CALIFORNIA AIR RESOURCES BOARD

Public Workshop on The Fiscal Year 2020-21 Funding Plan *for* Clean Transportation Incentives

DISCUSSION DOCUMENT

CALIFORNIA CLIMATE INVESTMENTS
Cap and Trade Dollars at Work

Public Workshop Date and Location:

Tuesday, September 29, 2020
9:00 a.m. to 1:00 p.m.
Webinar and Teleconference

Released: September 22, 2020

Workshop Information

Tuesday, September 29, 2020, 9:00am – 1:00pm

Webinar Information

Zoom Webinar Registration Link:
https://zoom.us/webinar/register/WN_6jkhlB-CROql9ksKZKOWrQ

The workshop presentation will be posted on the morning of the workshop at:
https://ww2.arb.ca.gov/our-work/programs/low-carbon-transportation-investments-and-air-quality-improvement-program/low-1

AGENDA

9:00am – 9:45am	Introduction and AQIP Funding Allocations
9:45am – 10:30am	Draft changes to project criteria for CVRP, Financing Assistance, Clean Cars 4 All, Zero-Emission Assurance Project Pilot, and CORE
10:30am – 10:45am	Break
10:45am – 11:30am	Heavy-Duty Investment Strategy
11:30am – 12:30pm	HVIP
12:30pm – 1:00pm	Open Discussion

All times are approximate—if a topic concludes early we will proceed with the next item

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DISCUSSION DOCUMENT INTRODUCTION

The State Budget for Fiscal Year (FY) 2020-21 included $28.64 million for the Air Quality Improvement Program (AQIP). The legislature has deferred action on Cap-and-Trade auction proceeds, including Low Carbon Transportation.

While the legislature has not yet finalized the Low Carbon Transportation appropriation, the California Air Resources Board (CARB) is moving forward with the development of a Funding Plan. Doing so ensures that the AQIP appropriation is available to the projects in critical need of an influx of funds and the State can begin to see the benefits of this funding as soon as possible. CARB will develop allocations for FY 2020-21 Low Carbon Transportation funds after the Cap-and-Trade Expenditure Plan is finalized.

This year's plan will include the strategy for investing AQIP funding, updates to CARB's long-term investment strategies as required by statue, and will incorporate changes to requirements for projects as necessary. This discussion document summarizes options for expending AQIP funds, and reflects input from a March 12, 2020 public workshop, public work group meetings held between January and September 2020, and additional stakeholder comments. The document describes initial staff thinking with respect to:

- The plan for expending the AQIP appropriation
- Updates to the evaluation of the Clean Vehicle Rebate Project (CVRP) and the Zero-Emission Vehicle (ZEV) Market required by Senate Bill (SB) 1275 (De León, Chapter 530, Statutes of 2014) and the Supplemental Report of the 2018-19 Budget Act, and the SB 1403 (Lara, Chapter 370, Statutes of 2018) Long-Term Heavy-Duty Investment Strategy
- Program refinements based on public input and evaluation of recent years' projects for projects receiving funds this year and for projects that have remaining funds from prior fiscal years

The Low Carbon Transportation and AQIP investments represent only a portion of the substantial investments made by the State to promote clean transportation, support the State's numerous air quality and climate goals, and stimulate the economy. Funding for other CARB incentives is covered in separate documents, such as the *Beneficiary Mitigation Plan for the Volkswagen Environmental Mitigation Trust*[1], or the *Community Air Protection Incentives 2019 Guidelines and Staff Report*[2].

[1] California Air Resources Board. *Beneficiary Mitigation Plan for the Volkswagen Environmental Mitigation Trust*. June 2018. https://ww2.arb.ca.gov/sites/default/files/2018-07/bmp_june2018.pdf
[2] California Air Resources Board. Community Air Protection Incentives to Reduce Emissions in AB 617 Communities. https://ww3.arb.ca.gov/msprog/cap/capfunds.htm

Staff will present and seek comment on these draft recommendations at a public workshop on September 29, 2020. Based on input provided at this workshop and additional feedback received at previous meetings, staff will develop final proposed recommendations for Board consideration. Staff plans to release the proposed FY 2020-21 Funding Plan for Clean Transportation Incentives (FY 2020-21 Funding Plan or Funding Plan) by November 6, 2020 for public comment prior to Board consideration at the December 10-11, 2020 Board meeting.

BACKGROUND

CARB has a portfolio of incentive programs that complements regulatory programs 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 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 low-income and disadvantaged communities most impacted by pollution.
- Supporting the transition to and adoption of more sustainable transportation modes to reduce greenhouse gas emissions (GHGs).
- Expanding the supply chain for advanced technology components, the number of manufacturers choosing California as a home for manufacturing, and leveraging private investment to support the commercial viability of advanced technology.
- Supporting economic growth and continuing the momentum California has built towards becoming a hub for the manufacture and deployment of clean technologies and associated high-quality jobs.

One challenge is finding the right balance between investing in technologies that provide cost-effective, near-term emission benefits and investing in the transformative zero-emission technologies that cost more in the near-term but are needed to meet California's longer-term 2030 and 2050 goals. If CARB's investments focus exclusively on the projects that are most cost-effective today, the State would miss the opportunity to accelerate the deployment of zero-emission technologies and fail to meet the State's 2030 and 2050 goals. CARB's portfolio approach of maintaining a balanced suite of investments that include programs to support the acceleration of fleet turnover to meet near-term air quality goals, as well as programs that keep the momentum of advancing technology from demonstration to commercialization phase, is necessary to meet future State goals. The Clean Transportation Incentives work alongside other incentive programs and the State's regulatory efforts to reduce emissions, but are uniquely positioned to support advanced technologies in the early stages of commercialization. Tightening targets and limited funds make it critical to

consider how all of these programs interact, and strategically fund only those technologies that best match the goals of each incentive program.

This plan's focus on deploying zero-emission technologies is just one aspect of the State's climate change and air quality investment portfolio. The investment strategy is also coordinated with and complemented by other State agencies' clean transportation and sustainable community, clean energy, and natural resources programs funded with Cap-and-Trade auction proceeds and other funding sources. All of these programs are designed to help achieve one or more of the State's ambitious goals to reduce GHGs and short-lived climate pollutant emissions, improve air quality and reduce toxics risk, deploy ZEVs, reduce vehicle miles travelled, and lessen petroleum dependency.

CARB's 2017 *Climate Change Scoping Plan* 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, Assembly Bill (AB) 617 (C. Garcia, Chapter 136, Statutes of 2017) establishes 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.

The investments included in this discussion document are informed by these goals and strategies. Typically, the Funding Plan discusses the plan for investing funds from both Low Carbon Transportation Investments and AQIP. While this year's plan will not include allocations for Low Carbon Transportation, the projects and past investments made within the program continue to play a crucial role in meeting the State's numerous air quality, climate, and petroleum dependency goals.

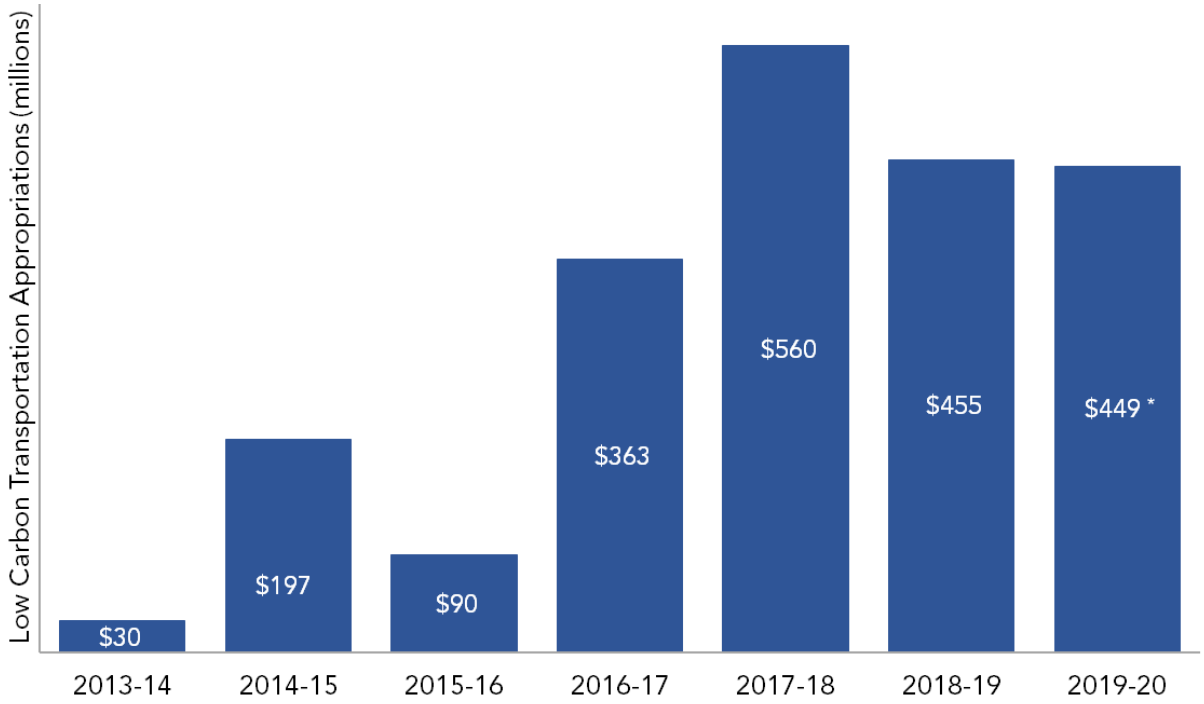
LOW CARBON TRANSPORTATION INVESTMENTS

Cap-and-Trade auction proceeds provide funding for CARB's advanced technology, clean transportation incentive programs that reduce GHG emissions. The first three Cap-and-Trade Auction Proceeds Investment Plans identified low carbon transportation as a priority investment area. These investments accelerate the transition to low carbon freight and passenger transportation.

The Legislature has appropriated over $2.1 billion to CARB for Low Carbon Transportation Investments over the past seven budget cycles (FY 2013-14 through FY 2019-20), as shown in Figure 1. These appropriations are being used to fund: zero-emission and plug-in hybrid passenger vehicles through traditional and innovative car ownership projects such as CVRP, Statewide Financing Assistance, and Clean Cars

4 All; clean mobility projects to increase access to alternative modes of transportation in and near low-income and disadvantaged communities, tribes, and for lower-income Californians; deployment incentives for clean trucks, buses, and off-road equipment utilizing zero-emission technologies; and advanced technology demonstration and pilot projects for freight trucks and off-road equipment.

Figure 1: Low Carbon Transportation Funding to Date



**The original appropriation acted on in the FY 2019-20 Funding Plan was for $485 million, however, the appropriation has since been revised to address lower than anticipated Cap-and-Trade Auction revenue as directed by the Department of Finance per the Budget Act of 2019*

Revisions to Fiscal Year 2019-20 Allocations

Each year, the legislature develops appropriations for Low Carbon Transportation Investments as part of the Cap-and-Trade Expenditure Plan. Historically, the expenditure plan has been forward looking—meaning rather than developing a plan for already accumulated revenue, it outlines a plan for investing future revenue generated at the auctions in the upcoming fiscal year. To account for uncertainties in the revenue projections used to develop the appropriations, programs are required to not encumber 25 percent of their appropriation until the fourth auction is completed, unless otherwise specified by legislation.

In FY 2019-20, Low Carbon Transportation was initially appropriated $485 million, and the allocations approved in the FY 2019-20 Funding Plan were developed accordingly. However, the actual revenue generated by the FY 2019-20 auctions was lower than the amount required to fulfill all the appropriations included in the FY 2019-20 Cap-and-Trade Expenditure Plan. As a result, the appropriations to various programs,

including the Low Carbon Transportation Program, have been adjusted downward as directed by the Department of Finance per the Budget Act of 2019 [AB 74 (Ting, Chapter 23, Statutes of 2019)]. The final FY 2019-20 appropriation for Low Carbon Transportation is just over $449 million. The final appropriation results in cuts to the allocations for heavy-duty and clean transportation equity projects approved in the FY 2019-20 Funding Plan. CVRP received the full allocation approved in last year's funding plan because the Budget Act exempted it from the requirement to withhold the last 25 percent of the budgeted appropriation. Table 1 summarizes the allocations included in the FY 2019-20 Funding Plan and the final allocations resulting from the outcomes of the fourth quarter auctions. In most cases, the cuts to project allocations have been made proportionally. Staff held work groups as needed to discuss any changes to projects resulting from the revised allocations.

Table 1: FY 2019-20 Low Carbon Transportation Investments

Project	Allocations Approved in FY 2019-20 Funding Plan (millions)	Final Funding Allocation[a] (millions)
Light-Duty Investments	**$238**	**$238**
CVRP Standard Rebates	$213[b]	$213[b]
CVRP Increased Rebate for Lower Income Consumers	$25	$25
Clean Transportation Equity Investments	**$65**	**$55.5**
Financing Assistance for Lower-Income Consumers	$10.9	$7.96
Clean Mobility Options	$10	$8.58
Clean Mobility in Schools	$5	$9.86
Agricultural Worker Vanpools	$5[c]	$0
Rural School Bus Pilot	$4.45	$3
Sustainable Transportation Equity Project	$22	$19.5
Outreach, Alignment, and Workforce Training and Development	$7	$6
State Operations	$0.65	$0.65
Heavy-Duty Vehicle and Off-Road Equipment Investments	**$182**	**$155.5**
Heavy-Duty Demonstration and Pilot Projects	$40[b]	$33.8
Clean Truck and Bus Vouchers (HVIP)	$142[b]	$119.9
State Operations		$1.82
Total	**$485**	**$449**

[a] Columns may not add to total due to rounding. The final funding allocation includes reductions directed by the Department of Financing per the Budget Act of 2019, associated with lower fourth quarter Cap-and-Trade auction proceeds.

[b] Up to one percent of the allocation may be used for State Operations.

[c] Agricultural Worker Vanpools was initially approved for expansion funding, however, vehicle manufacturing and hybrid conversion certification delays, combined with an onset of maintenance issues from driving the vehicles on unpaved roads, made expansion infeasible. $9.7 million in expansion funding was redirected to support CARB's other clean mobility equity projects, ($9.5 million to the Clean Mobility in Schools Pilot Project, and $138,500 to Clean Mobility Options Projects).

Benefits to Disadvantaged Communities

To date, 55 percent of CARB's Low Carbon Transportation funding has gone to projects benefiting low-income and disadvantaged communities, including low-income residents of these communities (collectively referred to here as priority populations) as shown in Table 2. The 55 percent benefiting priority populations greatly exceeds the commitments made in past Funding Plans. Much of the funding benefiting priority populations is for clean transportation equity projects, Zero-Emission Truck and Bus Pilot Projects, and Advanced Freight Technology Demonstration Projects. While not limited to priority populations, 69 percent of the HVIP funding has been awarded to trucks and buses benefiting priority populations.

Table 2: Low Carbon Transportation Project Allocations Benefiting Priority Populations to Date

(FY 2013-14, 2014-15, 2016-17, 2017-18, 2018-19, and 2019-20)

Project	Funding Allocated[a] (millions)	Share Benefiting Priority Populations[b]
Light-Duty Investments		
CVRP	$943.7	31%
Clean Transportation Equity Investments		
Clean Cars 4 All	$102[c]	71%
Clean Mobility Options	$55.4	100%
Financing Assistance for Lower-Income Consumers	$34.1[c]	74%
Agricultural Worker Vanpools	$6	100%
Clean Mobility in Schools Project	$24.6	100%
Rural School Bus Pilot	$61.6	60%
Sustainable Transportation Equity Project	$19.5	TBD
Outreach, Community Transportation Needs Assessments, Technical Assistance, and One-Stop-Shop	$6[c]	100%
Heavy-Duty Vehicle and Off-Road Equipment Investments		
Advanced Technology Freight Demonstrations	$81.2	100%
Clean Off-Road Equipment Vouchers (CORE)	$44.2	TBD
Zero-Emission Truck/Bus Pilot	$85	78%
Zero- and Near Zero-Emission Freight Facilities	$148.7	100%
Clean Truck and Bus Vouchers (HVIP)	$488.4	69%
Total	**$2,093**	**55%**

[a] *Total Allocations have been updated to reflect the revisions to FY 2019-20 funding allocations*
[b] *Source: 2020 Cap-and-Trade Auction Proceeds Semi-Annual Data Update.*
[c] *Funding shown here only includes Low Carbon Transportation Allocations. Clean Cars 4 All and Financing Assistance for Lower-Income Consumers each received $10 million from the Volkswagen settlement funds. One-Stop-Shop also received $5 million from the Volkswagen settlement funds.*

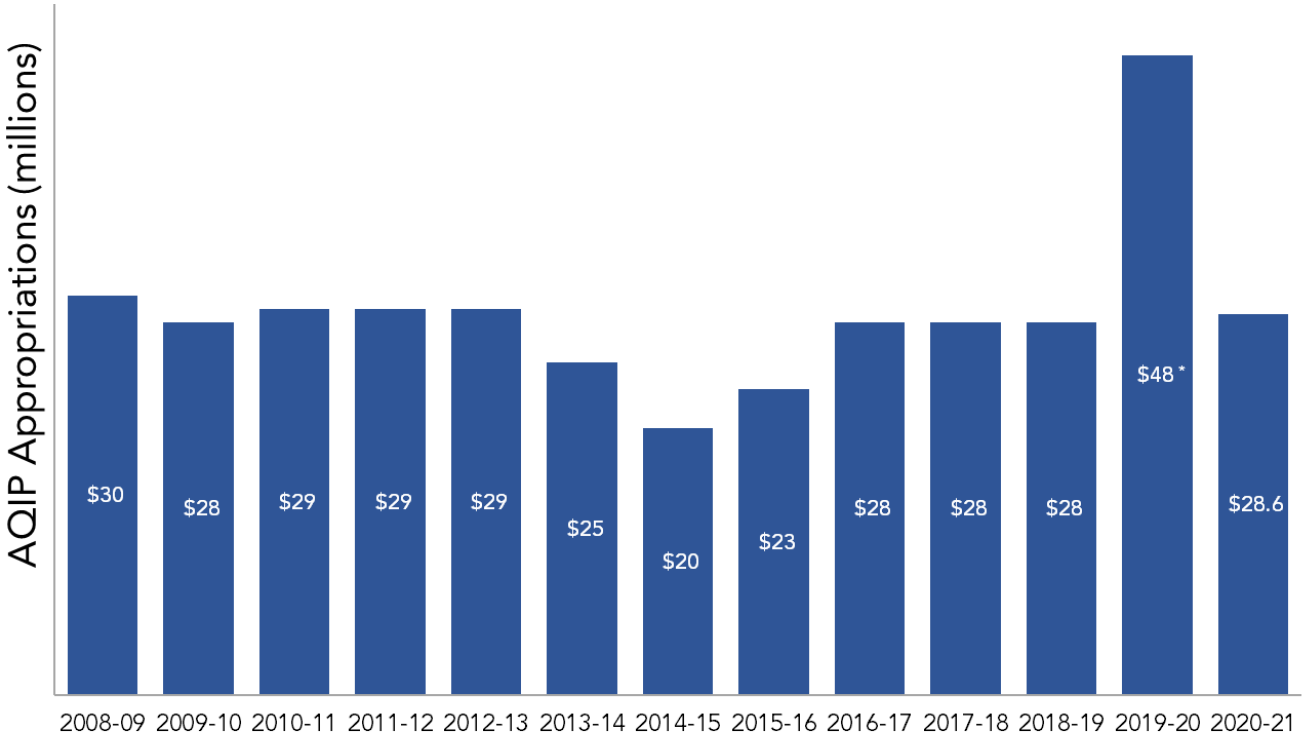
AIR QUALITY IMPROVEMENT PROGRAM (AQIP)

AQIP is a mobile source incentive program that focuses on reducing criteria pollutant and diesel particulate emissions with concurrent reductions in GHG emissions. Since

2009, AQIP has provided funding for CVRP, HVIP, demonstrations of advanced emission reduction vehicle technologies, and in recent years, the Truck Loan Assistance Program. Funding for AQIP comes primarily from the smog abatement fee assessed annually by the Department of Motor Vehicles (DMV) during a vehicle's first six registration years in lieu of a biennial smog inspection. This year, the program was appropriated $28.64 million.

Figure 2 provides a summary of AQIP investments to date. In FY 2019-20, AQIP received a one-time infusion of funding to help the Truck Loan Assistance Program meet an anticipated increase in demand associated with automatic compliance verification of the Truck and Bus Regulation (SB 1, Beall, Chapter 5, Statutes of 2017).

Figure 2: AQIP Funding to Date



**In FY 2019-20, AQIP received a one-time infusion of funding to ensure that the Truck Loan Assistance Program was fully funded and able to meet an anticipated increase in demand associated with automatic compliance verification of the Truck and Bus Regulation (SB 1, Beall, Chapter 5, Statutes of 2017)*

HIGHLIGHTS OF INVESTMENTS AND OUTCOMES TO DATE

The large-scale statewide investments CARB makes through the Low Carbon Transportation Program and AQIP send a market signal and move the needle in terms of advancing clean technologies in a way that smaller, locally-focused investments simply cannot match. These investments have been instrumental in California leading the nation in ZEV deployment, but also in developing innovative equity-focused projects that bring clean mobility options to residents of low-income and disadvantaged communities. The State has already begun to see the social and

economic benefits of these investments. Communities have new, innovative methods of accessing clean transportation and getting to their desired destinations and several companies have established ZEV manufacturing operations in the State, supporting jobs in a burgeoning industry for thousands of Californians.

These investments also leverage significant sources of other public and private funding, further stimulating the economy. Many projects such as the heavy-duty demonstration and pilot projects and the clean transportation equity projects see State investments matched by other public or private sources. Rebate projects and voucher projects such as CVRP and HVIP encourage consumer and business spending within the State. The dollars invested in Clean Transportation Incentives effectively work as a multiplier—catalyzing far greater spending that supports both California's economy and its climate change and air quality goals.

CARB has historically focused Clean Transportation Investments in three areas: CVRP, clean transportation equity investments, and heavy-duty and off-road equipment.

Clean Vehicle Rebate Project (CVRP)

CARB's light-duty vehicle investments focus on supporting the long-term transformation of California's fleet and meeting policy, statutory, and regulatory goals and requirements. As of February 2020, CVRP, CARB's flagship clean vehicle rebate project, has provided rebates for over 380,000 vehicles totaling over $875 million since the project's launch in 2010. Since March 2016, over 19,000 increased rebates have been issued to low-income consumers totaling over $78 million. About 62 percent of rebates issued went to battery electric vehicles, 36 percent to plug-in hybrid electric vehicles, and about 2 percent to fuel cell electric vehicles and zero-emission motorcycles. 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, increased awareness of clean technology options, and increased environmental sustainability.

Clean Transportation Equity Investments

Equity projects are an integral component of CARB's clean transportation investment portfolio, especially in light of current global health challenges. Since FY 2014-15, CARB has allocated over $300 million to clean transportation equity projects, as directed by SB 1275. This includes clean vehicle ownership and purchase incentives; clean, shared mobility; streamlining access to funding and financing opportunities; and increasing community outreach, education, and exposure to clean technologies. CARB sees the importance of implementing a pilot approach to clean transportation and mobility investments to allow for flexibility, feedback, and adjustments where necessary. Each project is unique, and the pilot phase is critical to discovering how

each can best achieve their specific goals and find solutions to the numerous barriers faced by low-income and disadvantaged communities. Over time as pilot projects mature and move to the full program implementation phase, there is an opportunity to replicate proven strategies and models to maximize benefits and participation. Expansions have already been realized for numerous pilots, and CARB continues to apply key learnings across equity projects.

One such learning is that lead times to successfully launching or expanding a clean transportation equity project can be substantial. To build a strong foundation for success, each project relies on creating strong partnerships, developing extensive outreach plans and considering community goals and needs. In several cases, this has led to delays in launching, and as a result, many clean transportation equity projects have funds remaining from prior fiscal year allocations as seen in Table 3. CARB continues to develop strategies to address the obstacles identified—for example, CARB is creating a comprehensive outreach strategy for existing clean transportation equity project administrators, and supporting technical assistance and capacity building for priority populations through resources and funding to local community-based organizations. This year staff will continue to monitor demand for existing projects and incorporate lessons learned.

Table 3: Clean Transportation Equity Investments to Date

(FY 2014-15, 2015-16, 2016-17, 2017-18, 2018-19, and 2019-20)

Project	Total Funds Allocated to Date *(millions)*	Remaining Funding* *(millions)*
Clean Cars 4 All**	$112	$36.1
Financing Assistance for Lower-Income Applicants**	$44	$30
Zero-Emission Assurance Project	$0	--
Clean Mobility Options	$55	$49
Agricultural Worker Vanpools	$6	$0
Rural School Bus	$61.6	$5.1
Sustainable Transportation Equity Project	$19.5	$19.5
Clean Mobility in Schools	$25	$25
Outreach, Community Transportation Needs Assessments, Technical Assistance, and One-Stop-Shop**	$11	$6.5
TOTAL	**$334.1**	**$171.2**

**Allocated funding not spent as of August 2020 including funds that are under grant but not yet spent.*
***Funding shown here includes Low Carbon Transportation Allocations and Volkswagen settlement funds. Clean Cars 4 All and Financing Assistance for Lower-Income Consumers each received $10 million from the Volkswagen settlement funds. One-Stop-Shop received $5 million from the Volkswagen settlement funds.*

CARB continues to prioritize equity projects and balance our portfolio of clean transportation investments to ensure the most impacted communities have immediate access to benefits as we transition to a low carbon economy.

Heavy-Duty and Off-Road Equipment Investments

Heavy-duty advanced technologies are making progress in California and around the world. New applications are emerging; existing ones are continuing a steady march toward widespread commercial availability; and major global manufacturers are bringing product to market, dramatically increasing production capabilities. CARB has adopted a portfolio approach to invest heavy-duty funds. This means that it provides funding across multiple technologies at different points on their commercialization arcs 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 and pilot projects. As these technologies reach the market, they progress to funding programs such as HVIP and the Clean Off-Road Equipment Voucher Incentive Project (CORE), which offer vouchers for early commercial advanced technologies. More mature technologies then graduate to fleet turnover incentive programs within CARB's incentive portfolio.

The State continues to see success from investments in zero-emission transit buses, a natural beachhead for transforming the heavy-duty sector. Transit fleets have many zero-emission bus manufacturers to choose from, and now manufacturer diversity is expanding to the zero-emission Class 8 truck market. Last year staff recommended that some combustion technologies graduate out of HVIP after demonstrating that the technology had achieved a level of commercialization better suited for a different program within CARB's portfolio.

DRAFT AQIP FUNDING ALLOCATIONS

CARB uses Clean Transportation Incentive funding to accelerate deployment of the cleanest feasible mobile source technologies and to improve access to clean vehicle purchasing incentives and clean mobility options, including access to alternative modes like transit, biking, and walking. In line with public input and statutory guidance, staff strives to maximize benefits for priority populations and prioritize investments that support multiple clean air goals as described in the introduction. Projects are designed to both achieve immediate emission reductions and, equally important, support the fleet transformation needed to meet long-term air quality and climate change goals.

Projections from the Long-Term Plan for CVRP and Light-Duty Incentives as well as the Long-Term Heavy-Duty Investment Strategy highlight the need for continued funding if the State is to meet its climate and air quality goals. Because the Low Carbon Transportation appropriation is delayed, staff's recommendations for AQIP allocations focused on determining which project most critically needed an immediate influx of funding. Staff evaluated anticipated project demand, reviewed long-term investment strategies released in previous funding plans, considered other available funding sources, and took into account stakeholder input. The Truck Loan Assistance Program, which typically utilizes AQIP funds, has sufficient funding available and is not expected to need additional funding this fiscal year.

While it is clear that there is a need to continue investment in all project categories, staff recommends allocating the AQIP appropriation to HVIP. This early commercial clean truck and bus purchase incentive project is in critical need of additional funding, having been closed to new voucher requests since November 2019 after requests exceeded the total FY 2019-20 funding allocated to the program. HVIP plays a crucial role in advancing zero-emission technologies and encouraging fleets to adopt technologies in advance of regulatory deadlines, including Advanced Clean Trucks and Innovative Clean Transit. By encouraging the purchase of cleaner heavy-duty vehicles, HVIP not only reduces greenhouse gas emissions, but also nitrogen oxides (NOx) and diesel particulate matter, while driving broader market transformation essential to meeting long-term goals.

Additionally, staff is considering creating a fiscal "reserve" to provide a buffer against uncertainty with this year's projected motor vehicle smog abatement fee revenue—the primary source of AQIP funds. This is a prudent step consistent with prior Funding Plans adopted during times of revenue uncertainty. Table 4 shows draft AQIP project allocations.

Table 4: Draft Project Allocations for $28 Million AQIP Appropriation

Project Category	**Allocation** (millions)
Clean Truck and Bus Vouchers (HVIP)	$25
Reserve for revenue uncertainty	$3.64
TOTAL	**$28.64**

- $25 million of the AQIP funds would be directed to HVIP.

- The remaining $3.64 million, or just over 12 percent of the AQIP appropriation, would be held in a reserve. In Spring 2021, staff will evaluate the actual revenue. If revenue is sufficient, CARB will assess project needs at that time and allocate the reserve accordingly.

The remainder of this chapter will address HVIP goals and priorities, as well as recommended changes to project criteria.

CLEAN TRUCK AND BUS VOUCHERS (HVIP)

The Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) is the cornerstone of CARB's advanced technology heavy-duty incentives, providing funding since 2010 to support the long-term transition to ZEVs in the heavy-duty market, as well as supporting investments in other emerging technology to achieve substantial greenhouse gas reductions and help meet health-based ambient air quality standards. 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. As HVIP enters its 11th year, staff is working with stakeholders to better define and memorialize the program's guiding principles while exploring policy changes to address an unprecedented fiscal crisis.

HVIP is a unique project in the CARB portfolio. As the only project that exclusively supports on-road advanced technologies with high adoption barriers, it provides the bridge between demonstrations and pilots to the scrap and replace programs. 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 those for the Innovative Clean Transit rule and Advanced Clean Trucks rule. The Carl Moyer Memorial Air Quality Standards Program, Community Air Protection Incentive Funds, Volkswagen Environmental Mitigation Trust, Truck Loan Assistance Program, and FARMER Program all provide funding for heavy-duty vehicles adopting clean technology, but must conform to state laws and directives. These incentive programs were designed to be complementary with some focusing on achieving cost-effective emission reductions or meeting the needs of specific communities.

The continued availability of HVIP, including avoidance of waitlists or program holds, is vital for success, particularly for supplying economic benefits by encouraging private investment. Low Carbon Transportation funds serve as a catalyst spurring additional private investment—leveraging up to $5.93[3] of additional investment for each incentive dollar provided through HVIP—reducing uncertainty and keeping the economy moving.

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

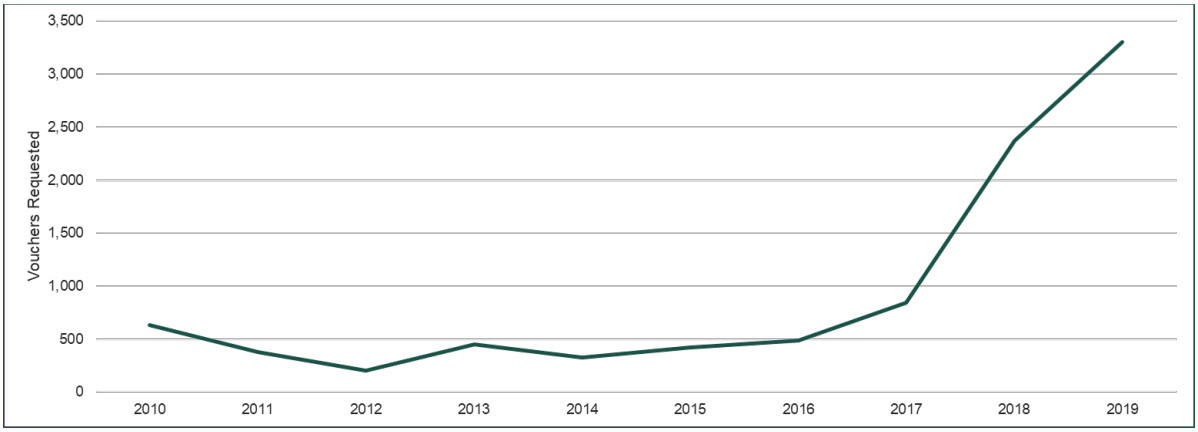
HVIP will continue to provide benefits to AB 1550 disadvantaged communities and low-income communities. HVIP is implemented on a first-come, first-served, statewide basis, so it is not possible to estimate in advance exactly how much funding will be spent in disadvantaged communities. To date, over two-thirds of awarded HVIP funding has benefited disadvantaged and low-income communities, as reported in the Annual Report to the Legislature on California Climate Investments, March 2020[4].

Current Project Status

Since its inception in 2010, HVIP has supported the purchase of over 3,000 zero-emission trucks and buses, 2,500 hybrid trucks, 3,000 natural gas combustion engines, and 200 trucks outfitted with electric power take off systems (ePTOs) by California fleets through July 2020. Market demand for clean technologies increased substantially in the past three years. The increase in demand, starting in 2017, led to the dramatic growth shown in Figure 3. About 80 percent of all voucher funding was requested between 2017 and 2019.

[3] As of March 2020, HVIP has funded $208.6 million toward the purchase of over 5,500 clean vehicles since 2010. This investment leveraged $1.2 billion additional dollars of other public and private spending toward these purchases – $5.93 for every $1 of HVIP investment. This data encompasses only deployed vehicles (redeemed vouchers), not active vouchers for vehicles that are yet to be built / delivered.
[4] California Air Resource Board. *2020 Annual Report to the Legislature on California Climate Investments Using Cap-and Trade Auction Proceeds*. March 2020. https://ww3.arb.ca.gov/cc/capandtrade/auctionproceeds/2020_cci_annual_report.pdf.

Figure 3: HVIP Vouchers Requested by Year



The increase in funding demand proved so significant that the program entered a waitlist in July 2019 and was forced to close for new voucher requests in November 2019 after approximately 1,600 voucher requests on the waitlist surpassed the entire available FY 2019-20 budget that was approved by the Board in October 2019. Low proceeds generated in the May 2020 Cap-and-Trade auction (the fourth and final auction supplying FY 2019-20 Low Carbon Transportation Investments) reduced the project's available funds by nearly $21 million[5]. Funding associated with any cancelled vouchers will remain in HVIP and potentially be available for new voucher requests consistent with policy changes approved by the Board in the Funding Plan.

The unprecedented waitlist experience helped define HVIP waitlist protocol discussed in public workgroups and included in the current Implementation Manual. HVIP will remain closed for new voucher requests until funding is available, however redemption of existing approved vouchers will continue as vehicles are delivered, along with all other aspects of HVIP administration including monitoring and reporting, outreach, and program development.

Component Cost Analysis: CARB is in the process of developing a component cost analysis intended to provide staff with current information regarding the actual cost of advanced technology vehicles. CARB staff is working with vehicle manufacturers and other partners to obtain accurate cost information. CARB staff is also adding a component cost survey as part of the required HVIP vehicle eligibility documentation for each model year to help maintain current data and identify cost trends. Staff may use the results to better determine voucher incentive amounts or modify voucher amounts for specific applications, vehicle classes, or technologies. This effort further supports staff efforts to ensure that HVIP strategically invests funds to promote California's climate and air quality goals.

[5] Item 3900-492 of the Budget Act of 2020 [Senate Bill 74 (Mitchell, Chapter 6, Statutes of 2020)] reappropriated $2.8 million to HVIP, slightly reducing losses entering the fiscal year.

Project Solicitation: CARB held a competitive solicitation for the selection of a HVIP Grantee in October 2019. In January 2020, CALSTART was selected as the Grantee to administer HVIP for FY 2019-20 via a three-year competitive solicitation with the option of adding the FY 2020-21 and FY 2021-22 funds with an updated grant agreement. CARB used this option in the past and proposes to utilize this option again; and therefore, CARB will not issue a new solicitation for FY 2020-21 HVIP.

HVIP Guiding Principles

Changing markets, evolving needs, and limited resources are driving tough decisions on project priorities. Guiding principles direct an organization or program throughout its life, irrespective of changes in its strategies, circumstances, or abilities. The original guiding principles for AQIP were described in the FY 2009-10 Funding Plan, and are the basis for staff's evaluation of updated guiding principles specifically for HVIP. After incorporating stakeholder feedback, staff is considering the following guiding principles with no value in order. They are designed to not be strictly interpreted, but rather reflect foundational values that would be factored in decision-making. Staff proposes the following guiding principles:

- Accelerate market transformation for the cleanest advanced technologies to support the State's climate, air quality and petroleum reduction goals
- Support the goals laid out in CARB's Long-Term Heavy-Duty Investment Strategy
- Drive purchase decisions
- Maintain simplicity and a fleet-friendly process
- Support CARB regulatory programs
- Avoid market disruptions caused by unpredictable funding availability
- Graduate established technologies

Draft Funding Allocation for FY 2020-21

With those potential guiding principles in mind, HVIP faces urgent challenges to address. Following lower than anticipated proceeds from the Cap-and-Trade auction in May 2020, HVIP's oversubscribed FY 2019-20 allocation decreased further, as shown in Table 1. Under current program policies, voucher demand in FY 2020-21 is expected to outstrip available funds by an order of magnitude, all but guaranteeing that the project will quickly reenter an extended waitlist or shutdown. Waitlists—which elevate uncertainty, diminish the program's economic benefits, and leave fleets and technology providers without sustained funding—are undesirable at any time and it is CARB's goal to avoid them. This year however, the extent of the funding shortfall makes it even more important to apply limited dollars to actions that are most

supportive of HVIP's goals. Doing so requires substantial changes to align with guiding principles and stretch resources. No single policy change will yield necessary savings to meet all market demand. Therefore, multiple modifications will be needed. Staff is considering the changes below.

Potential Changes for FY 2020-21

Progress by advanced technologies in the heavy-duty sector has accelerated in recent years and expanded sales and component supply chains are lifting the curtain on a more certain zero-emission future. But nascent zero-emission markets must continue receiving support if the State is to realize air quality and climate change goals, as demonstrated by the Scoping Plan, Sustainable Freight Action Plan, and Mobile Source Strategy.

New market uncertainty and unprecedented fiscal crises—that have left the program on hold since November 2019—augment the need to clarify HVIP's goals and double down on priorities if the project is to remain successful. After receiving input from stakeholders, staff is considering making several changes to the project criteria, detailed in subsections below.

Reduce Voucher Amounts

The most direct way of reducing program costs is reducing the amounts offered for eligible vehicle purchases. In order to provide the magnitude of savings needed in HVIP's deep fiscal crisis, substantial cuts to voucher amounts may be necessary. In October 2019, the Board granted authority to CARB's Executive Officer to reduce some or all voucher amounts by up to 20 percent.[6] Staff is considering maintaining this option to lessen the severity of funding shortfalls in the coming fiscal year. Staff recognizes that sweeping reductions may adversely impact some vehicle or technology categories more than others. However, a primary goal of HVIP is to support the market for these technologies, so staff considers stability in funding availability to be a priority. Staff will continue to explore alternatives, such as voucher reductions for specific vehicle categories potentially based on component cost or other market data.

Reduce Fleet Voucher Caps and Introduce Manufacturer Caps

Voucher caps have existed in HVIP in different forms. Voucher caps reduce program financial burden by limiting the number of vouchers that can be requested by a fleet or manufacturer. The cap could be a hard cap that does not allow any voucher requests beyond the cap number, or a soft cap that reduces voucher amount past the

[6] California Air Resources Board. *Fiscal Year 2019-20 Funding Plan for Clean Transportation Incentives.* September 2019. https://ww2.arb.ca.gov/sites/default/files/2019-09/fy1920fundingplan.pdf

set cap. Under current financial conditions, staff is considering both fleet and manufacturer caps.

HVIP has included several levels of fleet caps over time, allowing each fleet to request no more than a certain number of vouchers in a calendar year. Fleet caps are valuable for reducing fiscal drain on the program, allowing more fleets to participate, and focusing resources on aiding fleets taking their first steps into the advanced technology market. The current fleet cap is 200 vouchers per year. Addressing fiscal needs and doubling down on supporting early deployments, staff is considering a reduced fleet cap, possibly as low as 20 vouchers per year to focus on overcoming significant barriers with initial fleet deployments.

Manufacturer caps can take different forms, including an annual cap like the fleet cap discussed above, or a lifetime cap, similar to the federal tax rebate for light-duty ZEVs. Acknowledging feedback from many stakeholder groups that these types of caps (particularly annual limits) could be detrimental to HVIP's technology advancement and market transformation goals, staff is not considering these at this time.

However, staff is considering a rolling manufacturer voucher "soft" cap to improve HVIP availability and encourage faster vehicle delivery while still offering the flexibility needed by advanced technology providers. A rolling manufacturer cap governs how many unredeemed vouchers a manufacturer is allowed to hold at any given time. When a manufacturer reaches its cap, no more vouchers can be requested for vehicles from that manufacturer until it delivers vehicles and redeems associated vouchers. When vehicles are delivered and those vouchers paid, the paid vouchers are closed out, allowing new ones to be requested. The "soft" cap under consideration would not prohibit manufacturers from requesting vouchers in excess of the specified limit, but would necessitate case-by-case review prior to voucher approval. In the case-by-case review, CARB would require manufacturers supply additional information affirming production timeframe and ability to deliver within the maximum-allowed voucher term. In early years, HVIP had rolling voucher caps and staff would consider a similar cap in the range of 100 to 200 vouchers.

As another means of encouraging timely delivery and reducing the risk of prolonged funding holds, staff is also considering a framework for manufacturer probation. The mechanism would add restrictions and additional review should underperformance criteria be met. Consequences might include a hold on new voucher requests, case-by-case evaluation, or voucher reduction schedules.

Graduate Internal Combustion Engines

Graduating internal combustion engines remains under consideration this year. The primary purpose would not be for cost savings—though it would yield a fiscal benefit in the tens of millions annually at current funding levels.

Currently, HVIP provides funding to offset the incremental cost of some 11.9-liter natural gas engines that are certified to meet the optional 0.02 grams per brake horsepower-hour (g/bhp-hr) NOx standard and are fueled exclusively with in-state produced renewable natural gas. In August 2020, the Board approved for adoption the Heavy-Duty Engine and Vehicle Omnibus Regulation and Associated Amendments, which lowers the mandatory NOx standard to 0.050 g/bhp-hr in 2024 and to 0.020 g/bhp-hr in 2027. The omnibus regulation also would create a new optional standard of 0.01 g/bhp-hr NOx. In FY 2018-19, CARB discontinued vouchers for the purchase of new internal combustion engine refuse trucks in existing natural gas fleets and all internal combustion engine transit buses because natural gas engines meeting the 0.02 g/bhp-hr NOx optional standard had become the predominant technology available on the market for these vehicle vocations. Similarly, in FY 2019-20, the Board approved discontinuing HVIP eligibility for all 8.9-liter natural gas engines given that those engines had reached the necessary level of maturity to graduate. The determination was guided by evaluating the market acceptance, technology readiness, barriers to adoption, and economic factors facing natural gas internal combustion engines.

Resource constraints highlight the importance of critically evaluating the goals of HVIP and the need to strategically fund those technologies that best advance the 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 the cleanest early commercial vehicles, and helping reap the benefits of improved economies of scale.

Though the Board recognized limited zero-emission options for class 8 trucks last year when extending funding for 11.9L natural gas combustion engines meeting the lowest optional NOx standard at the time, over the last year the class 8 zero-emission market has grown. Zero-emission class 8 tractors are now HVIP-eligible and available from some manufacturers. And new entrants expected over the next year—Volvo, Kenworth, Tesla, and others—will expand fleet options and call for fiscal dedication to zero-emission trucks and near zero technologies such as ePTO systems and potentially plug-in or fuel cell range-extended hybrid trucks.

Fortunately, CARB's large incentive portfolio includes other, well-suited funding sources. Perhaps most prominent is the Carl Moyer program, which continues to allow

implementing air districts to fund projects with higher maximum funding amounts for truck replacements with the cleanest available combustion technologies.[7]

Modify Vehicle Eligibility

Staff is considering raising the minimum gross vehicle weight rating (GVWR) for HVIP vehicle eligibility from 8,001 to 10,001 pounds. The move has no immediate fiscal impact, but would align with HVIP's role as an incentive program for commercial heavy-duty fleets and reduce future potential for funding non-commercial vehicles in HVIP as zero-emission options in the lower weight segment begins to expand. HVIP and CVRP staff are working together to ensure coordinated incentive opportunities for all weight classes.

Consider Future Regulation

CARB's planning, regulatory, and funding documents describe the importance of coordinated incentives and mandates for a cohesive and effective air quality and climate change strategy. While incentives should not be used to pay for compliance, they can help prime the market ahead of compliance dates. Recently adopted heavy-duty zero-emission regulations and more on the horizon will drive faster deployment of zero-emission technologies, making HVIP's technology preparation and market transformation goals even more important. Staff began a discussion with stakeholders this year on concepts that HVIP can consider to support CARB regulations, such as prioritizing incentive availability or flexibility to accelerate market development for the most challenging segments facing future mandates. The consideration of potential changes will continue into the next Funding Plan development cycle for FY 2021-22.

Remove Length-Based Public Transit Bus Voucher Amounts

The FY 2016-17 Funding Plan added a separate voucher amounts table for transit buses and vans based on bus length instead of GVWR. The modification was made based on feedback from public transit stakeholders. The revised transit bus voucher amounts based on bus lengths were intended for public transit agencies purchasing buses. However, the additional table caused confusion for fleets and manufacturers when determining the appropriate voucher amounts due to the variety of bus fleet operators, including public transit agencies, private transportation companies, public and private shuttle bus operators, and others. Staff is evaluating options to streamline and simplify voucher amounts, potentially establishing a single criteria, such as GVWR, as the basis for all vouchers.

[7] California Air Resources Board. 2017 Carl Moyer Program Guidelines, Chapter 4, Table 4-4. April 2017. https://ww3.arb.ca.gov/msprog/moyer/guidelines/current.htm

Policy Flexibility for FY 2020-21

Staff anticipates HVIP having insufficient resources to meet demand, although the severity of the funding shortfall could vary. As a result, staff is considering an adaptive policy framework that could reduce the severity of the funding shortfall while closely conforming to the project's guiding principles and minimizing impacts on the market.

Staff worked with stakeholders to develop the policy levers above. While all of the policy levers are needed, many offer varying degrees of effect (e.g. higher or lower caps, greater or lesser voucher reductions, etc.). HVIP's ability to adapt to varying funding levels may be valuable in adjusting policies to suit varying fiscal conditions. To serve that need, staff developed a policy "decision tree," wherein ranges of available funds point to suites of policy levers. With higher funding levels, HVIP might need fewer and less restrictive policies. But as available resources drop, the project should focus on the highest priorities. While staff will make specific recommendations for policy levers in the Funding Plan, staff anticipates seeking authority for the Executive Officer to ease policies should HVIP receive additional resources before the next funding cycle.

Table 5 below outlines a possible decision tree to cover the entirety of the 2020-21 fiscal year (i.e. not just the time between the release of this Discussion Document and Board consideration of a funding plan). Possible fiscal resources are divided into five bins with accompanying policies appropriate for the available funds. Staff assumes the $25 million AQIP allocation and "other" funding includes returned funds from cancellations or an off-cycle appropriation.

Table 5: HVIP Policies by FY 2020-21 Funding Availability

Available Funding	Policy Suite
$110+ million *Other ~ $115M* *AQIP – $25M*	• Reduce fleet cap (30-50/yr) • Introduce manufacturer rolling *soft* cap (100-200/yr) • Graduate internal combustion engines • Raise minimum GVWR to 10,001 lbs
$80-105 million *Other ~ $80M* *AQIP – $25M*	All of the above and: • Reduce fleet cap (≤30/yr) • Introduce manufacturer rolling *soft* cap (≤100/yr) • Reduce some or all vouchers by up to 20%
$50-75 million *Other ~ $50M* *AQIP – $25M*	All of the above and: • Introduce manufacturer probation • Reduce most vouchers by up to 20%
$30-45 million *Other ~ $20M* *AQIP – $25M*	All of the above and: • Reduce all vouchers by up to 20% • Consider limiting eligibility to several critical categories
≤$25 million *Other – $0M* *AQIP ~ $25M*	All of the above and: • Limit eligibility to one or two vehicle types[8]

The table is not intended to dictate actions, but rather gives a sense of direction for how CARB would prioritize and recommend action. Recognizing the importance of project continuity and flexibility, the decision tree is intended to enable quick action and offer lesser restrictions if possible. Any changes after Board approval of this year's Funding Plan would require action by the Executive Officer with prior authorization from the Board.

[8] The requirement of SB 1403 (Lara, Chapter 370, Statutes of 2018) that at least 20% of GGRF-sourced HVIP funds support early commercial deployment of existing zero- and near-zero-emission heavy-duty truck technology does not pertain to AQIP funds.

REVISIONS TO CRITERIA FOR FY 2019-20 PROJECTS

While CARB is not addressing the FY 2020-21 Low Carbon Transportation Investments in this document, several projects have funds remaining from previous fiscal year allocations and would benefit from changes to project criteria. Although funding allocations are not included for these projects at this time, the potential changes will help address a variety of goals to ensure that the projects are able to run smoothly over the course of FY 2020-21. Changes recommended will help streamline requirements between complementary programs, clarify requirements to make them more consumer friendly, enable programs to stretch remaining dollars further, and address necessary administrative changes.

ALIGNING VEHICLE PURCHASE INCENTIVES: CVRP, CLEAN CARS 4 ALL AND FINANCING ASSISTANCE FOR LOWER INCOME CONSUMERS

To facilitate streamlined access through the One Stop Shop and improve consistency and clarity across CARB's various lower-income consumer vehicle purchase incentive projects, staff is working to align various policies and criteria related to consumer eligibility. In particular, staff is examining income criteria and the definition of household used in Financing Assistance, Clean Cars 4 All, and CVRP for Lower-Income Applicants.

Alignment of these programs requires three steps: income cap alignment, household definition alignment, and income definition alignment. Staff is considering recommending that all vehicle purchase incentive equity projects move to an income limit of 400 percent of the Federal Poverty Level. Likewise, staff is considering using a single household definition: Household members include the applicant, their spouse and anyone they claim as a dependent on their tax form. If the applicant is claimed as a dependent on someone else's tax form, the applicant's household size includes the person who claimed them as a dependent, that person's spouse, and all claimed dependents including the applicant. Additionally, staff is considering recommending that these programs use gross income rather than adjusted gross income to better serve these programs' target audience. The adjusted gross income reflects an individual's income after deductions have been made. The tax laws typically change every year, and some examples of adjustments include contributions to an individual retirement account (IRA), capital losses, and gift and estate deductions. Deductions, like the ones listed, are typically incurred by those with higher incomes and more disposable incomes. In many cases, the target audience's adjusted gross income is the same or close to their gross annual income. Using gross income for these programs would better ensure that the funds are reaching the population for which they were intended. Since many of these changes will be made at the project level, they are also discussed in their respective project revisions.

CLEAN VEHICLE REBATE PROJECT (CVRP)

CVRP offers vehicle rebates to eligible applicants on a first-come, first-serve 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 partially offset the higher initial cost of these advanced technologies. Increased rebates for low-income applicants were introduced in 2016.

Potential Changes to Project Criteria: Based on the current state of the economy, staff does not want to further impact the ZEV market by introducing major changes to the project. Therefore, staff is not considering any major changes to CVRP at this time. However, staff is considering minor program adjustments that will make implementation easier down the road and allow for alignment with other Clean Transportation Equity Projects, such as Financing Assistance and Clean Cars 4 All.

Staff is considering minor program adjustments such as:

- Changing from using the Urban Dynamometer Driving Schedule, or UDDS, to determine all-electric range for plug-in hybrid vehicle eligibility to using United States Environmental Protection Agency (U.S. EPA) all-electric ranges as this information is more readily available to consumers. Staff is considering using a minimum U.S. EPA all-electric range of 25 miles, which is equivalent to the current minimum of 35 miles UDDS all-electric range. By using a U.S. EPA all-electric range that is equivalent to the current UDDS requirement, there would be no impact on the current list of eligible vehicles and no impact to applicants.
- Increasing the maximum gross vehicle weight rating, or GVWR, for vehicle eligibility from 8,500 pounds GVWR to 10,000 pounds. This adjustment is being made in coordination with HVIP.
- Increasing the income limit for increased rebates from a maximum of 300 percent of the federal poverty level to 400 percent to align with other incentive programs as discussed in the previous section.
- Directing the CVRP administrator to revise the definition of household and other definitions as necessary to align with other clean vehicle purchase incentive programs as discussed in the previous section.
- Changing the outreach requirement for the CVRP administrator. Currently, the administrator must spend at least 50 percent of rebate processing fees on outreach. This requirement allowed the administrator to develop a very robust outreach program for CVRP focusing on the new car ready, low- and moderate-income, and dealer audiences. Now staff would like to move more outreach funds to support continued outreach for increased rebates for

low- to moderate-income consumers. To do this, staff is considering changing the outreach requirement in the CVRP grant to specify that at least 50 percent of rebate processing fees spent on outreach must be focused on targeting low- and moderate-income consumers.

Staff is still gathering information on the impacts of these minor program adjustments. Staff will continue to meet with stakeholders to discuss how to design CVRP in a way that supports California's ZEV deployment goals and provides a stimulus to the ZEV market.

CLEAN CARS 4 ALL

Clean Cars 4 All (also known as the Enhanced Fleet Modernization Program (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. Furthermore, participants can choose an alternative mobility option such as an electric bike, a voucher for public transit, or a combination of clean transportation options allowed under the program in lieu of purchasing a replacement vehicle. In addition, buyers of plug-in hybrid and battery electric vehicles are also eligible for home charger incentives. Participants must have a household income of less than 400 percent of the federal poverty limit and live in a ZIP Code containing a disadvantaged community census tract. Annual goals for this and the scrap-only component of the enhanced fleet modernization program use participation rates as a measure of success for FY 2019-20. FY 2020-21 annual goals are established through a public process shortly after CARB's adoption of this Funding Plan. In addition to participation rates, projections for number of vehicles funded in total and by replacement vehicle technology type, and number of participants choosing the alternative mobility option will be included.

Potential Changes to Project Criteria:

- **Direct Administrators to Align Definitions:** CARB is considering directing the air districts that administer Clean Cars 4 All programs to revise the definitions of household and income and other definitions as necessary to align with other clean vehicle purchase incentive programs.

- **Revisions to Project Guidelines:** AB 630 (Cooper, Chapter 636, Statues of 2017), codified the EFMP Plus-up Pilot Project into a formal, stand-alone program. In 2018, the Board approved guidelines for the Clean Cars 4 All Program as required by AB 630. This year, CARB will incorporate detailed requirements for the Clean Cars 4 All Program to be proposed and approved through the Clean Transportation Incentives Funding Plan Process. CARB is considering the following scrapped vehicle minimum eligibility requirements and replacement vehicle including mobility option incentives amounts. The

guideline revisions will also adopt definitions to help align the CC4A program with other equity programs also under Low Carbon Transportation described above and outlined on page 23.

Scrapped Vehicle Minimum Eligibility Requirements:

1. To receive an incentive from Clean Cars 4 All, an individual must be the registered owner of the vehicle with vehicle title issued in their name.
2. A vehicle that holds a salvage title is eligible for participation if registered as operable at the time of application.
3. The vehicle must meet one of the following requirements:
    a. It shall meet the DMV requirements as specified in sections 3394.4(b)(6)(C) and 3394.4(b)(6)(D) of Title 16 of Division 33, Article 11 of the California Code of Regulations; or
    b. An unregistered vehicle, or a currently registered vehicle not meeting (c)(1) above, may also be eligible if operated in California for the last two years and not registered in any other state or country in the last two years. Documentation of operation in California includes the following:
        i. Proof of continuous insurance coverage in California for the two consecutive years preceding application to Clean Cars 4 All, without lapses in insurance coverage totaling more than 120 days; or
        ii. At least two invoices from an Automotive Repair Dealer registered at the time of the repair with the Bureau pursuant to section 9884.6 of the Business and Professions Code showing the following:
            1. The Automotive Repair Dealer's valid registration number, as issued by the Bureau;
            2. The name and address of the Automotive Repair Dealer, as shown on the Bureau's records;
            3. Description of a repair or maintenance operation performed to the vehicle;
            4. The vehicle year, make, model, and vehicle identification or license plate number matching the vehicle to be scrapped; and
            5. The date of the repair or maintenance visit.
        iii. Invoices submitted for the purpose of satisfying the requirements of section (B) shall be from two separate calendar years. The oldest invoice may not be older than twenty-four months prior to the date of application receipt.
4. The vehicle must be voluntarily dismantled at a Dismantler under contract with BAR.

5. A vehicle must have a gross vehicle weight rating of 10,000 pounds or less, and be a passenger vehicle, truck, sport utility vehicle, or van.
6. A vehicle must complete a functionality test.

Replacement Vehicle and Mobility Option Incentive Amounts:

1. Program incentives may not be redeemed for the purchase of a dismantled vehicle or a vehicle with a salvaged title (as described in Vehicle Code section 544).
2. Clean Cars 4 All incentives may only be redeemed for mobility options or a replacement vehicle that is 8 years old or newer and that is one of the following:
    a. A conventional hybrid that meets or exceeds a minimum combined fuel economy rating of 35 miles per gallon;
    b. A plug-in hybrid; or
    c. A zero-emission vehicle.
3. An applicant determined to be eligible under the Clean Cars 4 All incentive program may receive one of the following minimum incentives depending on income eligibility and choice of replacement vehicle or mobility option:

Income Eligibility	**Eight Years Old or Newer Hybrid Electric Vehicle 35+ MPG (Combined)**	**Eight Years Old or Newer Plug-In Hybrid and Zero-Emission Vehicle**	**Mobility Option**
Low Income ≤225% FPL	$7,000	$9,500 (Plus $2,000 for electric vehicle supply equipment [EVSE])	$7,500 Face Value
Moderate Income ≤300% FPL	$5,000	$7,500 (Plus $2,000 for EVSE)	$7,500 Face Value
Above Moderate Income ≤400% FPL	Not Available	$5,500 (Plus $2,000 for EVSE)	$7,500 Face Value

FINANCING ASSISTANCE FOR LOWER-INCOME CONSUMERS

The Financing Assistance for Lower-Income Consumers pilot project (Financing Assistance) provides financial resources to help lower-income Californians purchase

advanced clean vehicles. The project offers vehicle price buy-downs (grants) at the point-of-sale and fair financing through low-interest loans. In addition, funding is available to consumers for EVSE. By increasing adoption of advanced clean vehicles, the project supports the State's ZEV deployment, air quality, greenhouse gas reduction and equity goals.

Financing Assistance complements CVRP and Clean Cars 4 All by offering low-interest loans to participants in those programs. Program administrators provide financial education and advanced vehicle technology training to ensure consumer protection, increase the chance of successful loan repayments, and ensure that the vehicles chosen by participants appropriately meet their transportation needs. Participating financial institutions and lenders in this project are being offered funds for a loan loss reserve to mitigate risk.

Potential Changes to Project Criteria:

- **Maintain Annual Percentage Rate at 12 Percent:** As part of recent project changes, CARB reduced the Annual Percentage Rate (APR) of loans issued by outside lenders from 16 to 12 percent. Last year staff suggested reducing the cap further to 8 percent for FY 2020-21 to be consistent with the APR cap on loans issued by Beneficial State Bank. However, analysis of the APR loans issued by outside lenders shows that 20 percent of applicants took loans with APR of more than 12 percent. Furthermore, stakeholders have also argued that flexibility should be maintained through a higher interest rate to ensure that credit-challenged applicants continue to have some options. Given the available data and stakeholders' input, staff's recommendation is not to reduce the APR loan caps until further program changes occur and more data becomes available. Staff instead is considering giving the Executive Officer the authority to adjust the interest rate for outside lenders as necessary to meet program needs as they occur.

- **Direct Administrators to Align Definitions:** CARB staff is considering directing program administrators to revise the definition of household and other definitions as necessary to align with other clean vehicle purchase incentives as discussed on page 23.

ZERO-EMISSION ASSURANCE PROJECT

According to the SB 350 Barriers Report, one of the biggest barriers to ZEV adoption in the marketplace is affordability—if ZEV components fail, replacement batteries in electric vehicles can cost over $5,000 and for many lower-income consumers this type of expenditure makes it unattractive or even impossible to purchase a ZEV. In an effort to address this concern, AB 193 (Cervantes, Chapter 363, Statues of 2018)

established the Zero-Emission Assurance Project (ZAP) to help lower-income Californians reduce the risk of buying a used ZEV by providing a rebate or vehicle service contract for the replacement battery or fuel cell component. AB 193 states that CARB will "establish ZAP by allocating moneys, available upon appropriation from the Legislature in the annual Budget Act or other statute," (AB 193 Cervantes, Chapter 363, Statues of 2018). Since no such funding or resources have been allocated and the FY 2020-21 Cap-and-Trade Expenditure Plan has been delayed, CARB is unable implement ZAP at this time.

CLEAN OFF-ROAD EQUIPMENT VOUCHER INCENTIVE PROJECT (CORE)

The Clean Off-Road Equipment Voucher Incentive Project (CORE) established a first-come, first-served voucher program analogous to HVIP, but for off-road equipment that began funding equipment in February 2020. The project targets commercialized products that have yet to achieve a significant market foothold. It is designed to accelerate deployment of cleaner technologies by providing a streamlined process for fleets ready to purchase specific zero-emission equipment to receive funding to offset the higher cost of such technologies. By promoting the purchase of zero-emission off-road equipment over internal combustion options, the project reduces emissions, particularly in areas that are most impacted; helps build confidence in zero-emission technology; and provides other sector-wide benefits, such as technology transferability, reductions in zero-emission component costs, and larger infrastructure investments.

On August 4, 2020, CORE closed to new vouchers applications as all of the $44 million funding allocation to CORE had been reserved, merely 6 months from when the program began accepting voucher requests. A wide variety of off-road equipment types, including 127 terminal tractors, 96 transport refrigeration units (TRU), 48 mobile power units, 22 large forklifts, and 16 railcar movers, received funding. 73 percent of the vouchers have been reserved for equipment domiciled in low-income and/or disadvantaged communities.

As of September 2020, there are a total of 13 manufacturers offering 49 unique equipment models in CORE. CORE has made a meaningful impact by stimulating growth in a number of zero-emission off-road markets that are just beginning to enter the early commercialization phase. While some manufacturers began to make their first few commercial sales using CORE, others were able to utilize the program to help make larger scale deployments of their equipment.

Despite it being the first year of the program, the activity generated by CORE is a strong indicator of the project's role in helping drive the market. Should funding become available in the future, CORE can continue to deploy more zero-emission equipment, encourage green investment in the state, and reduce emissions in areas that are most impacted by pollution.

LONG-TERM INVESTMENT STRATEGIES

LIGHT-DUTY ZEV MARKET FINDINGS (SB 1275)

SB 1275, signed into law in 2014, established the Charge Ahead California Initiative with the goals of placing one million zero-emission and near zero-emission vehicles in California by 2023 to establish a self-sustaining market and increasing 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;
- An assessment of when a self-sustaining market is expected; and
- An assessment of how to modify existing incentives to recognize expected changes in future market conditions.

As part of the FY 2016-17 Funding Plan, staff, in consultation with stakeholders, proposed a framework for the plan and provided the first 3-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. Last year, staff included a more in-depth and comprehensive update to the plan.

As part of the Supplemental Report of the 2018-19 Budget Act,[9] 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 last year. The first report is provided in the FY 2019-20 Funding Plan as part of Appendix C and will be updated in the Funding Plan annually thereafter until 2030.

Since the introduction of the first Light-Duty Long-Term Plan in FY 2016-17, the ZEV market has grown tremendously. However, events over the last few months have changed the ZEV market landscape and the new vehicle market as a whole. The inability to predict how the ZEV market will withstand the current economic instability

[9] Legislative Analysts Office. *Supplemental Report of the 2018-19 Budget Act.* September 2018. https://lao.ca.gov/reports/2018/3883/supplemental-language-2018.pdf

will pose challenges to updating CVRP funding need projections and the long-term plan this year. Staff is continuing to review new data as it becomes available and analyzing the impacts the current economic and health crisis will have in updating assumptions, evaluations, and recommendations for the long-term plan.

One thing remains constant and that is the need to get more ZEVs on California's roads. Incentives will continue to play a critical role in meeting ZEV deployment goals for the foreseeable future, especially as we try to encourage market growth from harder to reach market segments. Staff will present updated findings and suggestions to support this goal in this year's Funding Plan after completing a thorough analysis of all market and technology aspects.

SUMMARY OF CHANGES TO THE LONG-TERM HEAVY-DUTY INVESTMENT STRATEGY

Three years ago, as part of the FY 2017-18 Funding Plan, CARB developed the Long-Term Heavy-Duty Investment Strategy (Strategy) to serve as a roadmap. The Strategy has been designed to show how Low Carbon Transportation funds might be invested in heavy-duty vehicle and off-road equipment incentives so that they can have the greatest impact. Each year, staff has updated this document through a public process, using stakeholder input while laying out the agency's goals, analyzing the factors affecting the efficacy of projects, and presenting a thoughtful strategy for accomplishing this. The result of the process was the Three-Year Investment Strategy for Heavy-Duty Vehicles and Off-Road Equipment.

The Strategy generally includes three main components: technology status snapshots that display progress to date toward commercialization, beachheads for the three advanced technology pathways (zero-emission capable, cleaner combustion, and efficiencies) and a three-year investment priorities table. The beachheads show the avenues for technology transfer, and the investment priorities table details staff's assessment of individual priorities and estimated funding needed to ensure continued progress toward commercialization and market transformation goals through the Low Carbon Transportation funds. One new component this year is the development of a set of market readiness indicators. While the technology status snapshots show that a technology may be technically ready for commercial introduction, assessing market transformation requires considering a set of indicators to better understand acceptance into the market, technology performance, continued barriers to adoption, and economic factors. CARB and CALSTART have been working with stakeholders through a series of public work group meetings this year to develop, refine, and rank the relative importance of potential market readiness indicators.

Investment this year is critical given the dramatic changes taking place in the market and widespread economic uncertainties. The Strategy will help to focus and guide the resources that are available to where they can do the most good. As in prior years,

staff have updated the core components of the Strategy that are integral to its mission and purpose.

Technology Status Snapshots

Since the development of the first Funding Plan for Low Carbon Transportation and AQIP, technology has been advancing rapidly in the heavy-duty vehicle and off-road equipment space. Understanding where key technologies are on their path to commercialization better enables staff to make appropriate funding considerations. As such, this year's Long-Term Heavy-Duty Investment Strategy includes an annual update to the status of these core technologies and applications.

Technology Beachheads

The foundation of CARB's investment strategy is the concept of beachheads: early successful vehicle applications where the pathway technologies can best establish initial market acceptance, and then continue from there to advance and seed additional adjacent market applications. CARB has worked with its own internal vehicle technology specialists and regulatory development teams, as well as its partners at CALSTART to understand how vehicle technology evolves and transfers between applications, transforming this understanding into a theory of change for heavy-duty transportation technologies. The beachhead model has helped support the earliest successful zero-emission vehicle applications taking place in delivery van, medium-duty truck, and medium-duty shuttle bus markets. These successes enable heavier truck applications by reducing costs and establishing robust supply chains.

With the ongoing advancement of off-road technologies and the emergence of promising new applications, CARB has continued to integrate off-road technologies into the beachhead models and the Long-Term Heavy-Duty Investment Strategy more broadly. CARB has worked with stakeholders to understand the connections between on- and off-road, and will be updating the beachheads accordingly, while also creating separate technology status snapshot charts for on-road and off-road. These updates will better enable CARB to invest appropriately in both on- and off-road applications and to accelerate technology commercialization for the entire heavy-duty sector.

Three-Year Investment Priorities Table

Many of the key findings of the Long-Term Heavy-Duty Investment Strategy are captured in the three-year investment priorities table, which contains CARB's top priorities for the upcoming three fiscal years (not including the current year) for Low Carbon Transportation funds. The technologies identified in the table are priorities, and do not represent an absolute of what will or will not be funded in future years. As

in prior years, staff will be adding a new third year (FY 2023-24) to the table along with draft funding levels for technologies in the demonstration, pilot, and commercial incentive categories. Small changes are being made to the other years to recognize shifts in technology, current projects receiving State investment, and the resulting impacts to our priorities.

Other Updates

- Metrics of Success – Prior Strategy documents have highlighted the need to define what makes a program successful in order to more effectively set goals, establish priorities, and assess progress. Staff identified three broad categories that define success: creating healthy communities; growing the green economy; and supporting technology evolution. CARB has worked with stakeholders and discussed a number of possible metrics that CARB could use—particularly using data already being collected—to construct a holistic set of evaluation tools. These may include measures such as clean vehicle miles traveled, investments in California's disadvantaged communities, the number of incentive vouchers issued by technology type, change in average vehicle purchase price over time, as well as other technology and market readiness indicators. For this year's Strategy, these metrics will be developed starting with data already available in HVIP and then assembled into an infographic.

- Infrastructure – As fleets both large and small continue to adopt an expanding array of zero-emission vehicle types, some fueling infrastructure questions are starting to get answered, and best practices are emerging, but data gaps still persist. The FY 2018-19 Strategy began to examine the barriers posed by infrastructure and address possible solutions to ease future deployments. The following year included an expansion of that discussion and an HVIP Infrastructure Valuation, which concluded that the infrastructure required to support HVIP-supported zero-emission vehicles (based on approved vouchers through July 2019) would cost nearly $150 million. Staff also signaled intent to conduct future case studies on CARB demonstration and pilot projects.

  These advanced technology demonstration and pilot projects provide the opportunity to deepen our understanding of the financial and timing impacts of infrastructure on Low Carbon Transportation investments, improve incentive policy recommendations, guide data requirements for projects, and help to boost the overall success of projects well into the future. Case study outcomes may also aid our coordination activities, including the California Energy Commission's AB 2127 infrastructure needs report and the in-progress update to CARB's Mobile Source Strategy.

While acknowledging the complexity of these projects, staff is focusing this year on highlighting some of the most valuable lessons learned from two early demonstration and pilot projects—one with battery electric trucks and the other with hydrogen fuel cell buses. Lessons learned in areas of application-writing, project management, information gaps, working with authorities having jurisdiction, and cost estimating will be shared in the form of brief one-pagers in the FY 2020-21 Long-Term Heavy-Duty Investment Strategy.

SB 1403 School Bus Report Updates

During the 2018 legislative session, SB 1403 was passed, formalizing the Long-Term Heavy-Duty Strategy and adding to it a report on the State's school bus population and funding needs. This year's report will provide an update to State school bus funding programs and the State school bus inventory, and highlights from emerging zero-emission school bus fleets including case studies from school districts that have incorporated zero-emission school buses into their fleet. The report is being developed via public process and in coordination with the CEC.

ACRONYM LIST

1. AB – Assembly Bill
2. AQIP – Air Quality Improvement Program
3. CARB – California Air Resources Board
4. CEC – California Energy Commission
5. CORE – Clean Off-Road Equipment Voucher Incentive Project
6. CVRP – Clean Vehicle Rebate Project
7. DMV – Department of Motor Vehicles
8. EFMP – Enhanced Fleet Modernization Program
9. ePTO – electric power take-off
10. EVSE – electric vehicle supply equipment
11. FY – fiscal year
12. g/bhp-hr – grams per brake horsepower-hour
13. GHG – greenhouse gas
14. GVWR – gross vehicle weight rating
15. HVIP – Hybrid and Zero-Emission Voucher Incentive Program
16. IRA – Individual Retirement Account
17. NOx – nitrogen oxides
18. SB – Senate Bill
19. SIP – State Implementation Plan
20. U.S. EPA – United States Environmental Protection Agency
21. ZAP – Zero-Emission Assurance Project
22. ZEV – zero-emission vehicle