



**2022 BIENNIAL REPORT TO THE LEGISLATURE ON THE
ASSEMBLY BILL 118 AIR QUALITY IMPROVEMENT PROGRAM,
FISCAL YEARS 2020-21 and 2021-22**

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Executive Summary

This document provides the required biennial update on the implementation of the Air Quality Improvement Program (AQIP). Health and Safety Code Section 44274 requires the California Air Resources Board (CARB) to submit to the Legislature a report containing details of projects funded, expected benefits of projects in promoting clean fuels and vehicle technologies, the impact that projects have on reaching air quality goals, and recommendations for future actions.

In the early years of AQIP, CARB focused investments on technology advancing projects that support California's long-term air quality and climate change goals in addition to providing immediate emissions benefits. These projects included the Clean Vehicle Rebate Project (CVRP), which provides rebates to consumers who buy zero-emission vehicles (ZEV), truck and bus vouchers through the Hybrid Truck and Bus Voucher Incentive Project (HVIP), and advanced technology freight demonstrations. The flexibility allowed within AQIP allowed CARB to pilot concepts that became the core part of its incentive portfolio. In recent years, CVRP, HVIP, and advanced technology freight demonstrations have been funded through the Low Carbon Transportation Program, and AQIP funds have primarily been directed to the Truck Loan Assistance Program. More details on these projects can be found in the Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds at the [California Climate Investments](#) webpage.

During this report's status update period covering fiscal years (FY) 2020-21 and 2021-22, 50 percent of AQIP-specific funds were directed to the Truck Loan Assistance Program, 44 percent supported HVIP, and 6 percent supported Clean Cars 4 All (CC4A). The Truck Loan Assistance Program enables small fleets affected by the Truck and Bus Regulation to secure financing to upgrade older vehicles in their fleets. AQIP provided a funding allocation of \$28.64 million in FY 2021-22 for the loan program. Approximately 11,000 cleaner trucks were financed during the status update period. HVIP provides funding to support the transformation to ZEVs in the heavy-duty on-road market, through a first-come, first-served application process. After being closed to new voucher requests for over 18 months, HVIP opened again in June 2021 with approximately \$170 million in total funding available, including \$25 million in AQIP funding approved in the FY 2020-21 Funding Plan and the remainder from previously cancelled vouchers. The CC4A Program, provides incentives to lower-income California residents to scrap their older, high-polluting, light-duty vehicle and replace it with a newer, cleaner replacement vehicle or an alternative mobility option such as public transit passes. The CC4A Program is largely funded through California Climate Investments. The program received a one-time funding allocation of \$3.64 million of AQIP funds in FY 2020-21 which were spent in the FY 2021-22. During this time, the program retired 298 older, more-polluting vehicles and replaced them with cleaner transportation options.

Status updates for projects that received AQIP funds prior to FY 2020-21, but were not yet complete before publication of the previous biennial report, are presented in the Appendix. This includes Truck Filter Replacements which did not receive any AQIP funding during the

status update period.

The Truck Filter Replacements Project provided \$3 million in FY 2018-19 AQIP funding for the upgrade or replacement of 192 recalled Cleaire Longmile diesel particulate filters to reduce toxic diesel particulate matter (PM) emissions. The project successfully identified, evaluated, and upgraded the emissions systems on heavy-duty diesel vehicles operating in 33 of the State's 58 counties. At project conclusion, no known remaining affected vehicles were operating in the State with the recalled PM filter system.

Emission reduction benefits attributable to AQIP-specific funds between July 1, 2020 and June 30, 2022 are contained in this report. The deployment of vehicles from these funds has resulted in emission reductions of approximately 1,258 tons of nitrogen oxides (NO_x).

Nearly all AQIP funding has been allocated to the Truck Loan Assistance Program in recent years. For FY 2020-21, no funding was allocated to the program. At that time, funding from previous years was sufficient to meet demand with a large allocation of \$48 million made in FY 2019-20. For FY 2022-23, CARB staff is proposing an AQIP allocation through a public process for Board approval for the loan program of \$28.64 million. Program need is expected to continue through 2023. The Board will decide on staff's recommendation as part of the public process for producing the annual [Funding Plan for Low Carbon Transportation \(LCT\) Investments and AQIP](#).

I. Introduction

A. AQIP and Assembly Bill (AB) 118

AQIP is a voluntary incentive program administered by CARB to reduce smog and diesel particulate pollution, with concurrent reductions in greenhouse gas (GHG) emissions. AQIP was created under the *California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007* (AB 118, Núñez, Chapter 750, Statutes of 2007). Originally scheduled to sunset in 2015, the passage of AB 8 (Perea, Chapter 401, Statutes of 2013) extended the funding for AB 118 programs until January 1, 2024. For additional background on AB 118, please see the 2016 Biennial Report to the Legislature at the [Legislatively Mandated Reports](#) webpage.

AQIP has invested approximately \$402 million in 11 project categories from program inception in FYs 2008-09 through 2021-22. Specific funding categories have included financing for heavy-duty diesel trucks, incentives for clean cars, hybrid trucks, electric lawnmowers, zero-emission agricultural work vehicles, and demonstration projects for cleaner marine and locomotive engines. All of the projects funded through AQIP have supported the expansion of advanced clean technologies in vehicles or equipment in the California marketplace.

B. Implementation of AQIP

CARB adopted regulations that establish the administrative procedures for implementing AQIP. As required in Health and Safety Code (HSC) Section 44274(a), the Board adopted regulatory guidelines in 2009. Central to the guidelines is the requirement for a Board-approved annual Funding Plan developed with public input.

The Funding Plan is each year's blueprint for expending AQIP funds appropriated to CARB in the annual State Budget. The Funding Plan describes the projects CARB intends to fund, establishes funding targets for each project, and provides the justification for these decisions. The Funding Plan is updated and presented to the Board for its approval each year. CARB staff hold a series of workgroup meetings and public workshops during the development of each Funding Plan to solicit feedback and recommendations. See the [Funding Plan](#) for details.

C. Funding Sources

Funding for AQIP comes primarily from the smog abatement fee assessed annually by the Department of Motor Vehicles (DMV) during a vehicle's first 6 registration years in lieu of a biennial smog inspection. Of the \$20 collected for each vehicle at the time of annual registration, \$4 is allocated to CARB for AQIP through the end of 2023 (HSC 44060.5). A small portion of AQIP funding comes from 2 additional sources: an initial registration fee for new watercraft and a special equipment identification plate fee for certain types of equipment. The fees identified above generate approximately \$25-\$30 million on an annual basis.

In addition to the fees above, AQIP has received \$108 million in additional funding from other sources since program inception to support the growing demand of AQIP projects. For details on the other funding please see the 2016 Biennial Report to the Legislature at the [Legislatively Mandated Reports](#) webpage.

Beginning in FY 2013-14, funds from the Greenhouse Gas Reduction Fund (GGRF) were appropriated by the Legislature for LCT investments in HVIP and Low NOx Engines and CVRP. Since then, per the FY 2021-22 Funding Plan, LCT appropriations in these programs have totaled over \$2.5 billion. Nearly all AQIP funds were then directed to the Truck Loan Assistance Program for helping small-business truckers affected by the In-Use Truck and Bus Regulation to secure financing for clean trucks.

D. Reporting Requirements

There are three separate reporting requirements for AQIP.

First, HSC Section 44274(d) requires CARB to submit a biennial report to the Legislature on the implementation of AQIP. The report is required to include a list of funded projects, the benefits of these projects, and recommendations for future actions.

Second, CARB's regulation for implementing AQIP requires CARB staff to report to the Board biennially on progress in implementing the program. The regulation provides that this report may be combined with the required report to the Legislature. (Title 13, Chapter 8.2, California Code of Regulations Section 2358.)

Third, HSC Section 44274.7(f) requires CARB to report to the Legislature annually on the implementation of the Truck Loan Assistance Program established in the FY 2008-09 State Budget with AQIP funds.

This report is intended to fulfill all of these requirements. Project status update information provided in this report covers current AQIP projects funded in FYs 2020-21 and 2021-22. A list of past projects is also included in Appendix A.

II. AQIP Projects Funded in FYs 2020-21 and 2021-22

Overview

AQIP projects support the demonstration and deployment of near-zero and ZEVs and equipment, and other advanced technologies that provide emission reductions and are critical to meeting California’s longer-term air quality and climate change goals. Three categories, the Truck Loan Assistance Program, HVIP, and the CC4A Program received AQIP funding during the status update period of FYs 2020-21 and 2021-22.

Table 1 provides a summary of the funding from AQIP provided to the above categories during the status update period. AQIP invested a total of approximately \$57.28 million. The emission benefits generated during the status update period from these 3 AQIP projects are illustrated in Tables 2 and 3.

This is followed by an overview of individual projects with project benefits, current status (as of June 30, 2022), and future direction. Emission benefits shown in this report have only been calculated for monies attributable to AQIP funding.

Table 1: AQIP Project Funding (millions) during the Status Update Period

Project Category	Fiscal Year 2020-21	Fiscal Year 2021-22	Cumulative Funding through 6/30/2022	Comments
Truck Loan Assistance Program ¹	\$0	\$28.64	\$219.24	-Launched April 2009 -37,614 loans issued as of 6/30/2022
HVIP	\$25	\$0	\$95	-Launched February 2010
CC4A	\$3.64	\$0	\$3.64	-Launched in July 2015 under the EFMP ² Plus-Up Pilot Project

¹Funding allocated to the loan program from other sources: \$15 million in CARB funds in FY 2017-18. \$10 million in FY 2013-14 from the Vehicle Inspection and Repair Fund.

²Enhanced Fleet Modernization Program (EFMP).

**Table 2: Statewide Criteria Pollutant and Precursor Emission Reductions
Attributable to AQIP in FY 2020-21 and FY 2021-22**

Funding Category	AQIP Funding (millions)	NOx ¹ (tons)	ROG ¹ (tons)	PM 2.5 ¹ (tons)
Truck Loan Assistance Program ²	\$28.64	1,256	11	-- ³
HVIP ⁴	\$25	85	1	2
CC4A ⁵	\$3.64	2	<1	<1

¹Criteria pollutant emission reductions are calculated for exhaust emissions only. Reactive Organic Gas (ROG).

²Emissions based on approximately 11,000 trucks for the Truck Loan Assistance Program.

³PM reductions are not included in the table as attributable to the Truck Loan Assistance Program because the In-Use Truck and Bus Regulation already requires PM reductions from trucks.

⁴No vehicles from the FY 2020-21 and FY 2021-22 funds have been deployed yet, so this provides projected emission reductions attributable to AQIP completed through June 30, 2022.

⁵Based on 298 vehicles funded through June 30, 2022.

**Table 3: Cumulative Statewide Criteria Pollutant and Precursor Emission Reductions
Attributable to AQIP**

Funding Category	AQIP Funding (millions)	NOx ¹ (tons)	ROG ¹ (tons)	PM 2.5 ¹ (tons)
Truck Loan Assistance Program	\$219	17,907	595	-- ²
HVIP ³	\$95	604	19	21
CC4A ^{4,5}	\$3.64	2	<1	<1

¹Criteria pollutant emission reductions are calculated for exhaust emissions only. Reactive Organic Gas (ROG).

² PM reductions are not included in the table as attributable to the Truck Loan Assistance Program because the In-Use Truck and Bus Regulation already requires PM reductions from trucks.

³No vehicles from the FY 2020-21 and FY 2021-22 funds have been deployed yet, so the cumulative reductions are based on projected emission reductions during the status update period attributable to AQIP through June 30, 2022.

⁴Based on 298 vehicles funded through June 30, 2022.

A. Truck Loan Assistance Program

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. This program is an on-going and successful incentive option that leverages public funding with private investments from participating lending institutions.

Implemented in partnership with the California Pollution Control Financing Authority (CPCFA) through its California Capital Access Program, the Truck Loan Assistance Program creates financing opportunities for truck owners who fall below conventional lending criteria and are unable to qualify for traditional financing. The program is available for small fleets with 10 or fewer trucks at the time of application. In the current program, AQIP funds are set aside (based on a percentage of each enrolled loan amount) in each participating lender's loan loss reserve account to cover potential losses resulting from loan defaults. The interest rate is capped at 20 percent. However, the average interest rate for issued loans is about 13 percent.

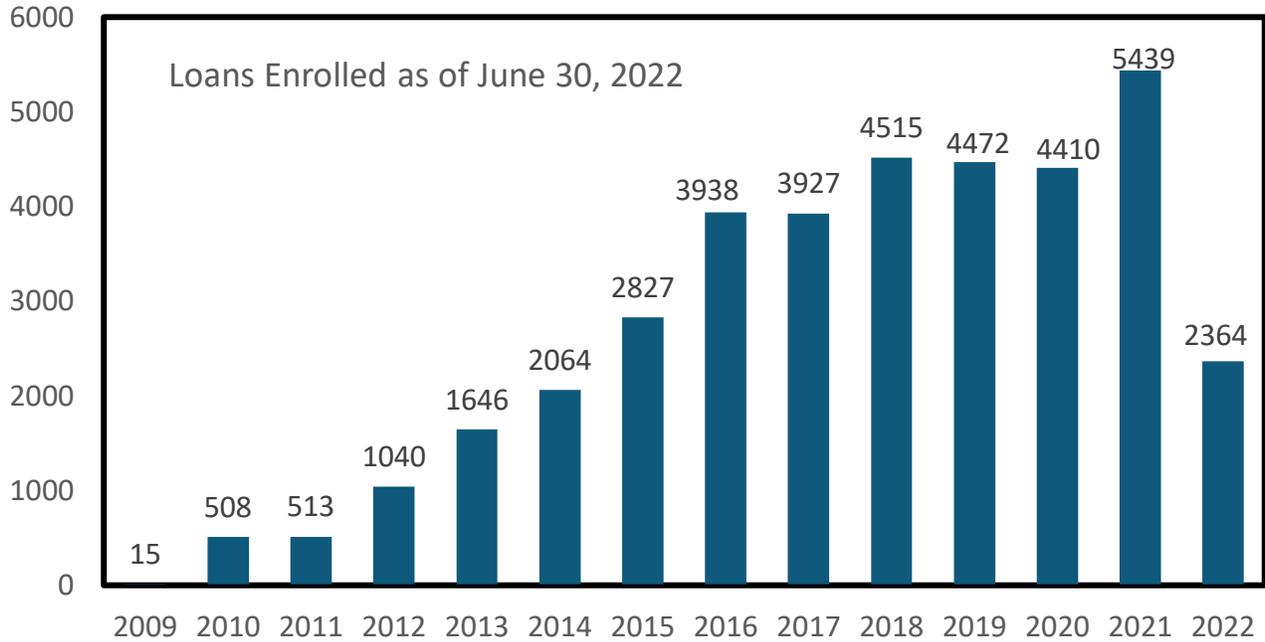
Project Benefits

This program primarily reduces criteria and toxic air contaminant emissions by helping small-business truckers secure financing to purchase newer trucks or retrofits to comply with the In-Use Truck and Bus Regulation. The cleaner trucks reduce health risks from exposure to diesel PM (a toxic air contaminant), particularly in disadvantaged communities where exposure can be substantial. Cleaner trucks also emit less NOx. Reducing NOx emissions from diesel engines are important because they can undergo chemical reaction in the atmosphere leading to formation of PM2.5 and ozone.

Project Status as of June 30, 2022

Approximately \$219 million allocated to the program has been leveraged to provide over \$2.6 billion in financing for the purchase of over 40,400 cleaner trucks, exhaust retrofits, and trailers. Loan enrollments had been increasing over most years of the program and have remained mostly steady since 2018, except for an increase in calendar year 2021 as shown in Figure 1, which shows activity through June 30, 2022.

Figure 1: Loan Activity by Calendar Year



In FY 2019-20, an allocation of \$48 million, much higher than the typical annual AQIP budget of around \$28 million, was provided for the loan program. In FY 2020-21, no funding was allocated to the program since funding that had been allocated in previous years was enough to meet program demand. CARB allocated \$28.64 million for the program for FY 2021-22.

CARB contribution rates for lender loan loss reserve accounts were increased effective March 2, 2020. This was in response to rising risks for lenders in the program, so they could continue or increase their participation providing loan assistance to small-business truckers by enrolling more loans. Documentation provided by lenders in the fall of 2019 showed that the transportation sector was facing a recession. CARB contribution rate for lenders with loan loss reserve accounts of \$500,000 or more was increased to 10 percent of the enrolled loan balance. For lenders with contributions to loan loss reserve accounts less than \$500,000 the contribution rate remained at 14 percent. This change in contribution rates is a return to the 2 contribution rate tiers that existed prior to the last modification in January 2016. The previous contribution rate structure had 3 tiers of 4, 7, and 14 percent at loan loss reserve amounts of over \$1.5 million, \$500,000 to \$1.5 million and under \$500,000 respectively.

Incremental recapture procedures have been implemented by CARB and CPCFA since 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. Based on loan activity through June 30, 2022, a total of approximately \$13 million in recaptured funds have been redeposited into the program account as of

June 30, 2022. The quantity of recaptured funds from matured loans is determined after the conclusion of each FY.

Table 4 provides a summary of loans, funding, and financing provided, and Table 5 shows the vehicles and equipment financed to date. About 45 percent of enrolled loans have been issued to owner operators with 1 truck, and about 96 percent of enrolled loans have been issued to fleet owners with 10 or fewer employees. The Truck Loan Assistance Program is not subject to disadvantaged community investment requirements. However, it is worth noting almost half of the Truck Loan Assistance Program funding has been spent within and benefiting individuals living in disadvantaged and low-income communities.

Table 4: Truck Loan Assistance Program Loans, Funding, and Financing.

Number of Loans Issued	State Funding (millions)	Total Amount Financed (billions)
37,614	\$214	\$2.6

Based on data through June 30, 2022.

Table 5: Truck Loan Assistance Program–Vehicles and Equipment Financed

Project Type	Number of Projects Financed ¹
Truck Purchases	38,700
Exhaust Retrofits	620
Trailers	1,160

Based on data through June 30, 2022.

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

Figure 2 on the next page shows the number of truck loans issued within each air district through June 30, 2022. The program has broad Statewide appeal, including rural regions.

Figure 2: Truck Loans in California by Air District



Emission Benefits

AQIP funds are used to finance the replacement of trucks with model year 2010 or newer engines. Prior to FY 2019-20, the funds were also used to finance the retrofit of trucks with CARB-verified diesel emission control devices and the replacement of trucks with model year 2007-2009 engines. Emission reductions were achieved because the retrofitted trucks and the air pollution controls installed by manufacturers on new engines have lower emissions. PM reductions are not included in the table below because the In-Use Truck and Bus Regulation already requires PM reductions from trucks. Table 6 shows emission benefits of the Truck Loan Assistance Program based on 38,700 cleaner trucks supported by this program through FY 2021-22.

Table 6: Statewide Truck Loan Assistance Program Criteria Pollutant and Precursor Emission Reductions

Time Period	Estimated Trucks Funded	NOx ¹ (tons)	ROG ¹ (tons)
FY 2020-21 and 2021-22	11,000	1,256	11
Cumulative ²	38,700	17,907	595

¹ Emission reductions are calculated for exhaust, or "tailpipe" emissions only.

² Cumulative through June 30, 2022

Future Direction

CARB's May 20, 2022, Memorandum to the Board Members, summarized CARB's thorough and sustained outreach efforts to alert vehicle owners they may be affected by the Truck and Bus Regulation and provide them financial assistance opportunities.¹ Outreach efforts have included sending out targeted mail-outs to over 200,000 fleet owners providing a two-year notice of upcoming deadlines each year and following up with a one-year reminder. Since 2018, a total of 109,877 letters and 169,832 postcards have been mailed to individuals identified as owning vehicles facing upcoming compliance deadlines. These outreach efforts frequently mention the Truck Loan Assistance Program as an option to help purchase compliant newer vehicles.

For many small fleets, this loan program may offer the only viable option to achieve compliance. CARB remains committed to meeting demand, as having loan assistance unavailable for even a short period erodes the confidence lenders have in providing the necessary financing to purchase trucks to meet the compliance requirements of the In-Use Truck and Bus Regulation.

As 2023 approaches, the model year schedule in the Truck and Bus Regulation will come to an end and 2010 or newer engines will be required except for some exemptions. CARB

¹ https://ww2.arb.ca.gov/sites/default/files/2022-06/tbcompliancedeadline_ADA.pdf

expects that fleets will continue to turnover vehicles throughout 2023 to meet the final regulation deadlines and DMV registration requirements.

California's clean air quality, carbon neutrality, petroleum reduction, and climate change goals are accelerating the introduction and deployment of zero-emission technologies. With 100 percent of sales of new passenger vehicles and trucks in the State required to be zero-emission by 2035, all drayage trucks required to be zero-emission by 2035, off-road vehicles and equipment required to be zero-emission by 2035 where feasible, and all other vehicles in the medium- and heavy-duty fleet required to transition to zero-emission by 2045 as described in Executive Order N-79-20, California is quickly moving toward ZEVs. With these policies in place, the loan program must evolve to meet the needs of small-business truckers seeking ZEV financing.

CARB staff is working with CPCFA and participating lenders to support zero-emission heavy-duty truck financing for small fleets. This includes exploring modifications to the existing program and incorporating learnings from the new Innovative Small e-Fleets set-aside in HVIP, where possible. The Zero-Emission Truck Loan Pilot Project proposed in the [FY 2022-23 Funding Plan for LCT Investments and AQIP](#) will also help small fleets explore transitioning to ZEVs as all CARB loan support evolves to ZEV financing for small fleets. This program could be funded by AQIP in the future.

While it is clear CARB is transitioning support to ZEVs, in 2022 work group meetings some stakeholders voiced concern that CARB should continue to support heavy-duty diesel trucks in the Truck Loan Assistance Program. CARB staff is recommending for Board consideration a funding allocation of \$28.64 million for the FY 2022-23 funding cycle. Program need and popularity is expected to continue through 2023. Factors such as DMV compliance verification, which will only allow clean trucks in compliance with CARB's In-Use Truck and Bus Regulation to be registered by the DMV, the equipment replacement deadline in the regulation, and recovery from the global health and economic crisis are expected to continue demand for the program. Based on recent program demand, funding allocated in previous FYs could be exhausted before the end of FY 2022-23. To ensure the continuity of the program through the full implementation of the Truck and Bus Regulation additional funds will be needed. The Board will decide on staff's recommendation as part of the public process for producing the annual Funding Plan for LCT Investments and AQIP.

The Truck Loan Assistance program has shown a successful way to leverage public funds into private financing, having leveraged nearly \$214 million in contributions into over \$2.6 billion in private financing. CARB staff is working with CPCFA and participating lenders to use the leverage of the program to support the financing of zero-emission trucks in the future, supporting California's goals to further reduce harmful emissions and petroleum usage, achieve carbon neutrality, and deploy ZEVs. Learnings from the Truck Loan Assistance Program and the proposed Zero-Emission Truck Loan Pilot Project will help small fleets adjust to zero-emission heavy-duty vehicles in the future.

B. HVIP

Overview

HVIP is the cornerstone of CARB's advanced technology heavy-duty incentives, providing funding since 2010 to support the transformation to ZEVs in the heavy-duty on-road market, as well as supporting investments in other emerging technology to achieve substantial GHG 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, first-come, first-served application process without requiring scrapping of an existing vehicle. HVIP provides vouchers to participating dealers to reduce the incremental cost of eligible vehicles at the point-of-sale.

This streamlined approach, with eligible vehicles and preset voucher amounts, has proven popular with vehicle dealers, manufacturers, and California fleets. Record voucher requests in 2018 and 2019—driven largely by a surge in demand for zero-emission buses and trucks—exhausted all available funds and forced the project to close for new voucher requests in November 2019. After being closed to new voucher requests for over 18 months, HVIP opened again in June 2021 with approximately \$170 million in total funding available, including \$25 million in AQIP funding approved in the FY 2020-21 Funding Plan and the remainder from previously cancelled vouchers.

HVIP typically receives funding through LCT Investments, with details of that program located on the [LCT Investments](#) webpage. However, a small portion of HVIP's funding in the last 5 years has come from AQIP, including \$25 million in FY 2020-21. See the 2020 Biennial Report to the Legislature on the [Legislatively Mandated Reports](#) webpage for more details.

Project Benefits

HVIP incentives drive manufacturing production and fleet acceptance of advanced heavy-duty vehicle technologies that California must deploy to meet its long-term air quality and climate goals. Previous AQIP funding that was used to incentivize low NOx engines has been fully expended and closed out. HVIP is now used to incentivize only zero-emission technologies and electric power-take-off systems.

Program Status as of June 30, 2022

The FY 2020-21 AQIP dollars are under grant and all the funds have been requested by fleets; however, no voucher requests using AQIP funds have been paid out as no vehicles have been deployed yet. In 2019, CARB found that heavy-duty vehicle deployment took 14 months on average and now the world is experiencing ongoing supply chain disruptions that have caused many manufacturers to take 18-24 months to build and deliver a heavy-duty vehicle.

The [HVIP webpage](#) provides an interactive data tool for funded vehicles, real-time accounting of voucher funds remaining, and other project information.

Emission Benefits

Funding made available in 2021 was a combination of AQIP and Low Carbon Transportation Funding, and no vehicles have been deployed yet, so emission reductions cannot be tied directly to the funding dollars. However, Table 7 provides projected emission reductions attributable to AQIP, calculated using the [Fiscal Year 2020-21 Funding Plan for Clean Transportation Incentives. Appendix B Emission Reductions Quantification Methodology](#). Emissions estimates associated with this status update period will be updated in future reports to the Legislature after the funded vehicles have been deployed.

Table 7: Projected Statewide HVIP Criteria Pollutant and GHG Emission Reductions Attributable to AQIP

Time Period	NOx (tons)	ROG (tons)	PM 2.5 (tons)	CO ₂ ¹ (MTCO _{2e}) ²
Projected Emission Reductions from FYs 2020-21 and 2021-22 Funding ³	85	0.84	2	98,400
Program Cumulative ⁴ to June 30, 2022	604	19	21	240,000

¹Carbon dioxide (CO₂).

²Metric tons of carbon dioxide equivalent (MTCO_{2e}). GHG emission reductions are calculated on a well-to-wheel basis, which accounts for the emissions produced from the production, distribution, and usage of the different fuel types, including electricity, as well as exhaust emissions.

³Estimates represent projected emission reductions attributable to AQIP.

⁴Based on approximately 2,430 vehicles funded.

Future Direction

HVIP received its last AQIP allocation in FY 2020-21, and those funds have been requested by fleets, but not yet expended. Manufacturers are currently building and delivering vehicles. CARB’s Grant Agreement with CALSTART for the FY 2020-21 AQIP has a goal of having all vouchers redeemed by March 31, 2023, with a grant closeout by June 30, 2023.

C. CC4A

Overview

CC4A, formerly known as the EFMP Plus-Up Pilot Project, provides incentives to lower-income California residents to scrap their older, high-polluting vehicle and replace it with a newer, cleaner replacement vehicle or an alternative mobility option such as public transit passes. Replacement vehicle technology types include Battery Electric Vehicles (BEV), Fuel Cell Vehicles (FCV), Plug-in-Hybrid Electric Vehicles (PHEV), and Conventional Hybrids. CC4A also provides incentives for Electric Vehicle Supply Equipment (EVSE) for participants that choose BEVs and PHEVs as a replacement vehicle, and prepaid electric vehicle charging cards for participants that are unable to install EVSE at their home. The program aims to focus the funding benefits to lower-income residents living in, or near, disadvantaged communities (DAC), and strongly emphasizes consumer protections, consumer outreach and education, and coordination with other clean transportation programs.

Since its inception in 2015, the CC4A program has expanded its reach from the two largest air districts, the San Joaquin Valley Air Pollution Control District (SJVAPCD) and South Coast Air Quality Management District, to the five largest ones. The Bay Area Air Quality Management District (BAAQMD) launched its program in FY 2018-19 and the Sacramento Metropolitan Air Quality Management District (SMAQMD) began its program in the first quarter of FY 2020-21. The fifth air district, San Diego County Air Pollution Control District, started their program in FY 2022-23.

The CC4A program is largely funded through California Climate Investments. The program received a one-time funding allocation of AQIP funds in FY 2020-21, which were spent in FY 2021-22. This section of the report provides data for the BAAQMD and SJVAPCD for FY 2021-22. None of the air districts were allocated AQIP funds in FY 2021-22.

Project Benefits

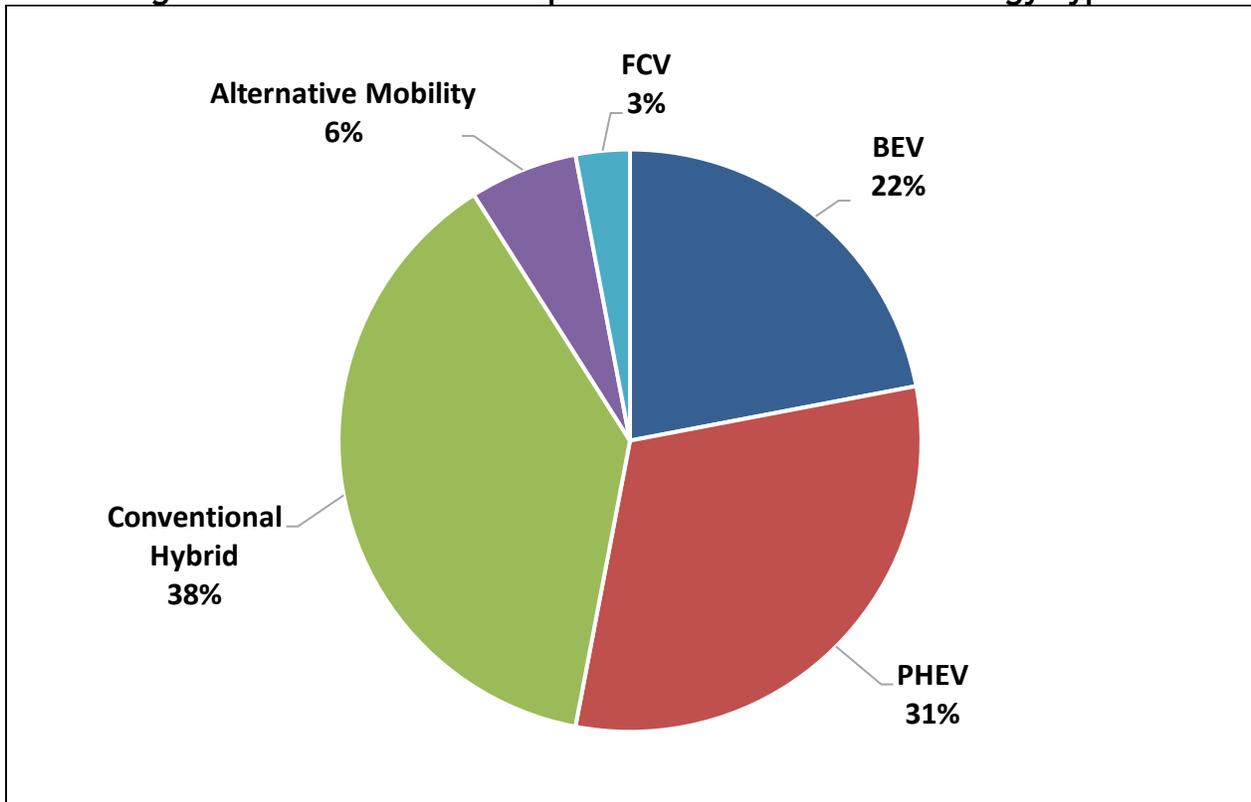
The CC4A program provides much-needed monetary incentives to California residents who have lower incomes to obtain cleaner, and more reliable, mobility options. This helps to reduce criteria pollutant emissions, such as NO_x and PM and improve air quality in communities most negatively impacted by air pollution, such as disadvantaged and environmental justice communities. It also helps to reduce other pollutants such as ROG and GHG emissions.

Program Status as of June 30, 2022

For FY 2020-21, \$3.64 million was allocated to CC4A from AQIP². More specifically, the FY 2020-21 Funding Plan allocated \$3 million to BAAQMD and \$640,000 to SJVAPCD in AQIP funds. These funds were spent during FY 2021-22. During this time, the program retired 298 older, more-polluting vehicles and replaced them with cleaner transportation options. The average miles per gallon (MPG) of the retired vehicles was 21 MPG while the average of the replacement vehicles was 83 MPG.³

As previously mentioned, for FY 2021-22, 298 projects were funded by AQIP funds. Figure 3 shows that over 20 percent of the funds went to BEV purchases, over 30 percent went to PHEV purchases, nearly 40 percent went to conventional hybrid purchases, over 5 percent went to alternative mobility option purchases, and 3 percent went to FCV purchases.

Figure 3: Percent of Funds Spent Toward Various Technology Types

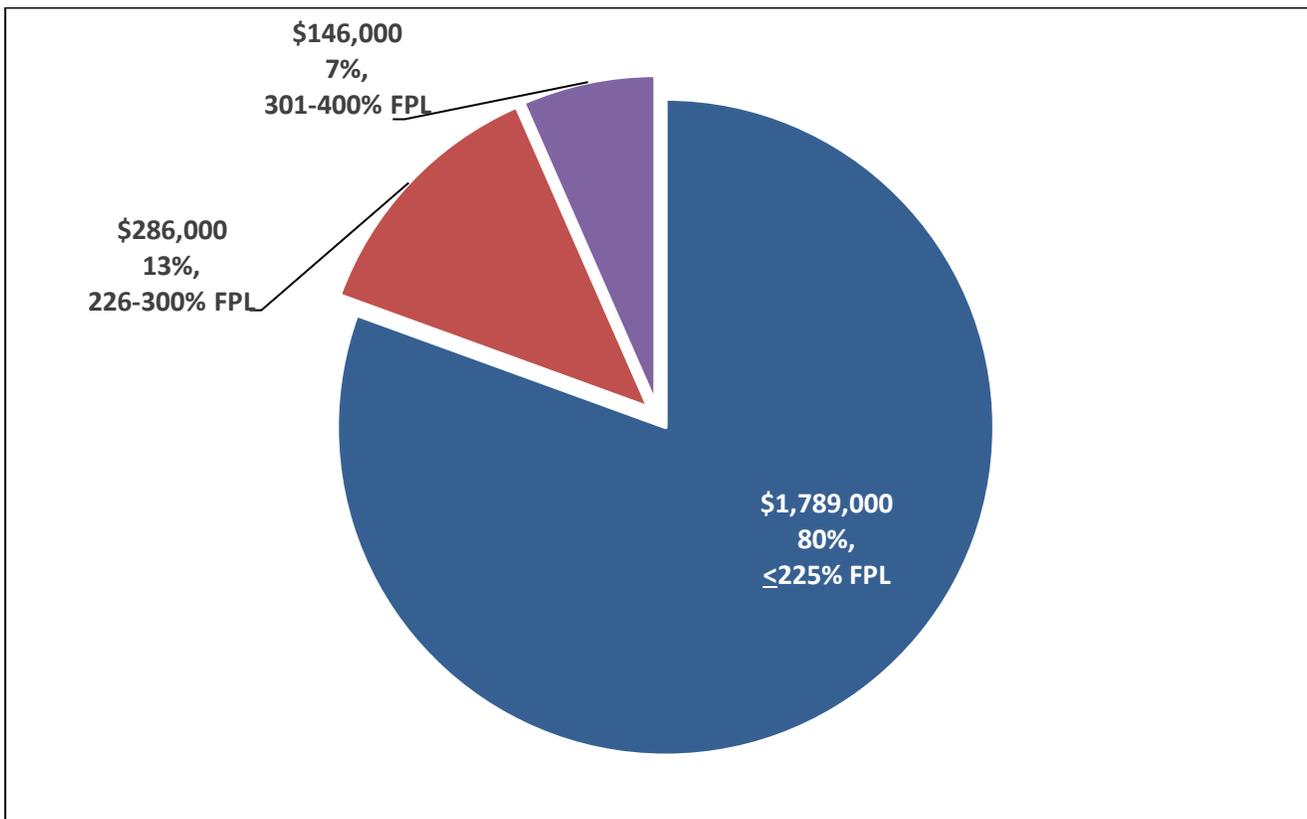


² [Annual Performance Goals and Evaluation for the Enhanced Fleet Modernization Program and Clean Cars 4 All Report – Fiscal Year 2020-2021](https://ww2.arb.ca.gov/sites/default/files/2022-02/Final_21-166%20EFMP%20and%20CC4A%20AB%20630%20Goals%20for%20FY%202020-21.pdf), California Air Resources Board webpage, accessed July 28, 2022, https://ww2.arb.ca.gov/sites/default/files/2022-02/Final_21-166%20EFMP%20and%20CC4A%20AB%20630%20Goals%20for%20FY%202020-21.pdf.

³ Note that MPG-equivalent (MPGe) fuel economy rating is used for BEVs, plug-in hybrid vehicles, and FCVs, while the standard MPG rating is used for hybrid vehicles.

Data also exist regarding the household income of program participants in relation to income thresholds and federal poverty levels (FPL). Figure 4 shows the AQIP funding spent in relation to the FPL⁴. Most of the funding spent, nearly \$1.8 million (or 80 percent) of funds, went to applicants with a household income of less than 225 percent of the FPL, or up to \$62,438 per year in 2022 for a household of 4⁵. Over \$285,000 (13 percent) of funds went to applicants with a household income in the 226-300 percent FPL range, or up to \$83,250 per year for a household of 4 in 2022. Lastly, over \$145,000 (7 percent) of the funds went to applicants in the 301-400 percent FPL range, or up to \$111,000 per year in 2022 for a household of 4.

Figure 4: Project Funds⁶ per Income Threshold



⁴ [U.S. Federal Poverty Guidelines Used to Determine Financial Eligibility for Certain Programs](https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines) webpage, Office of the Assistant Secretary for Planning and Evaluation, accessed July 26, 2022, <https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines>.

⁵ [Household Income Eligibility Guidelines](https://www.bar.ca.gov/consumer/consumer-assistance-program/household-income-guidelines) webpage, California Department of Consumer Affairs, Bureau of Automotive Repair, accessed August 3, 2022, <https://www.bar.ca.gov/consumer/consumer-assistance-program/household-income-guidelines>.

⁶ Excludes 15% administrative expenses.

Table 8 shows the number of incentives paid by each air district, and in total, for various percentages of the FPL. In total, among the 2 air districts listed, 298 incentive projects were funded, with 229 (77 percent) going to participants with a household income of less than or equal to 225 percent of the FPL. Forty-five (15 percent) incentives went to participants with a household income between 226-300 percent of the FPL, while 24 (8 percent) incentives went to participants with a household income of 301-400 percent of the FPL.

Table 8: Incentives Paid per Income Threshold

Household Income of Participant (% of FPL)	BAAQMD	SJVAPCD	Total
Less than or equal to 225%	159	70	229
226% to 300%	33	12	45
301% to 400%	22	2	24
Total	214	84	298

Table 9 shows the number of CC4A program participants that lived in a DAC based on zip code as well as based on DAC census tract. The 298 residences of the program participants were in a zip code located in a DAC. Additionally, 101 of those participants were also located in a DAC census tract. The BAAQMD had 214 (72 percent) participants residing in a zip code containing a DAC and SJVAPCD had 84 (28 percent). Both air districts had approximately 50 percent of residences located in a DAC census tract.

Table 9: Participation by Household Income Categories with respect to DAC⁷ Designation

Disadvantaged Community Residence	BAAQMD	SJVAPCD	Total
Zip Code Containing a DAC	214	84	298
DAC Census Tract	47	54	101

⁷ [California Climate Investments Priority Populations 2022 CES 4.0](https://webmaps.arb.ca.gov/PriorityPopulations/) webpage, California Air Resources Board, accessed July 26, 2022, <https://webmaps.arb.ca.gov/PriorityPopulations/>

Emission Benefits

CC4A achieves emission reductions by incentivizing the scrap and replacement of older, high-emitting vehicles, with cleaner advanced-technology options. The emission reductions below are calculated for the 298 projects funded by the AQIP funds in FY 2021-22⁸. The LCT On-Road Benefits Calculator Tool 2021 was used to calculate the emission reductions for this project. Based on projects that were funded using AQIP funds, on average, a 2000 model year vehicle was being scrapped and replaced by an average 2020 model year advanced-technology vehicle. The oldest model year (MY) of the retired vehicles was 1979 while the newest MY of the retired vehicles was 2006.

CC4A has a 30-month ownership requirement; therefore, total emission reductions for each project were quantified over the course of two-and-a-half years. The total emission reductions for CC4A are shown in Table 10 below.

Table 10: Total Emission Reductions for CC4A Attributable to AQIP in FY 2021-22

Number of Vehicles Funded	GHG (MTCO ₂ e)	NO _x (pounds)	PM 2.5 (pounds)	ROG (pounds)
298	3,078	4,323	298	894

Future Direction

CARB staff does not anticipate obtaining future AQIP funding for this program since it is primarily funded through California Climate Investments. However, CARB staff recognizes that the nature of incentive funding is dynamic and that the CC4A program could be allocated AQIP funds in the future.

Statewide Expansion

CARB is developing a pilot program to expand the CC4A program to the rest of the State. Staff propose to expand the geographic eligibility Statewide while maintaining income eligibility requirements and developing a needs-based approach to focus the program on Californians in most need. The Statewide expansion of CC4A will expand equitable access to clean transportation by expanding program eligibility to all areas of the State that are not able to participate in existing air district programs, including low-income communities, rural communities, tribal communities, and other priority populations that could benefit from the reliable transportation the CC4A program could provide.

⁸ There were no projects funded by the AQIP funds in FY 2020-21.

In the Budget Act of 2022, as amended by Senate Bill 179, the California Legislature appropriated \$255 million for a suite of equity transportation programs established under the Charge Ahead California Initiative including, but not limited to, the CC4A program. A minimum of \$125 million shall be used to establish the CC4A program Statewide.

Joint Solicitation with Financing Assistance

In preparation for the Statewide expansion effort, CC4A will solicit a third-party administrator through a competitive solicitation process. CARB plans to issue a joint solicitation between Financing Assistance and Statewide CC4A to streamline the application process for residents most in need, providing increased opportunity to match the need for low-cost financing with the vehicle purchase incentives provided through CC4A. Combining the two programs into one solicitation directly addresses feedback CARB received for several years from community members, environmental justice advocates, and the Legislature, regarding the need to consolidate programs to reduce consumer confusion when applying for incentives. A combined solicitation will allow for better management of communication across the programs, consolidated processing of rebate applications, cooperative relationships with dealers, more streamlined efforts and use of outreach tools and materials (when appropriate), and result in fewer administrators and risk of added complexity when working in partnership with Access Clean California.

III. Recommendations for Future Action

AQIP's emphasis has continued to be on providing financing assistance to small-business fleet owners for upgrading their heavy-duty trucks through the Truck Loan Assistance Program, though for FY 2020-21 no funding was allocated to the program. AQIP is authorized until January 1, 2024..

AQIP has provided funding for the Truck Loan Assistance Program, HVIP, demonstrations for advanced emission reduction vehicle technologies, CVRP and others since 2009. The availability of LCT appropriations since FY 2013-14 has allowed the HVIP and CVRP programs to be primarily funded from this source since demand for these programs exceeded AQIP's budget.

After evaluating anticipated project demand, and taking into account stakeholder input, staff recommends, through a public process for Board consideration, allocating the FY 2022-23 AQIP appropriation to the Truck Loan Assistance Program. Program need is expected to continue through 2023. Factors such as DMV compliance verification, which will only allow clean trucks in compliance with CARB's InUse- Truck and Bus Regulation to be registered by the DMV, the equipment replacement deadline in the regulation, and recovery from the global health and economic crisis are expected to continue demand for the program. Based on recent program demand, funding allocated in previous FYs could be exhausted before the end of FY 2022-23. To ensure the continuity of the program through the full implementation of the Truck and Bus Regulation, additional funds will be needed. The Board will decide on staff's recommendation as part of the public process for producing the annual [Funding Plan for LCT Investments and AQIP](#).

California's clean air quality, carbon neutrality, petroleum reduction, and climate change goals are accelerating the introduction and deployment of zero-emission technologies. CARB staff is working with CPCFA and participating lenders to support zero-emission heavy-duty financing for small fleets. This includes exploring possible modifications to the existing program and incorporating learnings from the new Innovative Small e-Fleets set-aside in HVIP, where possible. The Zero-Emission Truck Loan Pilot Project will also help small explore transitioning to zero-emission vehicles as all CARB loan support evolves to zero-emission financing for small fleets.

The technology-advancing projects funded through AQIP marked an important step in bringing the next generation of vehicles such as hybrid-electric trucks and ZEVs to California's roadways today. AQIP investments have helped start the fundamental transformation of the California fleet to zero and near-zero emission vehicles that will be needed to meet California's post-2020 State Implementation Plan commitments, 2030 and 2050 climate change goals. These investments also help position the State for green jobs growth.

Appendix A: Projects Receiving AQIP Funding Prior to FY 2020-21

In the early years of AQIP, CARB focused investments on technology advancing projects that support California’s long-term air quality and climate change goals in addition to providing immediate emission benefits. These projects included the CVRP which provides rebates to consumers who buy ZEVs and advanced technology freight demonstrations. The flexibility allowed within AQIP allowed CARB to pilot concepts that became the core part of its incentive portfolio. In recent years, CVRP and advanced technology freight demonstrations have been funded through the Low Carbon Transportation Program.

Seven project categories received a total of \$84.4 million in AQIP funding between FY 2009-10 and FY 2019-20. These projects are complete and did not receive additional AQIP funding during the status update period of FYs 2020-21 and 2021-22. Table 11 provides a summary of the funding provided to these project categories, and they are described in detail in the 2016, 2018, and 2020 Biennial Reports to the Legislature, available at the [Legislatively Mandated Reports](#) webpage.

**Table 11: Summary of AQIP Projects by FY
(Prior to FY 2020-21) and Emission Reductions Attributable to AQIP**

Project Category	Total Amount in Millions	NOx (tons)	ROG (tons)	PM (tons)
CVRP	\$67	248	41	105
Agriculture Equipment Trade-Up	\$3.5	106	11.5	6.70
Truck Filter Replacements	\$3	--	--	6.8
Advanced Technology Demonstrations ^{1,2}	\$6.2	--	--	--
Lawn & Garden Equipment Replacement	\$2.6	<1	--	<1
Hybrid Off-Road Equipment Pilot ¹	\$2	--	--	--
Zero-Emission Agricultural Utility Terrain Vehicle Rebates ¹	\$0.1	--	--	--

¹ No emission reductions were reported for these projects.

² See the [Moving California](#) website for details.

This Appendix includes a detailed status update for the Truck Filter Replacement Project which did not receive any AQIP funding during the status update period, but utilized AQIP funds allocated previous to FY 2020-21 and was not complete before publication of the last AQIP biennial report.

Truck Filter Replacements

Overview

The diesel filter replacement project provided \$3 million in FY 2018-19 AQIP funding for the upgrade or replacement of recalled Cleaire Longmile diesel particulate filters to reduce toxic diesel PM emissions. The project was administered through the Western States Trucking Association (WSTA) and began work in October 2019 with final installations in March 2021 and June 30, 2021 close-out. The project successfully identified, evaluated, and upgraded the emissions systems on 192 heavy-duty diesel vehicles operating in 33 of the State's 58 counties. At project conclusion, no known remaining affected vehicles were operating in the State with the recalled PM filter system.

Background

In 2012, Cleaire Advanced Emission Controls, Incorporated (Cleaire) voluntarily recalled its LongMile verified diesel emission control system (PM filter). During the recall, Cleaire replaced the LongMile with either a certified silicon carbide core substrate (known as the Longmile-S), a Cleaire Muffler Module, or removed the entire system. However, several months later, Cleaire ceased operation and their assets were acquired by ESW CleanTech, a manufacturer of verified diesel emissions control strategies. ESW CleanTech has provided product support of the Cleaire product line since the closure.

In 2015 through 2017, the SMAQMD and ESW CleanTech entered into a grant agreement to provide replacement filter funding of up to \$6.3 million for substrates through the Proposition 1B Goods Movement Emission Reduction Program. These replacements ensured reductions of PM consistent with the original system operations prior to the recall. However, some fleets could not qualify for Proposition 1B funding or could not meet required temperature or engine family criteria.

The Diesel Filter Replacement Program targeted the remaining vehicles to support filter substrate replacements for existing impacted heavy-duty vehicles. The program covered the upgrade costs up to an authorized limit, whether a conversion to the Longmile-S via a filter substrate upgrade, or a whole new system where required. Based on results from the Proposition 1B work, the project was expected to cover 270 to 500 substrate replacements or about 150 new diesel particulate filter systems. Substrate replacement costs vary according to the engine size and temperature duty-cycle, with higher costs for higher horsepower engines. Staff originally estimated that the expected funding allocation would provide about 5.33 tons of PM_{2.5} emissions reductions. Because PM filters only control PM, no other criteria or GHG emissions reductions were expected.

The Diesel Filter Replacement Program was administered and implemented through a partnership between CARB, ESW Cleantech as the contractor, and the WSTA as the Grantee. WSTA was selected via a competitive CARB grant solicitation in early 2019. The Grantee was responsible to distribute funding to the contractor after complete supporting documentation was submitted and all project eligibility requirements were verified. In conjunction with the Grantee, CARB held a public workshop in July 2019 with potential funding recipients to discuss the requirements and eligibility criteria for potential projects.

To protect fleets, the project prohibited the contractor from entering into a separate agreement with project participants to cover additional parts and labor not covered by the Diesel Filter Replacement Program, unless approved by WSTA and CARB. The contractor was also required to educate fleets on proper use and maintenance of the upgraded diesel PM filters.

The Project Implementation Manual for the FY 2018-19 Diesel Filter Replacement Program was finalized in October 2019 and provided the necessary definitions, explanations, and processes associated with the minimum requirements.

Application Priority & Process

The public workshop process informed a two-phase prioritization concept with the intent to ensure program funds were distributed across multiple fleet owners and that the State investment would provide lasting emissions benefits. Per AQIP Guidelines, emission reductions were required to be surplus to regulatory requirements and participating fleets had to be compliant with CARB diesel regulations. Eligible vehicles were not permitted to have any DMV Vehicle Identification Number Stops or registration holds through CARB Enforcement actions. Vehicles must remain in California operation for at least two years post upgrade.

Vehicles eligible for Phase 1 were required to be registered, operating, and have no regulatory replacement deadlines prior to January 1, 2023. An initial maximum of five projects per fleet owner were approved for each round—either substrate upgrades, PM filter replacements, or a combination of both. Substrate upgrade projects were identified and prioritized due to the superior cost effectiveness. Once all fleets had the opportunity to fund five projects, then an additional round(s) of five projects per fleet owner were approved. This process ensured that all impacted fleets had an equitable opportunity to receive project funding.

Phase 2 included applications received after the Phase 1 deadline and were considered following the same priority and round process as Phase 1. Once all applications were considered, vehicles with January 1, 2022, and later replacement dates were permitted to participate.

Program Timeline

The Phase 1 applications were mailed to eligible fleets in October 2019 with a 45-day submission deadline closing in December 2019. Applications returned after the deadline were considered in Phase 2 funding. The contractor also reached out to fleets multiple times, and CARB mailed a follow-up letter in May 2020.

Project Installations by Upgrade and Date

The total vehicles estimated at project startup was 505. The project team contacted all known fleet owners of the recalled LongMile systems to offer program funds to evaluate and repair or replace the PM filters. The project team identified 224 affected vehicles that were still owned by 53 fleet owners, as many vehicles had been removed from operation. Of those, 192 vehicles owned by 45 fleet operators were completed under the program. The remaining 32 vehicles did not qualify for a variety of reasons, primarily that the vehicles were either scheduled for retirement or would not meet the two years of operation minimum requirement. At the conclusion of the program there are no known remaining affected vehicles operating in the State with the recalled PM filter system.

Total funds paid for evaluations and installations were \$2,780,246.00 with a total administration expense of \$219,754. In addition, \$68,246 of unused administration funds were converted to project funding in the final months of the program. Table 12 shows the installation of substrate upgrades and new PM filter replacements by date.

Table 12: Installations by Date and Type

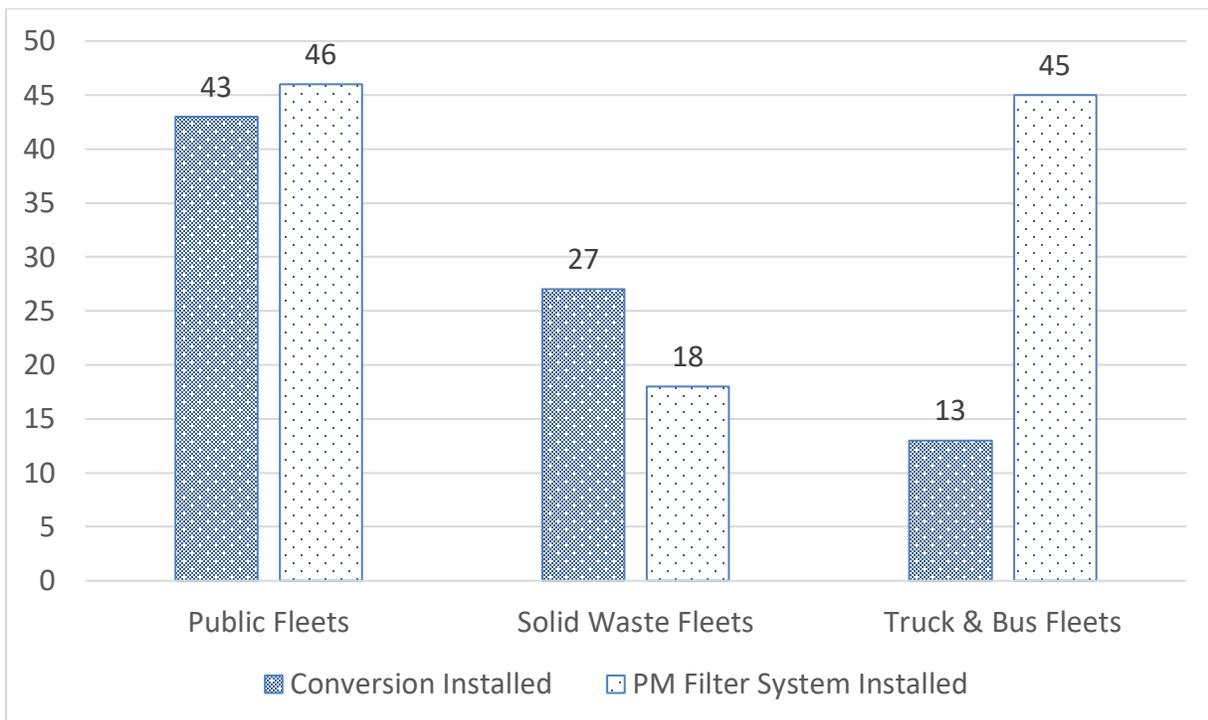
Month	Substrate Upgrades Installed	PM Filter Systems Installed	Total
December 2019 through March 2020	30	7	37
April 2020 through June 2020	15	19	34
July 2020 through September 2020	16	30	46
October 2020 through December 2020	21	42	63
January through March 2021	1	11	12
Final Program Totals:	83	109	192

Several projects were delayed due to complications from the COVID-19 pandemic. Many fleet operations were disrupted and the contractor had limited vehicle access, which hindered datalogging and upgrade work. Final installations occurred in March 2021 with final invoicing, report submittal, and grant closeout by the June 30, 2021 end of FY.

Fleet Upgrades and Locations

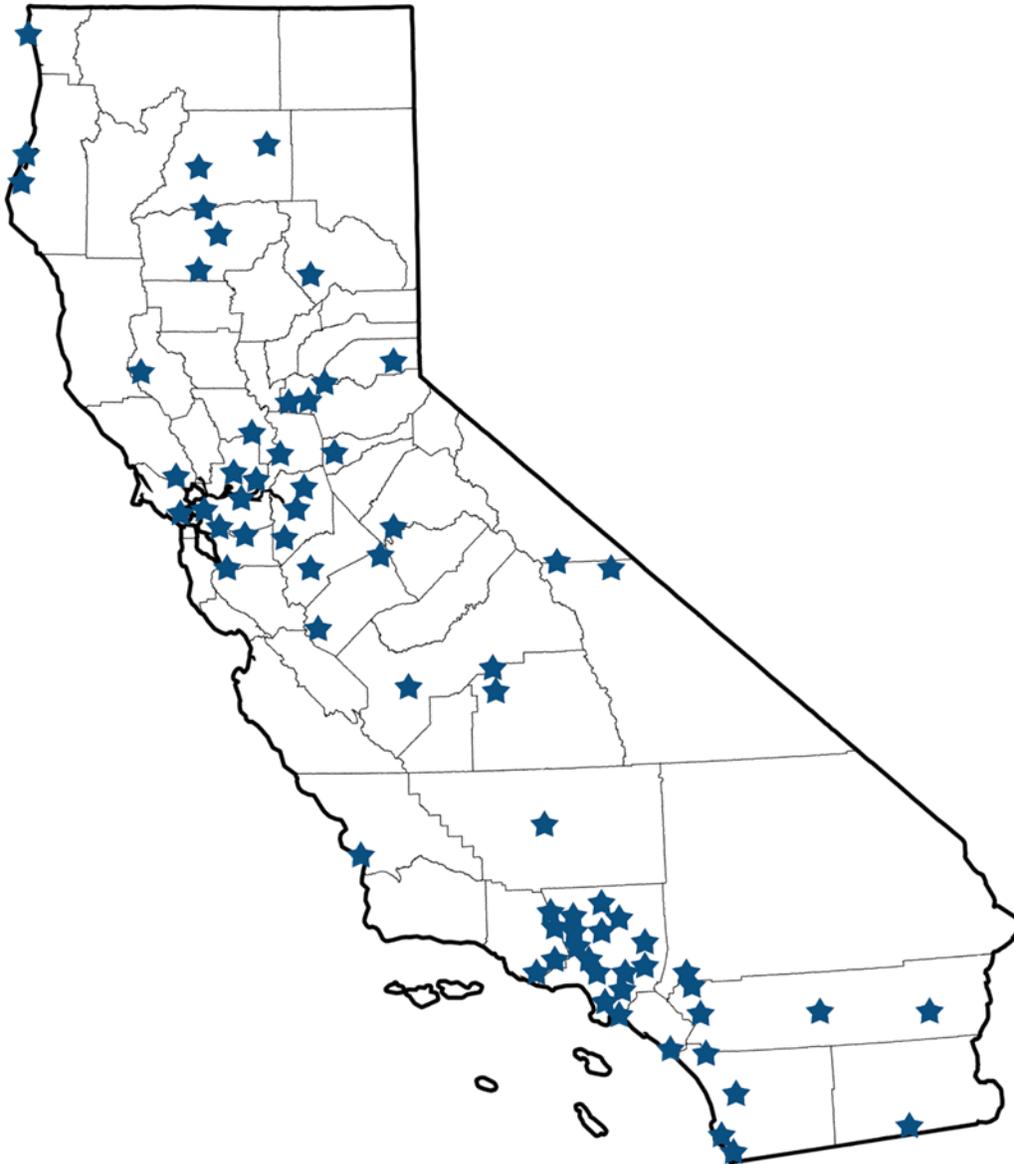
Program funds were distributed to both public and private fleet operators with 89 projects supporting public fleets, 45 projects in Solid Waste Collection fleets and 58 projects in commercial fleets subject to the Truck and Bus Rule. Forty-six percent of the project vehicles were publicly-owned and the remaining 53 percent were owned by commercial fleet businesses. Figure 6 indicates the upgrades by project and fleet type.

Figure 6: Upgrade Type by Fleet Category



The Project Map in Figure 7 below displays the project locations and demonstrates that the funds benefitted all areas of the State from Del Norte County in the north to Imperial County in the south. Each star represents the city in which the exhaust system upgrade took place. Because the vehicles are mobile sources and travel within the general area of the project locations, the surrounding area will derive a benefit over time from reduced PM emissions.

Figure 7: Project Map



Emission Benefits

Table 13 identifies the emission benefits from the Diesel Filter Replacement Program incentives over the life of funded projects based on AQIP funded monies by utilizing the calculation methodology in the [Funding Plan for LCT Investments and AQIP](#).

Table 13: Statewide Truck Filter Replacement Criteria Pollutant Emission Reductions Attributable to AQIP

Time Period	NOx (tons)	ROG (tons)	PM 2.5 (tons)	CO ₂ (MTCO ₂ e)
Program Cumulative ¹	--	--	6.83	--

¹192 vehicles at 0.007113 tons/year over a 5-year project life. Diesel particulate filters only reduce PM emissions.