expected to launch this year, and no additional funding is proposed for the project at this time.

## Staff Proposal for FY 2019-20

CARB staff recommends allocating $48 million to the Truck Loan Assistance Program to meet expected demand for the FY 2019-20 cycle. This is an increase of $22.4 million over the previous funding cycle in FY 2018-19. Program need and popularity is

expected to grow more in the coming years because of the passage of SB 1, the Road Repair and Accountability Act of 2017 (Beall, Chapter 5, Statutes of 2017). As a result, beginning in 2020, the Department of Motor Vehicles (DMV) will only allow clean trucks in compliance with CARB's Truck and Bus Regulation to be registered. The Truck and Bus Regulation requires most heavy-duty vehicles to be equipped with 2010 or newer model year engines between 2020 and 2023.

CARB has an enforcement process in preparation for DMV compliance verification and upcoming replacement deadlines. It is a streamlined process that will substantially increase the numbers of Notices of Violation and vehicle registration holds received by non-compliant fleets. For many small fleets, this loan program may offer the only viable option to achieve compliance.

Starting in FY 2019-20, retrofits and 2007 to 2009 model year engines will no longer be eligible through the Truck Loan Assistance Program. Most vehicles equipped with engines retrofitted with diesel particulate filters will require an upgrade to a 2010 or newer model year engine by 2020, so retrofits are no longer feasible. Most 2007 to 2009 model year engines will also require an engine upgrade by 2023. The term of a loan may be five years or more so it will not be practical to finance into 2023 or later if the financed vehicle will become non-compliant.

To ensure the sustainability of the program staff is continuing to work with CPCFA to monitor long-term cash flow and future demand.

AB 1550 Disadvantaged Community and Low-Income Household/Community Benefits:
The AB 1550 disadvantaged community, low-income community, and low-income household investment targets apply only to projects funded with Cap-and-Trade auction proceeds. They are not a requirement of AQIP funding, the sole funding source for the Truck Loan Assistance Program. However, it is worth noting that much of the Truck Loan Assistance Program funding has been spent in areas benefitting priority populations.

**Outcomes**

The proposed FY 2019-20 allocation for the Truck Loan Assistance Program is expected to enable financing for about 15,000 new truck purchases. This will help small business truckers comply with the In-Use Truck and Bus Regulation and result in an estimated 2,810 tons of NOx and 207 tons of ROG emission reductions. Appendix A provides additional details on the emission estimates.

This program has experienced growing demand since its creation. Staff expects the Truck Loan Assistance Program could face unprecedented demand in future fiscal years as truck owners take action to meet truck replacement requirements and come into compliance due to CARB's streamlined enforcement process and DMV compliance verification in 2020.

# CHAPTER 5: ADDRESSING CALIFORNIA CLIMATE INVESTMENT GUIDELINES REQUIREMENTS

CARB's August 2018 Funding Guidelines for Agencies that Administer California Climate Investments provide direction for implementing agencies.[16] This chapter summarizes the steps CARB is taking to meet some of the key Guidelines requirements, primarily those relating to priority populations (disadvantaged communities, low-income communities, and low-income households), but also addresses some of the new requirements from the August 2018 Guidelines for the Low Carbon Transportation Program.

The California Climate Investments Guidelines requirements related to evaluating investments for priority populations and maximizing benefits for disadvantaged communities can be found in Section V of the Guidelines and are summarized below, along with the actions CARB is taking to address them.

Guideline Requirement: Assess overall program structure for opportunities to target investments to benefit priority populations and evaluate projects for potential benefits to priority populations, using the criteria available at: www.arb.ca.gov/cci-resources.

> CARB Action: Staff expects that every project funded with the FY 2019-20 Low Carbon Transportation appropriation will provide some benefit for AB 1550 populations. The project category descriptions included in Chapters 3 and 4 of this Funding Plan describe the anticipated AB 1550 benefits for each project, and Appendix A shows how staff developed its minimum AB 1550 investment target that at least 50 percent of funds meet one or more of the AB 1550 criteria.
>
> For each project, staff will use the criteria from www.arb.ca.gov/cci-resources to evaluate the AB 1550 benefits and to develop project solicitation and grant requirements. As project funds are expended, CARB will report the AB 1550 benefits in future *Annual Reports to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds*.

Guideline Requirement: Target funding, to the extent feasible, for projects that benefit priority populations.

> CARB Action: The FY 2019-20 Funding Plan includes a mix of projects that are available statewide on a first-come, first-served basis and those that are limited to disadvantaged communities or to low-income households. These are clearly specified in the Funding Plan. In cases where projects are not limited to disadvantaged communities, many grant agreements that include a requirement to

[16]See Funding Guidelines for Agencies that Administer California Climate Investments, 2018. https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2018-funding-guidelines.pdf

focus outreach on disadvantaged communities to increase participation in those communities.

For the statewide first-come, first-served projects (CVRP and HVIP), staff has incorporated project criteria intended to increase benefits to disadvantaged communities and low-income households. For HVIP, zero-emission truck and bus voucher amounts are higher for vehicles that operate in disadvantaged communities. For CVRP, rebate amounts are higher for low-income vehicle purchasers with household incomes less than 300 percent of the federal poverty level. Outreach is being increasingly focused on disadvantaged communities and low-income households.

CARB is also dedicating $7 million to fund outreach, community transportation needs assessments, technical assistance, and the One-Stop-Shop project as part of the FY 2019-20 Funding Plan. These project elements are designed to increase awareness of and enable more efficient implementation of CARB's Low Carbon Transportation Equity projects, and expand participation by low-income households.

Guideline Requirement: Create or modify program guidelines or procedures to meet or exceed AB 1550 program targets.

CARB Action: This Funding Plan outlines the procedures CARB is taking to meet or exceed AB 1550 targets.

Guideline Requirement: Design programs and select projects that avoid substantial burdens to residents of disadvantaged and low-income communities, such as physical displacement of low-income or disadvantaged community residents or businesses, including small-, women-, and/or minority-owned businesses; or increased exposure to toxics or other health risks.

CARB Action: In designing the projects in the Funding Plan, staff is careful to avoid or minimize potential substantial economic, environmental, and public health burdens. Any potential substantial burdens are identified early in the project development process and are discussed with stakeholders through the public work group process.

Guideline Requirement: Provide direct outreach to disadvantaged communities and identify an agency point or contact to provide the information on funding opportunities and to coordinate with other State agencies on California Climate Investments.

CARB Action: CARB has taken multiple actions to outreach to disadvantaged communities.

*Hire dedicated staff*: CARB has hired dedicated staff to assist with disadvantaged community and low-income household outreach on Low Carbon Transportation investments and help ensure these communities are aware of funding opportunities. As part of this, CARB is working with liaisons from State agencies administering California Climate Investments to better share information at community events, so citizens can have access to all relevant California Climate Investments opportunities. This includes participating in the inter-agency California Climate Investments Outreach Work Group and the coordinating with the Strategic Growth Council on the California Climate Investments Outreach & Technical Assistance Program.

*Conduct outreach to help potential applicants access funding, particularly for priority populations:* CARB's multi-faceted outreach effort to support its Low Carbon Transportation Program and help ensure priority populations are aware of funding opportunities is summarized earlier in this chapter. These outreach efforts include the following elements:

- *Outreach events:* CARB has started an enhanced outreach/education program on the Low Carbon Transportation Program with a disadvantaged community focus. An important part of the effort is dedicated to assessing the needs of the communities. CARB is partnering with stakeholders, such as community-based organizations, community advocates, and environmental justice groups to conduct community meetings aimed at explaining available incentives and increasing the community's awareness of these programs. A list of outreach events since July 2018 where CARB provided information on its Low Carbon Transportation Program is shown in Table 20.

- *Website*: CARB has developed a new, user-friendly Moving California website to promote Low Carbon Transportation projects and increase awareness about funding opportunities: https://arb.ca.gov/msprog/lct/movingca.htm.

- *Outreach by grantees*: As a part of project solicitations, CARB requires that applicants provide information on how they will outreach to disadvantaged communities, and their applications are scored in part on the quality of the outreach proposal.

- *One-Stop-Shop*: The FY 2017-18 Funding Plan funded the One-Stop-Shop Pilot Project to address a core recommendation identified in the SB 350 Low-Income Barriers Study to increase awareness for low-income residents by expanding education and outreach on clean transportation and mobility options. One of the primary objectives of this pilot is to provide coordinated community-based outreach and education to maximize Low Carbon Transportation program participation and promote advanced

technology vehicle adoption in disadvantaged communities, low-income communities, and low-income households. In the Funding Plan, additional funding will be allocated to continuing the project.

- *Outreach Plan:* One of CARB's priority recommendations in the SB 350 Guidance Document is to develop an outreach plan to increase low-income residents' awareness of clean transportation and mobility options. CARB is leading outreach plan, or roadmap, development with the goal of improving state and local coordination and content development, tailoring and delivery of information, as well as strategies that will increase awareness of clean transportation and mobility options through improved education and information access for low-income residents across the State. The roadmap will include actions intended to strengthen collaboration and partnerships, outreach to low-income residents in urban, rural, and tribal communities based on community-identified needs and increase the ability to participate in CARB or related incentive programs. In April 2018, CARB convened working groups consisting of both internal and external stakeholders to solicit ongoing feedback, identify outreach and community engagement best practices, and develop the outreach roadmap. CARB anticipates releasing the draft roadmap in the fall for public feedback and finalizing later this year.

Guideline Requirement: Maximize economic, environmental, and public health co-benefits to the State.

CARB Action: To the extent feasible, staff seeks to ensure that the investments in the Funding Plan maximize co-benefits, such as fostering job creation, improving air quality, providing opportunities for business, public agencies, nonprofits, and other community institutions to participate in and benefit from investments, and lessening the impacts and effects of climate change.

Guideline Requirement: Foster job creation and job training, wherever possible.

CARB Action: The investments in the Funding Plan help to foster job creation by providing employment opportunities or job training tied to employment. To the extent feasible, jobs and job training are targeted to priority populations. This can take place at either the program or the project level.

Guideline Requirement: Ensure transparency and accountability and provide public access to program information.

CARB Action: All CARB grant agreements with funding recipients require grantees to collect and report to CARB all data necessary regarding AB 1550 benefits. This includes all information described in Section VI (Reporting Requirements) of the 2018 Funding Guidelines. CARB uses this information to provide input for the

*Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Proceeds* including the AB 1550 benefits of Low Carbon Transportation investments.

Guideline Requirement: When evaluating projects for benefiting priority populations, assess how projects meet a community or household need. The California Climate Investments Guidelines provides a list of common needs identified by community advocates during the development of the guidelines. Letters of community support can also be used to document that investments address a community need.

CARB Action: Staff reviewed the commonly identified needs of priority populations in the California Climate Investments Guidelines. The needs being met by proposed FY 2019-20 Low Carbon Transportation investments are shown in Table 19 below.

**Table 19: Common Needs of Priority Populations Addressed by Proposed FY 2019-20 Low Carbon Transportation Investments**

| | |
|---|---|
| Public Health, Need 1 | Reduce health harms suffered disproportionately by priority populations due to air pollutants.<br><br>*All Low Carbon Transportation projects meet this need. All projects reduce criteria air pollutants and/or toxic air contaminants as co-benefits thereby reducing health harms due to air pollutants, and a portion of funding from all projects is expected to benefit priority populations.* |
| Economic, Need 5 | Reduce transportation costs and improve access to public transportation.<br><br>*The Low Carbon Transportation projects that provide consumer incentives for more fuel-efficient vehicles meet this need. These include CVRP, Clean Cars 4 All, Financing Assistance for Lower-Income Consumers, and Clean Mobility Options projects.* |
| Economic, Need 10 | Provide educational and community capacity building opportunities through community engagement and leadership.<br><br>*Public outreach is an element of many Low Carbon Transportation projects. For the light-duty equity projects in particular, CARB will continue to require that grant awardees have strong community-based experience and commit to conduct extensive outreach and education tailored to the communities' projects will serve.* |
| Environmental, Need 1 | Reduce exposure to local environmental contaminants, such as toxic air contaminants, criteria air pollutants, and drinking water contaminants.<br><br>*All Low Carbon Transportation projects meet this need because they reduce criteria air pollutants and/or toxic air contaminants as co-benefits.* |
| Environmental, Need 2 | Prioritize zero-emission vehicle projects for areas with high diesel air pollution, especially around schools or sensitive populations with near-roadway exposure. |

| | |
|---|---|
| Public Health, Need 1 | Reduce health harms suffered disproportionately by priority populations due to air pollutants.<br><br>*All Low Carbon Transportation projects meet this need. All projects reduce criteria air pollutants and/or toxic air contaminants as co-benefits thereby reducing health harms due to air pollutants, and a portion of funding from all projects is expected to benefit priority populations.* |
| | *The Low Carbon Transportation projects that provide incentives for zero-emission vehicles to replace diesel vehicles meet this need. These include Rural School Bus Pilot, Zero- and Near Zero-Emission Freight Facilities, and HVIP.* |

Guideline Requirement: Facilitate GHG emission reductions and further the purposes of AB 32 and related statutes.

CARB Action: All of the Low Carbon Transportation projects in the Funding Plan help to facilitate the achievement of GHG emission reductions and further the purposes of AB 32. Facilitating these reductions is a priority as the programs or projects are designed, guidelines are developed, and final projects are selected. In selecting projects, staff has focused on funding those projects that: achieve near-term quantifiable GHG emissions reductions; achieve long-term quantifiable GHG emission reductions and provide co-benefits; promote early adoption of advanced technologies and practices that facilitate near-term GHG emission reductions; and/or support strategies and development of accelerated technologies needed to achieve the State's long-term GHG emission reduction goals.

CARB staff also reports on the outcomes of expenditures, including the cost-effectiveness of investments in achieving GHG emission reductions. In considering cost-effectiveness, staff has also noted where there may be tradeoffs when selecting projects with high GHG cost-effectiveness compared to projects that facilitate GHG emission reductions but primarily provide other co-benefits.

Guideline Recommendations: In addition to the requirements summarized above, the California Climate Investments Guidelines list a number of recommended program design strategies for targeting investments to priority populations.

CARB Action: In developing the FY 2019-20 Funding Plan, staff utilized a number of these strategies, including:

*Encourage projects that contribute to other State climate goals:* Many of the projects in this Funding Plan contribute to a variety of the State's climate goals. Table 2 in the Executive Summary lists many of the multiple goals that these

projects address. A more detailed list of the State's climate goals that are addressed by the Funding Plan is included in Chapter 1.

*Coordinate investments and leverage funds where possible to provide multiple benefits and to maximize benefits:* CARB staff coordinates with other agencies and meets with stakeholders both in individual meetings and in public work group meetings and workshops to discuss ways to maximize project benefits. A number of the projects leverage private investments and other government investments where possible.

*Set aside a portion of funding for projects benefiting priority populations*: Funding for the Clean Mobility Options and Agricultural Worker Vanpools are all limited to disadvantaged communities. In addition, the Low Carbon Transportation funding for EFMP Plus-up is limited to ZIP Codes benefiting disadvantaged communities. EFMP Plus-up and Financing Assistance funding is limited to lower-income consumers, and staff included an allocation of reserved CVRP rebates for low-income consumers earning less than 300 percent of the federal poverty level as a new refinement in the FY 2017-18 Funding Plan.

*Offer higher incentive amounts for projects benefiting priority populations*: HVIP provides higher voucher amounts for zero-emission trucks and buses that operate in disadvantaged communities. CVRP provides higher rebate amounts to lower-income consumers. EFMP Plus-up provides tiered incentive amount based on income, with the lowest-income participant receiving the highest incentive amounts.

**Table 20: Low Carbon Transportation Program Outreach Events**

| Outreach Event | Date | Location |
|---|---|---|
| Southern California "Optimizing the Transportation Sector": Infrastructure and Electrification | 9/6/2018 | Compton |
| Enterprise Community Partners on Housing and Economic Mobility: A Community Planning Session | 9/7/2018 | Los Angeles |
| Clean Vehicle Assistance Launch Event | 9/7/2018 | Bay Area |
| South Coast Air Quality Management District Annual Environmental Justice Conference | 9/26/2018 | Los Angeles |
| Kern County Asthma Conference | 9/27/2018 | Bakersfield |
| California Climate Investments Environmental Justice Resource Fair | 9/27/2018 | Sacramento |
| California Climate Investments: Transportation and Housing | 10/3/2018 | Inglewood |
| Pasadena Latino Festival | 10/12/2018 | Pasadena |
| Electrifying Transportation in Southern California: Opportunities and Challenges 2030 | 10/17/2018 | Los Angeles |
| Comite Civico Del Valle Annual Conference | 10/18/2018 | El Centro |
| Comite Civico Del Valle Annual Conference | 10/19/2018 | El Centro |
| 4th Climate Change Assessment Symposium | 11/2/2018 | Long Beach |
| Clean Mobility Options Projects for Disadvantaged Communities Final Grant Applicant Teleconference | 11/6/2018 | Sacramento |
| Low Carbon Transportation Investment (LCTI) Technical Assistance | 11/7/2018 | Fresno |
| 2018 California Climate Equity Coalitions Annual Convening | 11/14/2018 | Los Angeles |
| Applicant Teleconference for the Financing Assistance for Lower-Income Consumers Pilot Project | 11/14/2018 | Sacramento |
| Environmental Justice Task Force Community Bus Tour for Stockton Disadvantaged Communities | 11/15/2018 | Stockton |
| Low Carbon Transportation Investment Technical Assistance | 11/29/2018 | Lamont |
| Public Workshop on 3-Year Plan for Light-Duty Vehicle and Transportation Equity Investment | 12/4/2018 | El Monte |
| Public Work Group Meeting – Heavy-Duty Advanced Tech Barriers & Incentives | 12/11/2019 | Sacramento |
| Tribal Advisory Committee Meeting | 12/28/2018 | Sacramento |
| LCTI Outreach in Partnership with SCAQMD Lunch and Learn Workshop | 1/11/2019 | Riverside |
| Technical Assistance and Capacity Building Workshop for LCTI Equity Projects with Breathe LA | 1/14/2019 | Los Angeles |
| First Public Work Group Teleconference on Clean Mobility in Schools Pilot Project | 1/17/2019 | Sacramento |

| Outreach Event | Date | Location |
|---|---|---|
| Diesel One Stop Event (LCTI Table) | 1/17/2019 | Kerman |
| Technical Assistance & Capacity Building for LCTI Projects with Center for Community Action & Environmental Justice | 1/24/2019 | San Bernardino |
| Heavy-Duty Three-Year Investment Strategy Work Group #1 | 1/29/2019 | Diamond Bar |
| CALEPA Environmental Justice Training by Community Based Organizations | 2/13/2019 | Kettleman City |
| CVRP Public Work Group Meeting | 2/19/2019 | Sacramento |
| Education of LCTI Programs in Chino Disadvantaged Communities at Black History Month with Southern California Edison | 2/21/2019 | Chino |
| Energy, Utility & Environment Conference (EUEC) and Transportation Electrification Expo (TE-Expo) | 2/25/2019 | San Diego |
| Public Workshop on the FY 2019-20 Funding Plan for Clean Transportation Investments | 3/13/2019 | Sacramento |
| Low Carbon Transportation Heavy-Duty Showcase | 3/19/2019 | Sacramento |
| Technical Assistance and Capacity Building Workshop for LCTI Equity Projects with Comite Civico Del Valle | 3/20/2019 | El-Centro/ Imperial |
| Technical Assistance and Capacity Building Workshop for LCTI Equity Projects with Environmental Health Coalition | 3/21/2019 | National City |
| Mobility Options Workshop by UC Berkeley | 3/22/2019 | Berkeley |
| CVRP Public Work Group Meeting #2 | 3/22/2019 | Sacramento |
| HVIP Work Group Meeting | 3/25/2019 | Sacramento |
| Heavy-Duty Three-Year Investment Strategy Work Group #2 | 3/25/2019 | Sacramento |
| LCTI Outreach in Partnership with SCAQMD Lunch and Learn Workshop | 3/27/2019 | Fontana |
| Equity Projects Work Group Meeting | 3/28/2019 | Sacramento |
| Diesel One Stop Event (LCTI Table) | 4/3/2019 | Bishop |
| CVRP Public Work Group Meeting #3 | 4/4/2019 | Sacramento |
| Technical Assistance and Capacity Building Workshop for LCTI Equity Projects with Clean and Green Pomona | 4/11/2019 | Pomona |
| Equity Projects Work Group Meeting | 4/23/2019 | Sacramento |
| CVRP Public Work Group Meeting #4 | 4/23/2019 | Sacramento |
| LCTI Outreach at Advanced Clean Transportation Expo | 4/23/2019 | Los Angeles |
| Community Bridges Lift Line Press Event | 4/26/2019 | Watsonville |
| LCTI Outreach of Equity Projects with West Oakland Environmental Indicators Project | 4/27/2019 | Oakland |
| Equity Projects Work Group Meeting | 5/1/2019 | Sacramento |
| Technical Assistance and Capacity Building Workshop for LCTI Equity Projects with Valley Leap | 5/2/2019 | Huron |

| Outreach Event | Date | Location |
|---|---|---|
| Equity Projects Work Group Meeting | 5/7/2019 | Sacramento |
| Technical Assistance & Capacity Building Workshop for LCTI Projects with Leadership Council for Justice | 5/7/2019 | Coachella/ Mecca |
| Heavy-Duty Three-Year Investment Strategy Work Group #3 | 5/8/2019 | Long Beach |
| Diesel One Stop Event (LCTI Table) | 5/9/2019 | Santa Maria |
| LCTI Outreach at Advanced Clean Transportation Expo | 5/12/2019 | Long Beach |
| Sustainable Transportation Equity Project Work Group Meeting | 5/15/2019 | Sacramento |
| Technical Assistance & Capacity Building Workshop for LCTI Projects with Third Cities Coalition | 5/16/2019 | Stockton |
| CVRP Public Work Group Meeting #5 | 5/30/2019 | Sacramento |
| 4th Annual Faith and Non-Profit Summit by SCE | 5/31/2019 | Irwindale |
| Second Public Work Group Teleconference on Clean Mobility in Schools Pilot Project | 6/4/2019 | Sacramento |
| Technical Assistance and Capacity Building Workshop for Low Carbon Transportation Technical Assistance Project in Partnership with WOEIP* | 6/10/2019 | Oakland |
| Equity Projects Work Group Meeting | 6/11/2019 | Sacramento |
| Public Workshop on FY2019-20 Funding Plan for Clean Transportation Investments | 6/13/2019 | Sacramento |
| Diesel One Stop Event (LCTI Table) | 6/26/2019 | Truckee |
| Clean Mobility Options for Disadvantaged Communities Pilot Work Group Meeting #1 | 7/12/2019 | Sacramento |
| Diesel One-Stop Event (LCTI Table) | 7/17/2019 | Oakland |
| Heavy-Duty Projects Work Group Meeting | 7/17/2019 | Sacramento |
| AB 617 Sacramento Meeting | 7/23/2019 | Sacramento |
| Equity Projects Work Group Meeting | 7/24/2019 | Sacramento |
| CVRP Public Work Group Meeting #6 | 8/1/2019 | Sacramento |
| Assembly Member Chris Holden Fair | 8/3/2019 | Pasadena |
| Greenlining Climate Investments Workshop | 8/7/2019 | San Diego |
| Truck with Cleans Fuels Conference | 8/13/2019 | Shafter |
| Clean Mobility Options for Disadvantaged Communities Pilot Work Group Meeting #2 | 8/16/2019 | Sacramento |
| AB 617 Sacramento Meeting | 8/27/2019 | Sacramento |
| Clean Cars 4 All Work Group Meeting | 8/27/2019 | Sacramento |
| Diesel One-Stop Event | 8/28/2019 | Livermore |

**West Oakland Environmental Indicators Project*

# CHAPTER 6: CONTINGENCY PROVISIONS

The proposed FY 2019-20 Funding Plan is based on the latest available information. However, circumstances may change between the time the proposed Funding Plan is released for public comment and when the Board approves the Funding Plan, project solicitations are issued, project funds awarded, or as projects are implemented. This section describes staff's proposed contingency plans should mid-course corrections be needed to ensure that funds are spent expeditiously, efficiently, and where the need is the greatest. Under these provisions, the Board would grant the Executive Officer authority to make adjustments as necessary.

Low Carbon Transportation Appropriation:
CARB was appropriated $485 million from GGRF for its Low Carbon Transportation Program. Section 15.14 of the Budget Act of 2019 specifies that "no department shall encumber or commit more than 75 percent of any appropriation prior to the fourth cap and trade auction in the 2019-20 fiscal year. Upon determination of the final amount of auction proceeds after the fourth cap and trade auction, the Department of Finance shall make a final determination for the expenditure of the remaining auction proceeds." However, this provision does not apply to the allocation for CVRP. If CARB does not receive authorization to spend the full amount, staff will propose to scale back all projects proportionally and/or hold a public work group meeting if other changes are proposed.

AQIP Funding Levels:
Over past funding cycles, AQIP revenues were sometimes lower than the levels included in the State Budget, and project solicitations had to be scaled back. AQIP appropriation levels have been adjusted in the State Budget in recent years to more closely track anticipated revenues, so staff does not expect needing to scale back AQIP funding in the FY 2019-20 funding cycle.

Additional Funding Sources:
If funding from other sources is provided for any of the project categories authorized in the Funding Plan, these outside funds will be allocated as needed for projects or as specifically required by the authorizing entity. Additionally, projects receiving additional funding may be altered to accommodate any conditions placed upon the use of alternative sources of funding as long as these conditions are consistent with the statutory provisions for Low Carbon Transportation and AQIP. Staff will consult with project work groups prior to making any changes to projects.

Project Demand:
Staff plans to issue initial solicitations and funding agreements based on the allocations listed in Table 5 (Chapter 2). However, these solicitations and grant agreements will be written with provisions to allow an increase in awarded funding if there are sufficient revenues and project demand. Some solicitations may be written to allow for the potential use of funding from the FY 2020-21 budget year to meet

excess demand subject to approval by the Board as part of the FY 2020-21 Funding Plan. Conversely, staff proposes that the Executive Officer have the ability to reallocate funding from any project in the event that demand does not materialize or if it is determined that the project is not viable as envisioned in the Funding Plan (e.g. a technology considered for pilot deployment is not ready to be funded). In this case, funds would be reallocated within the same project category or sector prior. For example, if demand falls short for one of the transportation equity projects, CARB would shift that funding to another transportation equity project. Any changes in funding for a particular project category would be publicly vetted through a public project work group process.

When CARB is evaluating solicitations, there may be cases where funding has been awarded to the highest scoring applications and the remaining available funds are less than the amount requested in the next highest scoring application. In these cases, staff proposes that the Executive Officer have the authority to offer funding to the next highest scoring project(s) at a scaled down scope, carry the remaining funds forward to the next fiscal year, or shift the funds to another project category at his discretion.

Project Continuity Between Funding Cycles:
To avoid disruptions to ongoing projects, staff proposes the Executive Officer have the authority to establish applicant waiting lists for CVRP (including the public fleet element), Financing Assistance for Lower-Income Consumers, Clean Mobility Options, HVIP, or Truck Loans in the event funding is exhausted prior to the end of the funding cycle. If any of these projects end up with waiting lists, the Executive Officer would have the authority to amend the FY 2019-20 grant agreements to add FY 2020-21 funding upon the enactment of the 2020-21 State budget if funding is appropriated to these projects in the budget.

Staff also proposes a contingency provision to allow for uninterrupted implementation of the Truck Loan Assistance Program in the event that consideration of the FY 2020-21 Funding Plan is delayed beyond July 2020. If CARB is appropriated AQIP funding in the FY 2020-21 State budget and the Executive Officer determines that the Truck Loan Assistance Program would run out of funding prior to Board consideration of the FY 2020-21 Funding Plan, the Executive Officer would have the authority to allocate up to 50 percent of FY 2020-21 AQIP funds to the Truck Loan Assistance Program.

Technical or Administrative Changes:
The proposed Funding Plan specifies all policy-related details regarding the projects to be funded. However, technical or administrative changes may be needed from time to time to ensure these projects are successful. Staff proposes a transparent process in which changes to a project category would be publicly vetted through the project work group process that has been established to discuss the implementation

details of each project.  For several project categories, staff is already planning to use the public work group process to finalize technical details prior to issuing solicitations.

# CHAPTER 7: GRANT ADMINISTRATION

This chapter describes staff's proposed approach for addressing project implementation costs and provisions for advanced payments in grant agreements.

Project Implementation Costs:
Grants include indirect costs and direct project costs that support implementation and technology associated with the project. Staff reviewed grants from various project types to identify the common definitions associated with costs within grants. Indirect costs and direct project costs are identified within each grant agreement, and sometimes vary depending upon the needs of that particular project. Project costs should be detailed such that they include all necessary staff, tasks, and materials needed to implement the project. If appropriate, this includes activities such as outreach and education, research, data management, and reporting. Below is an overview of project implementation costs and how these costs are typically divided among various project types.

**Indirect Project Costs:** Indirect costs are costs which are not tied directly or solely to the project such as, distributed administration and general administrative services; non-project related contracts or subscriptions; rent and office space, phones and telephone services, printing, or mailing services not associated with staff working on the project; or any other costs that are not directly and fully incurred to support the grant project.

**Direct Project Costs:** AB 74 does not address non-administrative direct project costs. To present a complete picture, direct project costs are outlined below.

- *Direct Project Costs for First-come, First Serve Projects:* Includes project implementation costs and technology costs. Although the statute does not specify a threshold for implementation costs, grant administrators should focus on limiting costs to ensure that the majority of grant funds reach their ultimate recipients. Examples below.

    - Project Implementation Costs: Direct project labor and expenses associated with the project, including all components of project implementation, outreach and education, research and data analysis, program evaluation, required reporting, external consultants, third-party contracts for direct support, travel, and information technology related to project implementation.

    - Technology Costs: Costs associated with vehicles, equipment, and infrastructure that is either used to demonstrate the ability of the technology to achieve emission reductions or to deploy technology to an end user (i.e. business, consumer, etc.) for the purpose of achieving

emission reductions. This includes the direct maintenance of these components, if required by the project.

- *Direct Project Costs for Transportation Equity Projects, Pilots, and Demonstrations:* Includes project implementation costs and technology costs as described above, but limitations are typically based on milestones or deliverables, in addition to some amounts for general direct project expenses, if necessary.

Advance Payments to Grantees:

Consistent with the Legislature's direction to expeditiously disburse grants, CARB may provide advance payments of grant awards in a timely manner to support project initiation and implementation with a focus on mitigating the constraints of modest reserves and potential cash flow problems. SB 854 (Section 39603.1 of the Health and Safety Code) allows this as described below:

"a) Notwithstanding any other law, the state board may provide advance payments to grantees of a grant program or project if the state board determines all of the following:

(1) The advance payments are necessary to meet the purposes of the grant program or project.
(2) The use of the advance funds is adequately regulated by grant or budgetary controls.
(3) The request for application or the request for proposals contains the terms and conditions under which an advance payment may be received consistent with this section.
(4) The grantee is either a small district or the grantee meets all of the following criteria:
    (A) Has no outstanding financial audit findings related to any of the moneys eligible for advance payment and is in good standing with the Franchise Tax Board and Internal Revenue Service.
    (B) Agrees to revert all unused moneys to the state if they are not liquidated within the timeline specified in the grant agreement.
    (C) (i) Submits a spending plan to the state board for review prior to receiving the advance payment.
        (ii) The spending plan shall include project schedules, timelines, milestones, and the grantee's fund balance for all state grant programs.
        (iii) The state board shall consider the available fund balance when determining the amount of the advance payment.
    (D) Reports to the state board any material changes to the spending plan within 30 days.
    (E) Agrees to not provide advance payment to any other entity.

(5) In the event of the nonperformance of a grantee, the state board shall require the full recovery of the unspent moneys. A grantee shall provide a money transfer confirmation within 45 days upon the receipt of a notice from the state board.

(b) The state board, in consultation with the Department of Finance, shall adopt a regulation implementing this section to ensure the moneys are used properly.

*(Added by Stats. 2018, Ch. 51, and Sec. 11. (SB 854) Effective June 27, 2018.)"*

## ACRONYM LIST

1. AB – Assembly Bill
2. APCD – Air Pollution Control District
3. AQIP – Air Quality Improvement Program
4. AQMD – Air Quality Management District
5. BEV – battery-electric vehicle
6. CalCAP – California Capital Access Program
7. CHDC – Community Housing Development Corporation
8. CNG – compressed natural gas
9. $CO_2$ – carbon dioxide
10. CPCFA – California Pollution Control Financing Authority
11. CSE – Center for Sustainable Energy
12. CVRP – Clean Vehicle Rebate Project
13. DGS – Department of General Services
14. DMV – Department of Motor Vehicles
15. EFMP – Enhanced Fleet Modernization Program
16. ePTO – electric power take-off
17. EV – electric vehicle
18. FC – fuel cell
19. FCEV – fuel cell electric vehicle
20. FY – fiscal year
21. g/bhp-hr – grams per brake horsepower-hour
22. GHG – greenhouse gas
23. GVWR – gross vehicle weight rating
24. HD – heavy-duty
25. HVIP – Hybrid and Zero-Emission Voucher Incentive Program
26. ITR – Innovative Technology Regulation
27. LCFS – Low Carbon Fuel Standard
28. NG – natural gas
29. NOx –nitrogen oxides
30. OEM – original engine manufacturer
31. PHEV – plug-in hybrid-electric vehicle
32. PM – particulate matter
33. ROG – reactive organic gas
34. RTG – rubber-tired gantry crane
35. SB – Senate Bill
36. UDDS – Urban Dynamometer Driving Schedule
37. ZE – zero-emission
38. ZEV – zero-emission vehicle