

California Environmental Protection Agency



**ASSEMBLY BILL 118 AIR QUALITY IMPROVEMENT  
PROGRAM FUNDING PLAN FOR FISCAL YEAR 2013-14**

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## Executive Summary

The Air Quality Improvement Program (AQIP), administered by the Air Resources Board (ARB or Board), is a voluntary incentive program created under the *California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007* (Assembly Bill (AB) 118; Núñez, Chapter 750, Statutes of 2007). Through AQIP, ARB invests in clean vehicle and equipment projects that reduce criteria pollutant and air toxic emissions, often with concurrent climate change benefits. Funding for AQIP is provided through a dedicated revenue stream of fees that expire at the end of 2015, including smog abatement fees, vessel registration fees, and equipment identification plate.

AQIP provides funding for projects not covered by other ARB incentive programs. AQIP is ARB's only incentive program structured to enable investments in technology advancing projects that also provide immediate emission reductions. AQIP investments have supported the initial deployment of hybrid and zero-emission trucks, zero-emission and plug-in hybrid passenger cars, and other advanced technology demonstrations/testing critical to meeting California's long-term air quality and climate change goals. AQIP investments are an important first step in the fundamental transformation of the California vehicle fleet to one with widespread use of near-zero and zero-emission vehicles.

The Governor's proposed fiscal year 2013-14 State Budget authorizes, dependent upon revenues, up to \$35 million in funding for AQIP projects. ARB's regulatory guidelines governing implementation of AQIP require that the Board approve an annual Funding Plan describing how AQIP funds will be spent each fiscal year. The *Proposed Assembly Bill 118 Air Quality Improvement Program Funding Plan for Fiscal Year 2013-14* (Funding Plan) outlines: (1) ARB priorities for the funding cycle; (2) funding allocations by project category; (3) project category descriptions, including refinements based on public input and evaluation of previous years' project implementation; and (4) contingency provisions to address uncertainties in available funding levels.

### Summary of the Fiscal Year 2013-14 Funding Proposal

Because advanced light-duty and heavy-duty vehicle technologies are at a key point where public incentives can help them penetrate the California marketplace and become mainstream choices, for the fiscal year 2013-14 funding cycle, ARB staff proposes to focus most of AQIP funding on the two largest project categories from previous years – the Clean Vehicle Rebate Project and the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project. Staff also proposes to continue an allocation for advanced technology demonstrations, which are an important part of the program because successful demonstration projects can lead to future deployment project opportunities. Additionally, staff proposes to provide an allocation of funding to the Truck Loan Assistance Program, which aids smaller fleets in obtaining private financing for clean truck upgrades ahead of regulatory compliance schedules.

In recent years, Board approved plans contained two separate funding targets: an upper bound that reflected “best case” funding allocations based on AQIP’s total proposed budget authority, and one that reflected a more “realistic” estimate of available funding based on expected revenue and administrative costs. In some recent years, actual revenue has come in below even the “realistic” estimate. This year, to manage the uncertainty regarding available revenues that will ultimately be available for AQIP projects, ARB staff is proposing a more flexible approach that establishes minimum funding targets that balance the needs of all four projects, while holding in reserve a portion of anticipated revenue that can be directed to these projects throughout the year as they demonstrate a need for additional funding. Staff believes that this approach would allow ARB to be more responsive to changes in market demand, while committing to minimum funding levels for stakeholder planning purposes. Solicitations would be issued for the minimum funding levels shown in Table ES-1 with provisions to scale up funding as project demand grows.

**Table ES-1: Proposed Fiscal Year 2013-14 Project Category Funding Levels**

<b>Project Category</b>		<b>Proposed Minimum Allocation (Millions)</b>
Deployment Projects	Clean Vehicle Rebate Project	\$10
	Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project	\$5
	Truck Loan Assistance Program	\$2
Advanced Technology Demonstration/Testing		\$3
Additional Estimated Revenue/Reserve		\$5
Total		\$25

ARB staff proposes establishing a minimum funding allocation of \$10 million for the Clean Vehicle Rebate Project. In addition, the California Energy Commission (CEC) has approved \$5 million from the Alternative and Renewable Fuel and Vehicle Technology Program for fiscal year 2013-14, bringing the minimum allocation for the Clean Vehicle Rebate Project to \$15 million.

Despite this significant investment of AQIP funding, rebate demand is expected to outstrip available funding in the project as early as the fall of 2013. As part of the public process for developing this year’s Funding Plan, staff engaged stakeholders and the public on potential options for modifications to the Clean Vehicle Rebate Project that could potentially extend funding beyond this date. While there was general agreement that changes were needed to the project to ensure its long-term sustainability, stakeholders were concerned that near term changes (such as lower rebate amounts) could have unintended market consequences, and that any changes should be analyzed before being implemented. Unintended market consequences may be disruptive given that the zero-emission vehicle market is at a critical point as it matures

and transitions beyond early adopters. Although vehicle manufacturers are responding to market needs by offering lower price points, rebates can be a deciding factor in many consumers' economic ability to purchase or lease these cleaner vehicles. Based on these considerations and stakeholder feedback, at this time staff is not proposing any significant changes to the Clean Vehicle Rebate Project as part of this year's initial Funding Plan.

While significant program changes are not being initially proposed as part of this year's funding plan, staff is intending to immediately undertake a focused process with stakeholders to develop a sustainable long-term vision for the program. This effort will include the discussion of options to better align the Clean Vehicle Rebate Project with the near-term deployment needs of current technologies that are in the process of transitioning into mainstream consumer choices (such as battery electric vehicles), the identification of metrics for when these technologies no longer need public incentives in the primary and secondary marketplace, and on the long-term needs for newer technologies where public investment may be needed for years to come (such as hydrogen fuel cell vehicles). Public incentives remain critical for ensuring the long-term affordability and effective fleet turn-over by reducing production costs of advanced technology vehicles through spurring higher, more efficient production volumes; and accelerating consumer acceptance of new unfamiliar vehicle technologies. Staff is proposing to return to the Board by the end of 2013 to provide a status update on the progress made with stakeholders to develop a sustainable and more effective vision for the Clean Vehicle Rebate Project, and to present any appropriate recommendations for program changes.

Staff is proposing a \$5 million minimum allocation for the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project, which is expected to fund approximately 150 vehicles. With the relatively low availability of funds dedicated to the fiscal year 2013-14 Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project, staff recommends limiting each fleet to no more than 100 vouchers in fiscal year 2013-14, down from the current limit of 200 vouchers per fiscal year, to ensure no single fleet receives all of the project funds. Staff does not believe this will have an impact on fleets because no single fleet has ever requested more than 100 vouchers in a year. Staff is also proposing various technical changes to the project, including strengthening the three-year warranty requirements and offering higher voucher amounts for fast charge compatible vehicles. These changes aim to further the deployment of more advanced and robust hybrid and zero-emission technologies and ensure available funding to a diversity of fleets.

Advanced technology demonstrations remain a critical element of AQIP because they accelerate commercialization and deployment of cleaner technologies in broader applications and across multiple sectors. In support of this, a \$3 million minimum allocation is proposed for advanced technology demonstrations, of which \$1 million is intended to fund a Zero Emission Transit Demonstration Project that was not funded previously due to insufficient revenues in fiscal year 2012-13.

Additionally, AQIP provides one of a limited number of funding sources available to offer financing solutions to a wide range of small business truckers through the Truck Loan Assistance Program. The Truck Loan Assistance Program is the only incentive funding source available to truck owners for assistance with purchasing cleaner vehicles ahead of regulatory compliance schedules for existing in-use fleet rules. For fiscal year 2013-14, ARB staff proposes a \$2 million minimum allocation for truck loans, which could result in approximately 300 loans for clean vehicles and/or equipment.

ARB staff held two public workshops and five detailed public work group meetings in developing the proposed Funding Plan. ARB staff also maintains an open dialog with the CEC and other stakeholders in the development of the Funding Plan. As in previous years, ARB staff will hold additional public work group meetings through the year to update stakeholders on project implementation.

### Recommendation

Staff recommends the Board approve the proposed fiscal year 2013-14 Funding Plan.

## I. About AQIP

This chapter describes the guidelines, goals, and revenue sources for AQIP.

### A. Statutory and Regulatory Guidelines

**Enabling Statute:** AQIP is a voluntary incentive program 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) to fund clean vehicle and equipment projects and air quality research and training. AQIP focuses on reducing criteria pollutant and diesel particulate pollution with concurrent reductions in greenhouse gas emissions.

AQIP is 1 of 3 incentives programs created under AB 118. The other 2 programs include the Alternative and Renewable Fuel and Vehicle Technology Program, administered by the CEC, and the Enhanced Fleet Modernization Program, administered by the Bureau of Automotive Repair (BAR). The Alternative and Renewable Fuel and Vehicle Technology Program allocates roughly \$100 million a year toward alternative and renewable fuels; advanced technology cars, trucks, and equipment; vehicle manufacturing; workforce training; and fueling infrastructure. Additionally, BAR's Enhanced Fleet Modernization Program provides approximately \$30 million annually to accelerate the turnover of the existing light-duty fleet.

Health and Safety Code (HSC) section 44274 allows for a variety of eligible AQIP project categories that can be divided into 3 general project types:

- ***Commercial Deployment:*** These projects include the next generation of advanced technology vehicles and equipment just reaching commercialization. Consumer incentives are needed because these products generally cost more than their traditionally powered (e.g., gas or diesel) counterparts, which can be a significant barrier to their purchase. Incentives will accelerate consumer acceptance and have the immediate benefit of reducing criteria pollutants, air toxics, and greenhouse gas emissions. Incentives help drive down vehicle costs through economies of scale as production volumes increase, and accelerating technology transfer to other sectors. Most AQIP funding awarded to date has been directed to commercial deployment projects.
- ***Advanced Technology Demonstration:*** ARB's goal in funding demonstration projects is to help demonstrate the viability of new, cleaner technologies. AQIP funds are used to accelerate the introduction of advanced technology vehicles, equipment or emission controls that are not yet commercialized. The demonstration projects funded now could become deployment projects several years from now if the technology proves successful. ARB has included an allocation for advanced technology demonstration projects in each AQIP Funding Plan.

- Research and Workforce Training: Statute allows AQIP to fund research on the air quality impacts of alternative fuels, research to increase biofuel production, and workforce training related to advanced technologies. These project types provide the information and training necessary to develop the advanced fuels and vehicles most effective in reducing air pollution. To date, ARB has not directed AQIP funding to research and workforce training categories because there are already large investments being made by other agencies. For example, CEC has directed a total of \$24.6 million to advanced technology workforce training projects through the Alternative and Renewable Fuel and Vehicle Technology Program since the 2008-09 fiscal year, and has allocated an additional \$2 million investment in the upcoming funding cycle. CEC has also allocated a total of \$13.8 million for Emerging Opportunities that may include research on advanced fuels and innovative technologies. Accordingly, ARB staff again proposes deferring AQIP funding for these project categories.

**Regulatory Guidelines:** Prior to awarding funding for AQIP projects, ARB adopted regulations that establish the administrative procedures for implementing AQIP in order to ensure that the program is run efficiently, with transparency and public input.

As required in HSC section 44274(a), the Board adopted regulatory guidelines in 2009 which define the overall administrative requirements and policies and procedures for program implementation based on the framework established in statute. 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 ARB in the annual State Budget: describing the projects ARB intends to fund, establishing funding targets for each project, and providing the justification for these decisions. AQIP guidelines also establish the rules and requirements for soliciting projects and awarding funds.

The Board also adopted AB 118 Air Quality Guidelines as required in HSC section 44271(b). This regulation, also known as the "anti-backsliding guidelines," ensures that ARB and CEC AB 118 programs complement California's existing air quality programs by maintaining or improving upon emission benefits in the State Implementation Plan (SIP) and California's clean fuels regulations.

## **B. Purpose and Goals of AQIP**

In order to meet California's post-2020 federally-mandated SIP emission reduction targets and climate change goals, ARB must pursue an aggressive suite of control measures, and utilize incentives and other approaches as often as possible. Specific regulations adopted or under development to help achieve clean air requirements include ARB's Truck and Bus regulation, which requires engine upgrades as early as 2015, and the In-Use Off-Road Mobile Equipment Regulation.

Additionally, the Federal Clean Air Act includes a provision that allows SIPs for areas with the worst air quality (the extreme ozone nonattainment areas – the South Coast Air

Basin and the San Joaquin Valley) to rely on advanced, yet to be developed, technologies. Both the South Coast and the San Joaquin Valley air basins have ozone attainment dates in 2023 and new National Ambient Air Quality Standards established additional milestones to be met in 2032. Attainment of these standards will likely require significant use of zero- and near zero emission technologies, which are the same technologies needed to meet greenhouse gas emission reduction goals.

A fundamental transformation of the vehicle fleet will need to occur in order to meet the goal of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050 (Executive Order S-3-05). Critical to this is that zero-emission and hybrid vehicles will need to make up an increasingly significant fraction of California's vehicle fleet. In January 2012, ARB adopted the Advanced Clean Cars regulations which will require 1 out of every 7 new cars purchased in 2025 to be zero-emission or plug-in hybrid. This was followed by Executive Order B-16-2012 that sets a 2050 target for greenhouse gas emission reductions from the transportation sector equaling 80 percent less than 1990 levels, and directs state agencies to establish benchmarks for expanding the zero emission vehicle market share with over 1.5 million zero-emission vehicles on California roads, easy access to zero-emission vehicle infrastructure, and petroleum displacement of at least 1.5 billion gallons by 2025.

AQIP investments are an important early step in supporting this transformation. AQIP expands ARB's portfolio of air quality incentives, providing the opportunity to fund projects not covered by ARB's other incentive programs – the Carl Moyer Program<sup>1</sup>, Goods Movement Emission Reduction Program<sup>2</sup>, and Lower-Emission School Bus Program<sup>3</sup>. These other programs augment regulatory programs by paying for the incremental cost of cleaner vehicles, engines, and equipment; reducing diesel emissions ahead of compliance schedules or by more than is required; and focusing on near-term emission reductions from fully commercialized emission control technologies. Statute provides broader flexibility for implementing AQIP, and with it, the ability to focus on longer-term air quality goals. AQIP is the only ARB program structured to allow for investments in technology advancing projects.

AQIP funds are supporting the demonstration and deployment of hybrid-electric vehicles, zero-emission vehicles, and other advanced technologies which provide immediate emission reductions and are also critical to meeting air quality and climate change goals. With the time it takes for significant fleet turnover, California needs to start placing these zero- and near-zero emission vehicles on our roadways today to achieve large-scale emission reductions in future decades.

### **C. Program Benefits**

AQIP provides a modest down payment on the technologies needed to meet long-term air quality and climate change goals, with a focus on stimulating the widespread use of

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<sup>1</sup> See [www.arb.ca.gov/msprog/moyer/moyer.htm](http://www.arb.ca.gov/msprog/moyer/moyer.htm)

<sup>2</sup> See [www.arb.ca.gov/bonds/gmbond/gmbond.htm](http://www.arb.ca.gov/bonds/gmbond/gmbond.htm)

<sup>3</sup> See [www.arb.ca.gov/msprog/schoolbus/schoolbus.htm](http://www.arb.ca.gov/msprog/schoolbus/schoolbus.htm)

these technologies. AQIP projects provide both immediate emission reductions from the vehicles directly funded and, more importantly, set the stage for greater, indirect reductions in the future by accelerating large-scale market penetration. These longer-term program benefits accrue primarily from overcoming deployment barriers, reducing production costs, promoting consumer acceptance, and accelerating technology transfer to other sectors. Additionally, AQIP investments in advanced technology vehicles have been supported by CEC investments in infrastructure to ensure that necessary fueling networks are developed, thus reinforcing California's ongoing commitment to clean technologies.

#### **D. Revenue Sources**

Funding for AQIP comes primarily from the Smog Abatement Fee which is assessed annually for a vehicle's first 6 registration years in lieu of providing a biennial smog certification. Of the \$20 collected for each vehicle at the time of annual registration, \$4 is allocated to ARB for AQIP, with the remaining directed towards the Carl Moyer Program, CEC's AB 118 program, and BAR's smog check vehicle repair assistance program. In addition, a small portion of AQIP funding comes from 2 additional sources: a \$10 or \$20 initial registration fee for new vessels, dependent upon the year in which the new registration is filed, and \$2.50 for annual special equipment identification plate fees.

Each year funding is allocated to ARB in the State Budget for AQIP. The Governor's Proposed fiscal year 2013-14 State Budget allocates up to about \$35 million for AQIP. However, over the past several years, actual revenues in the Air Quality Improvement Fund have been lower than the State budget allocation by about 25-30 percent.

Additionally, the fees identified above generate approximately \$2 million each month to be expended on AQIP projects. However, demand for fiscal year 2013-14 Clean Vehicle Rebate Project rebates and Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project vouchers alone are expected to exceed \$5 million per month. AQIP revenues available in the early part of fiscal year 2013-14 may not be sufficient to fund AQIP projects in real time. Because of this, consumers may experience delays in receiving AQIP funding. Staff continues to explore options to minimize potential delays in rebate and voucher redemptions due to AQIP revenue shortfalls early in the fiscal year.

## II. Guiding Principles for Identifying AQIP Projects

This chapter describes the implementation priorities and guiding principles that ARB staff used to identify the projects proposed for funding in fiscal year 2013-14.

### A. Implementation Priorities

As discussed in Chapter I, AB 118 allows for a range of eligible AQIP project categories, including commercial deployment, demonstration, research, and workforce training projects. Consistent with previous fiscal years, staff proposes to continue to focus program funds on accelerating commercialization of advanced technologies needed to meet California's longer-term, post 2020 SIP goals. This area is not particularly well served in the Carl Moyer Program or Goods Movement Emission Reduction Program, which focus on achieving near-term emission reductions from already commercialized technologies.

### B. Deployment Projects

Staff is proposing to use the following guiding principles for selecting eligible vehicle and equipment deployment projects for fiscal year 2013-14:

- Attain Ambient Air Quality Standards: Projects should help California meet federal ambient air quality standards and spur deployment of advanced technologies to meet the SIP advanced technology commitments. Early deployment is critical to ensure significant technology penetration by the 2023 extreme ozone nonattainment area attainment date. Projects should also help achieve the state air quality standards, reduce toxic air contaminant emissions, and complement California's efforts to meet its climate change goals.
- Ready for Deployment: Projects should be ready for immediate on-the-ground deployment. Technologies that could help meet SIP advanced technology commitments but which are not ready for deployment would be considered for funding as demonstration projects.
- Modify Consumer Choice: Incentives should be focused on inducing vehicle and equipment purchases that would not otherwise have occurred, or advance market penetration to enable long-term benefits.
- Consider Funding Need: Project types that do not have access to other ARB incentive program funds, such as Carl Moyer Program and Goods Movement Emission Reduction Program funds, would be prioritized. Projects should also be coordinated with AB 118 projects funded by the CEC.

Staff proposes to continue to fund the two advanced technology deployment projects that it has funded in recent years: the Clean Vehicle Rebate Project and the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project. These projects were intended to be funded for multiple years in order to help promote large scale penetration of advanced light-, medium-, and heavy-duty on-road technologies.

Additionally, staff is proposing to provide funding for the Truck Loan Assistance Program, which assists small business truck owners in obtaining affordable financing for necessary truck upgrades ahead of regulatory compliance schedules. The Truck Loan Assistance Program acts as a deployment project in that it supports technologies necessary for meeting federal air quality standards; helps modify consumer choice by offering options to upgrade trucks with technology that might not otherwise have been purchased; and fills a funding need by providing financing opportunities to small business truck owners that are experiencing challenges obtaining financing in California's volatile economic climate and tight credit market.

### **C. Advanced Technology Demonstration Projects**

ARB's goal in funding demonstration projects under AQIP is to help accelerate the next generation of advanced technology vehicles, equipment, or emission controls which have not yet reached the commercialization stage of development. AQIP funding is used to demonstrate the viability of a new technology. Consistent with previous years, staff proposes to continue to focus funding for demonstration projects on technologies with the potential to provide cost-effective emission reductions that can be quickly introduced to the California marketplace. While the focus is accelerating technologies that provide criteria pollutant and toxic emission reductions, staff will also identify projects with ancillary greenhouse gas emission reductions where possible. Staff proposes to use the following guiding principles for selecting demonstration projects for fiscal year 2013-14:

- The project must be able to demonstrate the potential to provide cost-effective emission reductions. Projects are scored using Carl Moyer Program cost-effectiveness methodologies for estimated emissions during both the actual demonstration project and when the technology is deployed into the marketplace.
- The project must be near commercialization with potential to be economically viable without incentives.
- The project must be completed expeditiously, with potential deployment into the market place within 3 years following the completion of the demonstration. Potential deployment is evaluated based on several factors, including, but not limited to, the defined target markets; the identified market barriers and ability to overcome them; the identified market niche, its size, and potential growth; the financial strength of the technology demonstrator; and the project team's capability to bring the project to market.

- The project must have the potential for use in the California marketplace.

For fiscal year 2013-14, staff proposes to focus demonstration project funding primarily in off-road categories due to the need for long term emission reductions from off-road sources. Projects are proposed in the locomotive, marine, agricultural, and other off-road sectors. By funding off-road demonstration projects now, ARB staff envisions that there will be a greater opportunity to fund advanced technology off-road deployment projects in the future years.

In addition, staff proposed to fund a Zero Emission Transit Demonstration Project that was not funded due to insufficient revenues in fiscal year 2012-13. The goal of this project is to advance the pace of fuel-cell development, battery bus technology, and/or expand zero emission vehicles into the paratransit and shuttle bus market.

ARB staff is coordinating demonstration project funding with CEC's AB 118 program. Focusing fiscal year 2013-14 AQIP funds on off-road demonstration projects allows CEC to continue their focus on funding on-road demonstration projects. Staff will continue to work closely with CEC to coordinate AB118 efforts.

#### **D. Other Project Categories**

Not all eligible project categories identified in statute are proposed for funding in fiscal year 2013-14. As noted in Chapter I, staff is not proposing funding in the following areas as they already receive substantial investment from other entities:

- Research on the air quality impacts of alternative fuels and on biofuels production.
- Workforce training.
- Projects to identify and reduce emissions from high-emitting light-duty vehicles.

### **III. Proposed Funding Plan for Fiscal Year 2013-14**

For the fiscal year 2013-14 funding cycle, ARB staff proposes to focus most of AQIP funding on the two largest project categories from previous years – the Clean Vehicle Rebate Project and the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project. There has been strong demand for funding in these areas, and advanced light-duty and heavy-duty vehicle technologies are at a key point where public incentives can help them penetrate the California marketplace and become mainstream choices. Staff also proposes to continue an allocation for advanced technology demonstrations, which are an important part of the program because successful demonstration projects can potentially lead to future deployment project opportunities. Additionally, staff proposes to provide an allocation of funding to the Truck Loan Assistance Program, which aids smaller fleets in obtaining private financing for clean truck upgrades ahead of regulatory compliance schedules.

ARB staff held two public workshops and five detailed public work group meetings in developing the proposed Funding Plan. ARB staff also maintains an open dialog with stakeholders in the development of the Funding Plan and closely coordinates with CEC to ensure that the Funding Plan and the Alternative and Renewable Fuel and Vehicle Technology Program Investment Plan compliment one another. As in previous years, ARB staff will hold additional public work group meetings through the year to update stakeholders on project implementation.

#### **A. Summary of Funding Proposal**

In recent years, Board approved plans contained 2 separate funding targets: an upper bound that reflected “best case” funding allocations based on AQIP’s total proposed budget authority, and one that reflected a more “realistic” estimate available funding based on expected revenue and administrative costs. In some recent years, actual revenue has come in below even the “realistic” estimate. This year, to manage the uncertainty regarding available revenues that will ultimately be available for AQIP projects, ARB staff is proposing a more flexible approach that establishes minimum funding targets that balance the needs of all 4 projects, while holding in reserve a portion of anticipated revenue that can be directed to these projects throughout the year as they demonstrate a need for additional funding. Staff believes this approach allows ARB to be more responsive to changes in market demand, while committing to minimum funding levels for stakeholder planning purposes. Solicitations would be issued for the minimum funding levels shown in Table III-1 with provisions to scale up funding as project demand grows.

**Table III-1: Proposed Fiscal Year 2013-14 Project Category Funding Levels**

Project Category		Proposed Minimum Allocation (Millions)
Deployment Projects	Clean Vehicle Rebate Project	\$10
	Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project	\$5
	Truck Loan Assistance Program	\$2
Advanced Technology Demonstration/Testing		\$3
Additional Estimated Revenue/Reserve		\$5
Total		\$25

ARB staff proposes establishing a minimum funding allocation of \$10 million for the Clean Vehicle Rebate Project. In addition, the CEC has approved \$5 million from the Alternative and Renewable Fuel and Vehicle Technology Program for fiscal year 2013-14, bringing the minimum allocation for the Clean Vehicle Rebate Project to \$15 million.

Despite this significant investment of AQIP funding, rebate demand is expected to outstrip available funding in the project as early as the fall of 2013. As part of the public process for developing this year’s Funding Plan, staff engaged stakeholders and the public on potential options for modifications to the Clean Vehicle Rebate Project that could potentially extend funding beyond this date. While there was general agreement that changes were needed to the project to ensure its long-term sustainability, stakeholders were concerned that near term changes (such as lower rebate amounts) could have unintended market consequences, and that any changes should be analyzed before being implemented. Unintended market consequences may be disruptive given that the zero-emission vehicle market is at a critical point as it matures and transitions beyond early adopters. Although vehicle manufacturers are responding to market needs by offering lower price points, rebates can be a deciding factor in many consumers’ economic ability to purchase or lease these cleaner vehicles. Based on these considerations and stakeholder feedback, at this time staff is not proposing any significant changes to the Clean Vehicle Rebate Project as part of this year’s initial Funding Plan.

While significant program changes are not being initially proposed as part of this year’s funding plan, staff is intending to immediately undertake a focused process with stakeholders to develop a sustainable long-term vision for the program. This effort will include the discussion of options to better align the Clean Vehicle Rebate Project with the near-term deployment needs of current technologies that are in the process of transitioning into mainstream consumer choices (such as battery electric vehicles), the identification of metrics for when these technologies no longer need public incentives in the primary and secondary marketplace, and on the long-term needs for newer

technologies where public investment may be needed for years to come (such as hydrogen fuel cell vehicles). Public incentives remain critical for ensuring the long-term affordability and effective fleet turn-over by reducing production costs of advanced technology vehicles through spurring higher, more efficient production volumes; and accelerating consumer acceptance of new unfamiliar vehicle technologies. Staff is proposing to return to the Board by the end of 2013 to provide a status update on the progress made with stakeholders to develop a sustainable and more effective vision for the Clean Vehicle Rebate Project, and to present any appropriate recommendations for program changes.

Staff is proposing a \$5 million minimum allocation for the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project, which is expected to fund approximately 150 vehicles. With the relatively low availability of funds dedicated to the fiscal year 2013-14 Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project, staff recommends limiting each fleet to no more than 100 vouchers in fiscal year 2013-14, down from the current limit of 200 vouchers per fiscal year, to ensure no single fleet receives all of the project funds. Staff does not believe this will have an impact on fleets because no single fleet has ever requested more than 100 vouchers in a year. Staff is also proposing various technical changes to the project, including strengthening the three-year warranty requirements and offering higher voucher amounts for fast charge compatible vehicles. These changes aim to further the deployment of more advanced and robust hybrid and zero-emission technologies and ensure available funding to a diversity of fleets.

Advanced technology demonstrations remain a critical element of AQIP because they accelerate commercialization and deployment of cleaner technologies in broader applications and across multiple sectors. In support of this, a \$3 million minimum allocation is proposed for advanced technology demonstrations, of which \$1 million is intended to fund a Zero Emission Transit Demonstration Project that was not funded previously due to insufficient revenues in fiscal year 2012-13.

ARB staff envisioned that these project categories, including the Clean Vehicle Rebate Project, would be funded for multiple years in order to maintain continuity and provide a larger overall impact on the selected technologies. Continuing investments in the next generation of vehicles, equipment, and emission controls is critical to meet California's long-term air quality goals and will help start the transformation of the California fleet to one with widespread use of advanced technology near-zero and zero-emission vehicles.

Additionally, AQIP provides one of a limited number of funding sources available to offer financing solutions to a wide range of small business truckers through the Truck Loan Assistance Program. The Truck Loan Assistance Program is the only incentive funding source available to truck owners for assistance with purchasing cleaner vehicles ahead of regulatory compliance schedules for existing in-use fleet rules. For fiscal year 2013-14, ARB staff proposes a \$2 million minimum allocation for truck loans, which could result in approximately 300 loans for clean vehicles and/or equipment.

ARB staff forecasts that AQIP fees could generate up to \$25 million in project revenue, after accounting for various state administrative costs. Should project revenue materialize in this amount, then roughly an additional \$5 million would be available for allocation to the above projects. Staff believes this approach allows ARB to be more responsive to changes in market demand, while committing to minimum funding levels for stakeholder planning purposes. Section D of this Chapter identifies staff's recommended contingency plans, including how to allocate revenue received above the minimum allocations identified.

**B. Description of Project Categories Proposed for Fiscal Year 2013-14 Funding**

This section describes each project category proposed for funding in fiscal year 2013-14.

## Clean Vehicle Rebate Project



**Minimum Funding Target:** \$10 million

**Synopsis:** Consumer rebates for zero-emission and plug-in hybrid light-duty vehicles.

### **Project Benefits:**

- Support transportation sector emission reductions needed in the post-2020 timeframe.
- Spur commercialization of the cleanest vehicles available.

**Overview:** The Clean Vehicle Rebate Project provides vehicle rebates on a first-come, first-served basis to California residents, businesses, non-profit organizations and government entities that purchase or lease a battery, fuel cell, or a plug-in hybrid electric vehicle. This program helps to get the cleanest vehicles on the road in California by providing consumer rebates to partially offset the higher initial cost of these advanced technologies. The early investment in clean vehicle technologies will prime the market for the large number of vehicles needed over the next decade and beyond to meet the State's air quality standards and climate change goals, and Governor Brown's Executive Order B-16-2012, which establishes zero-emission vehicle benchmarks by 2020. ARB's investments through the Clean Vehicle Rebate Project — coupled with corresponding investments in vehicle charging and fueling infrastructure by the CEC, and regional and federal governments — are enticing manufacturers to focus early advanced vehicle deployments in California.

The project has adapted over the last four funding cycles to incorporate lessons learned through project implementation and in response to the evolving clean vehicle market. Adaptations implemented in previous fiscal years include:

- Reducing rebate amounts in fiscal year 2011-12 in order to extend vehicle funding, while still providing meaningful incentives
- Capping the number of rebates per rebate recipient
- Reducing ownership to a one-year minimum for rental and car share fleets
- Establishing waiting list contingencies to bridge short-term funding gaps

Current rebates range from up to \$2,500 for full functioning zero-emission vehicles (ZEV) and \$1,500 for plug-in hybrid vehicles (PHEV), and \$900 for zero-emission motorcycles (ZEM) and neighborhood electric vehicles (NEV).

**Status Update:** The Clean Vehicle Rebate Project launched in March 2010, and has since issued over 22,000 clean vehicle rebates, totaling \$55.8 million in funding. In the first 4 AQIP funding cycles, ARB allocated a total of \$49.3 million for the project and CEC provided an additional \$6.5 million through their AB 118 funds. For fiscal year 2012-13, the total funding was \$28.5 million, which includes \$18 million originally allocated in the Funding Plan, \$6 million transferred from the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project, and \$4.5 million from the CEC. As of March 12, 2013, the project had depleted all available funding, and applications submitted were placed on a waiting list. To help bridge the gap between this year's and next year's funding, an additional \$8 million from CEC for fiscal year 2012-13 was approved by the Commission on June 12, 2013, bringing the total CEC investment to \$12.5 million, and the total Clean Vehicle Rebate Project allocation to \$63.8 million.

While project funding became available in March of 2010, the number of rebate applications per month was consistently low until the launch of the Nissan LEAF in early 2011. As a result, fiscal year 2009-10 funds were carried over into fiscal year 2010-11. From April to June 2011, rebate applications doubled each month resulting in approximately 82 percent of total fiscal year 2009-2011 rebate funding allocated during this four month period. Rebate funding for fiscal year 2011-12 was exhausted in mid-June 2011, after which a waiting list began. Table III-2 details the historical investment made toward the Clean Vehicle Rebate Project to date.

**Table III-2: Clean Vehicle Rebate Project Investment History (as of May 12, 2013)**

Fiscal Year	Total CVRP Funding (Millions)			Rebates Issued (Thousands)
	ARB	CEC	Total	
2009-10	\$4.1	\$0.0	<b>\$4.1</b>	1,980
2010-11	\$5.0	\$2.0	<b>\$7.0</b>	
2011-12	\$16.2	\$0.0	<b>\$16.2</b>	8,060
2012-13	\$24.0	\$4.5 <sup>1</sup>	<b>\$28.5</b>	14,300
Totals:	\$49.3	\$6.5	<b>\$55.8</b>	24,340

<sup>1</sup> Does not include \$8 million, approved by CEC on June 12, 2013.

As articulated by stakeholders to the Board over the years, consumers, automakers, and dealerships attribute the program's success largely to its simplicity and fast payment (as compared to the \$7,500 federal tax credit). The vast majority (over 90 percent) of rebate recipients are individual consumers. Of the rebates issued, about 51 percent have gone toward zero-emission vehicles and 47 percent toward plug-in hybrid electric vehicles (with the remainder going towards zero emission motorcycles, neighborhood electric vehicles, and commercial zero-emission vehicles from the first year of the program.). However, the percent of funds expended, for electric vehicles and plug-in hybrid electric vehicles is 66 percent and 31 percent, respectively, due to the higher rebate amount for zero-emission vehicles. Currently, 21 manufacturers have

rebate-eligible vehicles, some with multiple models. The list of rebate-eligible vehicles continues to expand, and currently includes 29 different makes and models covering a wide range of different price points. For a complete list of eligible vehicles, rebate amounts and information about the Clean Vehicle Rebate Project, visit [www.energycenter.org/CVRP](http://www.energycenter.org/CVRP).

### Status of Zero-Emission Vehicle Deployment in the San Joaquin Valley

Because rebates have historically been concentrated in the San Francisco, Los Angeles, and San Diego regions, the Board directed staff to increase outreach efforts in the San Joaquin Valley in an effort to increase consumer participation. In March 2012, the San Joaquin Valley Air Pollution Control District (SJVAPCD) launched the *Drive Clean Rebate Program*, to provide further incentive to consumers within the region. Since the launch of the SJVAPCD's program, the Clean Vehicle Rebate Project has experienced an uptick in rebate activity for the San Joaquin Valley. As of April 8, 2013, 329 rebates had been issued in the region (equivalent to 2 percent of total rebates in the Clean Vehicle Rebate Project) and 250 of those rebates occurred after the launch of the Drive Clean Rebate Program. Of the total rebates issued in the SJVAPCD, 194 were for zero-emission vehicles, 127 for plug-in hybrid electric vehicles, 5 were for zero-emission motorcycles and 3 were for neighborhood electric vehicles. The staff of ARB and SJVAPCD continue to coordinate program outreach to consumers and dealerships to increase public awareness of this successful program.

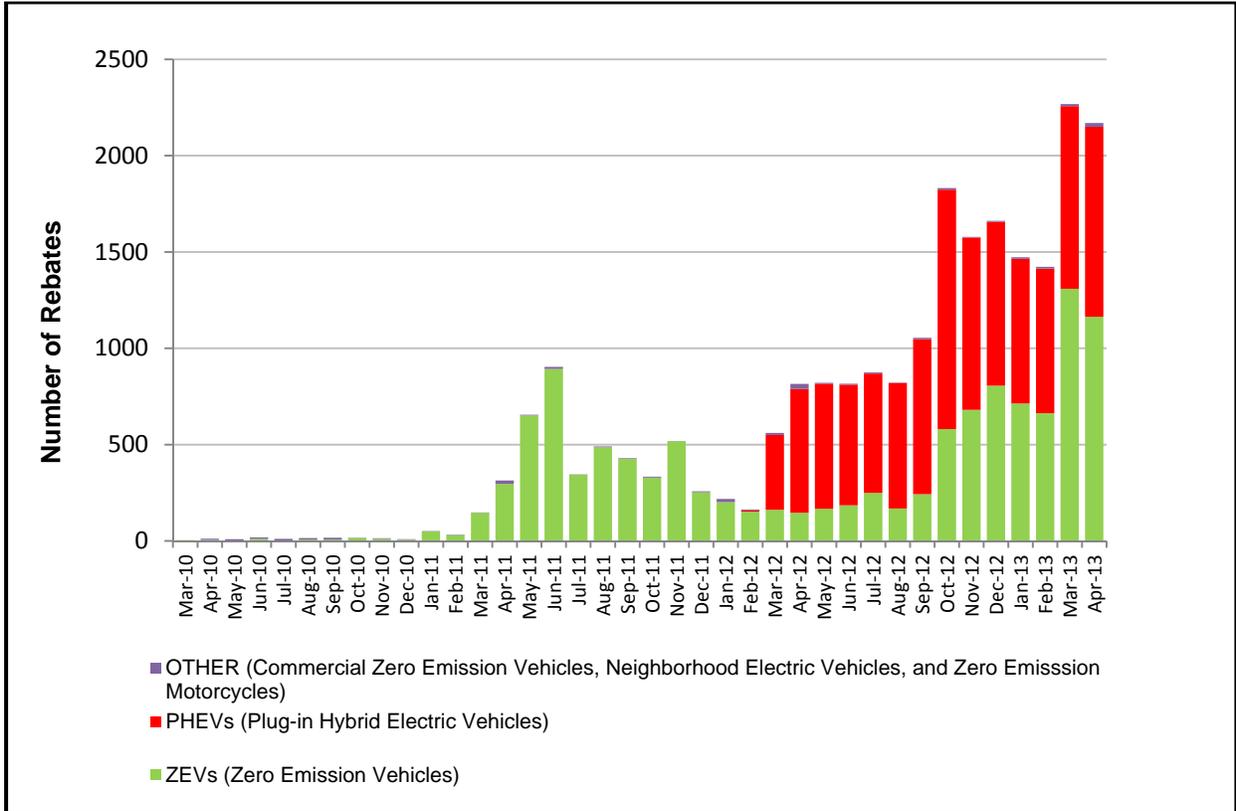
The SJVAPCD also administers their Public Benefit Grant Program which provides up to \$20,000 per public fleet vehicle, and up to \$100,000 per fleet. They are currently the only district to offer incentives of this kind. These incentives may also be combined with Clean Vehicle Rebate Project incentives. ARB and SJVAPCD staff will continue to promote both rebate programs through targeted outreach to public fleets within the Valley.

### Rebate Project Implementation

The non-profit California Center for Sustainable Energy, selected via competitive solicitation, continues to administer the Clean Vehicle Rebate Project statewide. Their responsibilities include project website development and maintenance, rebate processing and check issuance, consumer outreach and education, data reporting, and other duties associated with day-to-day implementation.

Rebates through April 30, 2013: Figure III-1 illustrates the trends in rebate activity under the Clean Vehicle Rebate Project, and Table III-3 provides a cumulative rebate summary by vehicle type and model since the project's inception. The rebate project was launched in March 2010, and rebate activity first spiked with the release of the Nissan LEAF in early 2011. Another rebate spike occurred in March 2012 after the commercial release of plug-in hybrid electric vehicles. Demand increased throughout 2012, and continues to grow with over 2,000 rebates issued in March and April of 2013.

**Figure III-1: Clean Vehicle Rebates Issued by Month**



**Table III-3: Clean Vehicle Rebates Issued by Vehicle Type and Model**

<b>Vehicle Type By Model</b>	<b>Number of Rebates</b>	<b>Total Dollars Allocated</b>
<b>Light-Duty Zero-Emission Vehicle</b>	<b>11,552</b>	<b>\$32,905,488</b>
BMW 1 Series Active E	70	\$52,500
CODA	48	\$120,000
Ford Focus Electric	426	\$1,065,000
Honda FCX-Clarity	10	\$45,000
Honda 2013 Fit EV	72	\$180,000
Mercedes-Benz F-Cell	3	\$7,500
Mitsubishi i-MiEV	116	\$230,061
Nissan LEAF	7,924	\$23,920,390
smart ED	338	\$663,000
Think City 2011	49	\$116,037
Tesla Roadster	156	\$660,000
Tesla Model S - 60 kWh battery	411	\$1,027,500
Tesla Model S - 85 kWh battery	1,713	\$4,282,500
Toyota RAV4 EV	215	\$534,000
Wheego LiFe	1	\$2,000
<b>Plug-In Hybrid Electric Vehicle</b>	<b>10,367</b>	<b>\$15,529,500</b>
Chevy Volt Low Emission package	5,394	\$8,087,850
Ford CMAX Energi	310	\$465,000
Ford Fusion Energi	75	\$112,500
Honda Accord Plug-In	15	\$22,500
Toyota Prius Plug-In Hybrid	4,573	\$6,841,650
<b>Zero Emission Motorcycle</b>	<b>148</b>	<b>\$159,400</b>
Brammo	19	\$21,300
Vectrix	5	\$6,900
Zero	124	\$131,200
<b>Neighborhood Electric Vehicles</b>	<b>93</b>	<b>\$102,550</b>
GEM	57	\$56,950
Miles EV	35	\$44,100
Vantage	1	\$1,500
<b>Commercial Zero Emission Vehicles</b>	<b>49</b>	<b>\$980,000</b>
Navistar eStar 300	10	\$200,000
Smith Newton1-9	39	\$780,000
<b>TOTAL</b>	<b>22,209</b>	<b>\$49,676,938</b>

**Funding Needs:** Under its current structure, the anticipated funding need for the Clean Vehicle Rebate Project in fiscal year 2013-14 is between \$40 and \$60 million. This projection is based on a continuation of the last 6 months of rebate disbursement volumes, as well as potentially higher funding needs driven by increases in consumer

demand associated with new model releases, higher vehicle production volumes, and an increase in new car sales. Table III-4 presents data on the number of rebates issued by month between November 2012 through April 20, 2013 for zero-emission vehicles and plug-in hybrid electric vehicles. Zero-emission motorcycles and neighborhood electric vehicles combined comprise only about one percent of the rebate total and are not included in the table.

**Table III-4: Recent Rebates Issued, by Month**

	Month	Vehicles Rebated		Funds Expended
		Zero-Emission Vehicles	Plug-In Hybrid Electric Vehicles	
2012	November	681	894	\$3,043,500
	December	806	851	\$3,291,500
2013	January	730	776	\$2,989,000
	February	652	759	\$2,768,500
	March	1366	986	\$4,894,000
	April	1164	948	\$4,332,000
<b>Average Monthly Expenditure</b>				<b>\$3,553,083</b>

Under the project’s current rebate structure, AQIP funding alone will not be sufficient to fully meet the anticipated consumer demand of \$40-\$60 million for fiscal year 2013-14. Without any changes to the current project, a base funding amount of \$10 million could be expected to last just a few months. The anticipated allocation of \$5 million to the Clean Vehicle Rebate Project from the CEC in its proposed fiscal year 2013-14 Investment Plan is expected to extend rebate availability into the fall of 2013, but the gap between demand and available funds is still substantial.

In addition, demand for clean vehicles is expected to increase significantly over the next several years as more models come to market, the number of mid-range priced vehicles expands, and consumer acceptance of advanced technologies increases. Although vehicle manufacturers are responding to market needs by offering lower price points, rebates remain a deciding factor in many consumers’ economic ability to purchase or lease these cleaner vehicles. Also, a pre-owned market for clean technology vehicles is starting to emerge, which may help to spur electric vehicle penetration in lower income populations and disadvantaged communities that are less likely to make new vehicle purchases. Because achieving California’s long term 2050 greenhouse gas reduction goals in the light-duty vehicle sector means nearly all new vehicle sales by the 2040 model year must be ZEVs and PHEVs, the combination of both monetary and non-monetary consumer incentives remains critical in the near term to achieve these goals.

**Staff Proposal:** As part of the public process for developing this year’s Funding Plan, staff engaged the public on potential options for modification to the Clean Vehicle Rebate Project in order to better ensure the sustainability of the project over the next several years. Staff participated in discussions with vehicle manufacturers, consumer advocates and other industry stakeholders, and held a Clean Vehicle Rebate Project Work Group teleconference on April 24, 2013. Stakeholders acknowledged that the

current structure of the project is unsustainable, but were concerned that near term changes (such as lower rebate amounts) could have unintended market consequences, and that any changes should be analyzed before being implemented. As a result of these discussions, staff is not proposing any significant modifications to the project at this time, but staff continues to actively engage stakeholders and the public to determine the best structure for the project long-term. A discussion of the next steps in this process can be found at the end of this section.

Staff is proposing a \$10 million minimum funding allocation for the Clean Vehicle Rebate Project, combined with an additional \$5 million approved by the Energy Commission in May 2013 in its fiscal year 2013-14 Investment Plan. Staff is also proposing a few minor administrative changes to the Clean Vehicle Rebate Project that include standardizing zero-emission vehicle rebates, maintaining a set-aside for public fleets, and adjusting maximum rebates per consumer type. Because available funding is expected to be exhausted no later than midway into fiscal year 2013-14, no waiting list provision is proposed.

Standardized ZEV Rebates

Staff proposes standardizing rebate amounts for all ZEVs with a minimum 50-miles range or greater. Standardizing the ZEV rebate amount simplifies the project for consumers and eliminates the sales advantage a higher rebate amount gives to ZEVs rated Type II and above (vehicles with a range of 100 miles or more). More specifically, consumers often confuse the vehicles miles per gallon equivalent (MPGe) rating provided by the Environmental Protection Agency (EPA) with the electric driving range, and often don't understand why a particular vehicle receives less in rebates than another. Further, ARB and EPA use different tests for determining electric driving range, which also adds to confusion at the consumer level. Currently, very few vehicle models below Type II are available in California's market and less than 5 percent of total ZEV rebates to date have gone to ZEVs below Type II.

Table III-5 details how this technical change would apply to ZEV rebates.

**Table III-5: Proposed FY 2013-14 Standardized ZEV Rebate Amounts**

Vehicle Type	Current Rebate	Standardized Rebate	Standardized Rebate Under Rental & Car Share Reduced Ownership Option
ZEV			
Type II, III, IV, or V (range ≥100 miles)	\$2,500	\$2500	\$750
Type I.5 (range ≥75, <100 miles)	\$2,000		
Type I (range ≥50, <75 miles)	\$1,500		
BEVx <sup>2</sup>	\$1,500		

<sup>1</sup> BEVx is a new regulatory category of battery electric vehicle with a small range extending auxiliary power unit.

### No Waiting List Provision

Staff does not recommend the continuation of a waiting list provision in this fiscal year's project. While stakeholders support a waiting list because it provides funding certainty during gaps between funding cycles, it is only appropriate when acting as a modest investment to bridge a short-term funding gap. Given the magnitude and timing of the funding shortfall this fiscal year, a waiting list would not be sustainable.

### Public Fleet Set-Aside

To date, public fleet participation in the Clean Vehicle Rebate Project has been low. Impediments to clean vehicle penetration in public fleets include:

- Agency fiscal constraints
- Higher capital costs compared to traditional gas vehicle counterparts
- Charging/refueling infrastructure requirements
- Inability to access the \$7,500 federal tax credit for clean vehicle purchases

To support public fleet participation in the Clean Vehicle Rebate Project, staff proposes a \$200,000 set-aside specifically for public agencies (federal, state, county, regional and municipal). While comprising only 1 percent of the total project funding, this set-aside would be sufficient to fund an amount of vehicles equivalent to the total number of public fleet vehicles rebated under the project to date. Staff would monitor the draw down throughout the fiscal year and remaining funds would be reallocated back into the rebate account if unused.

### Adjust Maximum Number of Rebates per Consumer Type

In response to limited rebate availability, staff proposes to adjust the maximum number of rebates per consumer type for each funding year as shown in Table III-6. Historically, most individuals have not applied for more than two rebates; therefore staff is proposing to reduce the allowed rebates from 20 to 2. For rental fleets, although some fleets have met their maximum allowed rebates, staff believes a reduction from 50 to 20 will allow more fleets to participate.

Finally, staff recommends increasing the public fleet limit to better allow public fleets to utilize in the Clean Vehicle Rebate Project (representing less than 4 percent to date), and public fleets need this flexibility to help meet the Governor's Executive Order goal of reaching 10 percent of state fleet purchases zero-emission vehicles by 2015.

**Table III-6: Proposed Maximum Number of Rebates per Consumer Type**

Consumer Type	Number of Rebates Currently Allowed	Maximum Number of Rebates Proposed
Individual	20	2
Public Fleet	20	30
Rental Fleet	50	20
Car Share	Unlimited	20

Grantee Solicitation

Staff proposes to issue the solicitation for a grantee to administer the Fiscal Year 2013-14 Clean Vehicle Rebate Project shortly following Board approval of the Funding Plan and passage of the annual State Budget. The same competitive process and eligibility requirements will be used as in previous funding years; the solicitation will be open to individuals, federal, state, and local government entities and agencies, and non-profit organizations with experience implementing a rebate program and general knowledge of statewide outreach and implementation. Consistent with previous years, staff proposes allowing up to 10 percent of the project funding to be used for administration and outreach.

**Long-term Light-duty Advanced Technology Incentive Needs:** As discussed above, rapid market and program success have led to a funding shortfall in the current fiscal year, and projections are showing significant shortfalls in future years if the program is not adjusted or if funding levels are not dramatically increased and stabilized. To ensure that the Clean Vehicle Rebate Project can be a viable project moving forward, ARB staff believes that the vision for the project should be predicated on a multi-year stable and predictable source of funding and should cover a continuum of technologies. Staff plans to continue dialogue with stakeholders, placing a strong focus on defining incentive needs, identifying program metrics and priorities, and designing the most viable structure for the project. More specifically, staff will seek input on near-term needs for current technologies that are in the process of transitioning into mainstream consumer choices, and long-term needs for newer technologies that will need public support for years to come. Staff will return to the Board by the end of 2013 to provide a status update on the progress made with stakeholders to develop a sustainable vision, and at that time, staff may present appropriate recommendations for near-term changes to the program.

## Hybrid and Zero Emission Truck and Bus Voucher Incentive Project



**Minimum Funding Target:** \$5 million

**Synopsis:** Offers vouchers to help California fleets purchase new hybrid and zero-emission trucks on a first come, first-served basis.

### **Project Benefits:**

- Ensure a California market for early deployment of advanced heavy-duty vehicle technologies needed for the State to meet its air quality and climate change challenges, while reducing toxic emissions.
- Provide incentive for truck and bus manufacturers to develop and deploy the next generation of advanced technologies.

**Overview:** The Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project offers vouchers to help California fleets purchase new hybrid and zero-emission trucks on a first come, first-served basis. Hybrid and zero-emission vehicle technologies have the potential to reduce criteria pollutant, air toxic, and greenhouse gas emissions – particularly in urban delivery vehicles, refuse trucks, work trucks, buses, and other vehicles with high stop-and-go or idling duty cycles. This project is intended to spur early production volumes for these vehicles and lower long-term production costs, and serves as a successful example for other states and localities.

**Status Update:** While Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project voucher demand was high in the first year of the project, fleet participation in subsequent years was slower than expected. Discussions with participating fleets and other project stakeholders suggest several challenges contributed to reduced voucher demand:

- Several early adopter fleets indicated they saturated their demand for new delivery trucks with stop-and-go routes that would benefit from hybrid technology at project launch out of concerns first year funding would be depleted quickly.
- Hybrid vehicle fuel economy uncertainties and the shortage of long-term vehicle performance and benefits data have made it difficult to entice the next generation of potential early adopters.
- The low cost of natural gas fuel make natural gas-powered trucks a more attractive option relative to hybrids for fleets' limited "green vehicle" funding.

- The next iteration of early adopter fleets (particularly medium and small fleets) are more risk averse and less likely to purchase new vehicle technologies they are unaccustomed to and which they perceive to be potentially less reliable or predictable.

To address these deployment issues, the Board approved several program refinements as part of the fiscal year 2012-13 AQIP Funding Plan to stimulate near-term demand, including increased voucher amounts for zero-emission vehicles and advanced technology hybrids. In addition, Hino Motor Company (Hino), a vertically integrated hybrid truck manufacturer owned by Toyota, entered the California market in October 2012 with a more economical hybrid in the 14,001 to 19,500 pounds (lbs) gross vehicle weight range (GVWR). Hino trucks are being purchased by smaller fleets that had not previously purchased hybrid vehicles. As a result, voucher demand has increased in response to program changes and the addition of Hino as an economical purchase option, with voucher demand in the fourth quarter of 2012 more than tripling that of fourth quarter 2011.

As of May 15, 2013, the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project has provided vouchers for the purchase of 1,217 hybrid and 370 battery-electric zero-emission trucks and buses, mostly in urban beverage and package delivery vocations. Approximately \$3 million in funds remain as of this date, with funds likely to be depleted this summer. Staff does not recommend a waiting list should funds be exhausted prior to launch of the fiscal year 2013-14 project this fall.

**Funding Needs:** Staff expects a significant increase in funding demand over the next year. Demand from medium and smaller fleets for hybrid trucks is expected to drive overall project demand during this time period. Table III-7, provides staff's preliminary projections of potential voucher demand between the beginning of fiscal year 2013-14 and the end of August 2014, when new fiscal year 2014-15 project funds could potentially become available. The range of potential voucher demand (between "Low" and "High" projections) is based upon discussions with vehicle manufacturers and California fleets, and considers the possibility of co-funding from Proposition 1B: Goods Movement Emissions Reduction Program (Goods Movement Program) and other market variables. The "High" projection assumes about 80 percent of manufacturer projections of project-eligible vehicles manufactured for the California market, with significant fleet demand for hybrid trucks and zero-emission vehicles co-funded by the Goods Movement Program. The "Low" projection more closely mirrors project demand over the past 2 quarters, after program changes increasing the voucher amount for zero-emission vehicles were implemented, and the market introduction of the Hino hybrid.

**Table III-7: Projected Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project Funding Demand**

	July – December 2013			January – August 2014			Total
	No. of Vehicles	Avg. \$ /Vehicle	Total Funding	No. of Vehicles	Avg. \$ /Vehicle	Total Funding	
<b>Low</b>	200	\$25,000	\$5M	280	\$25,000	\$7M	\$12M
<b>High</b>	300	\$33,000	\$10M	450	\$33,000	\$15M	\$25M

Continued incentive funding for these advanced technology trucks and buses will be critical to ensure these vehicles' acceptance and accelerate their deployment to help California meet its air quality and climate change goals.

**Staff Proposal:** Staff proposes maintaining the existing fiscal year 2011-12 Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project structure and vehicle voucher amounts, as these have provided a successful, steady and predictable driver for California's hybrid and zero-emission commercial vehicle market. However, staff recommends some minor adjustments to further incentivize deployment of more advanced and robust hybrid and zero-emission vehicle technologies, and ensure available funding to a diversity of fleets. Proposed changes target the next generation of early adopter fleets that have not previously considered purchasing hybrid or zero-emission trucks or buses, with strategies such as providing incentives for extended warranties and facilitating fleets' access to the Goods Movement Program co-funding. Staff's recommendations are described below.

*Limit of 100 Vouchers Per Fleet*

Staff recommends limiting each fleet to no more than 100 vouchers in fiscal year 2013-14, down from up to 200 vouchers per fiscal year (as shown in Table III-8 and III-9), due to the relatively low availability of funds dedicated to the fiscal year 2013-14 Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project. No single fleet has ever requested more than 100 vouchers in any single fiscal year. However, reducing the limit from 200 to 100 will ensure no single fleet receives all fiscal year 2013-14 project vouchers. Staff recommends allowing flexibility for the Executive Officer to adjust the limit per fleet back to 200 if the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project receives an influx of at least \$10 million in additional funding, or if project funding is not depleted by June 30, 2014.

**Table III-8: Zero-Emission Truck and Bus Voucher Amounts**

Gross Vehicle Weight Rating (lbs)	Base Vehicle Incentive <sup>1</sup>	
	1 to 100 vehicles	101 to 200 vehicles
5,001 – 8,500	\$12,000	\$10,000
8,501 – 10,000	\$18,000	\$12,000
10,001 – 14,000 <sup>2</sup>	\$30,000	\$20,000
14,001 – 19,500	\$35,000	\$25,000
19,501 – 26,000	\$40,000	\$30,000
> 26,000	\$45,000	\$35,000

The first three vouchers received by a fleet are eligible for the following voucher enhancements: \$2,000/vehicle if below 8,501 lbs; \$5,000/vehicle if 8,501 to 10,000 lbs; and \$10,000/vehicle if over 10,000 lbs.

1 - A zero-emission school bus is eligible for the same additional funding as a hybrid school bus as identified in Table III-9.

2 - This weight range is not intended for vehicles utilizing a pick-up truck chassis/platform typically found in vehicles below 10,001 lbs GVWR. Vehicles at the lower end of the 10,001 to 14,000 lbs weight range will be evaluated on a case-by-case basis to determine eligibility for the full \$30,000 Base Vehicle Incentive.

**Table III-9: Eligible Hybrid Truck and Bus Voucher Amounts**

Gross Vehicle Weight Rating (lbs) <sup>1</sup>	Base Vehicle Incentive	
	1 to 100 vehicles	101 to 200 vehicles
6,001 – 8,500 (plug-in hybrids only) <sup>2</sup>	\$ 8,000	\$ <del>6,000</del>
8,501 – 10,000 (plug-in hybrids only) <sup>2</sup>	\$10,000	\$ <del>8,000</del>
10,001 – 19,500	\$15,000	\$10,000
19,501 – 33,000	\$20,000	\$12,000
33,001 – 38,000	\$25,000	\$15,000
> 38,000	\$30,000	\$20,000

The first three vouchers received by a fleet are eligible for the following voucher enhancements: \$2,000/vehicle if below 8,501 lbs; \$5,000/vehicle if 8,501 to ~~40,000~~19,500 lbs; and \$10,000/vehicle if over ~~40,000~~ 19,500 lbs.

1 – Tractor trailers utilize Gross Combined Vehicle Weight for purposes of determining Base Vehicle Incentive.

2- Vehicle must be ARB-certified as an Ultra-Low Emission Vehicle (ULEV). Voucher amount is increased by \$2,000 for each of the following: ARB-certification as a Super Ultra Low Emission Vehicle (SULEV) and ARB-certification for zero-evaporative emissions.

**Maintain Existing Base Voucher Amounts**

Staff does not recommend changes to the existing Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project voucher amounts identified in Tables III-8 and III-9 (above). These voucher amounts, in conjunction with additional ‘bump-ups’ identified in Tables III-9 and III-10, provide the transparent and predictable incentives that helps manufacturers to develop and deploy advanced technology commercial vehicles in California, and for California fleets to consider purchase of these new technologies. However, staff does propose reducing the voucher enhancement for the first three vouchers per fleet from \$10,000 to \$5,000 for hybrid vehicles between 10,001 and 19,500 lbs GVWR (See footnote for Table III-8, below). Staff believes the lesser \$5,000 voucher enhancement for the first three vouchers per fleet is sufficient for vehicles

between 10,001 and 19,500 lbs GVWR due to the market penetration of the more economical Hino hybrids among smaller fleets.

Higher Voucher Amounts for Fast Charge Compatible Vehicles

Table III-10 identifies voucher ‘plus-ups’ approved by the Board last year as part of the fiscal year 2012-13 AQIP Funding Plan, as well as staff’s proposal to include zero-emission fast charge-compatible vehicles as eligible for one half the voucher enhancements as hydrogen fuel cell vehicles (See the underlined proposed update in Table III-10). Staff proposes providing zero-emission vehicles that are compatible with fast charging infrastructure with an additional voucher amount due to their “unlimited” daily range relative to traditional slow charge vehicles. Zero-emission fast charge vehicles would receive half the hydrogen fuel cell vehicle enhancement voucher amount due to fast charge technology’s lower relative incremental cost.

**Table III-10: Vehicle Voucher Enhancements<sup>1</sup>**

<b>Gross Vehicle Weight (lbs)</b>	<b>Plug-in or Hydraulic Hybrid<sup>2</sup></b>	<b>School Bus<sup>3</sup></b>	<b>ARB Certification (full vehicle)</b>	<b><u>Zero-Emission Fast Charge/ Hydrogen Fuel Cell Vehicles</u></b>
5,001 – 10,000 (plug-in hybrids only)	NA	\$ 5,000	NA	<u>\$10,000/\$20,000</u>
10,001 – 14,000	\$5,000			
14,001 – 19,500	\$10,000	\$10,000	\$15,000	<u>\$15,000/\$30,000</u>
19,501 – 33,000			\$20,000	<u>\$20,000/\$40,000</u>
33,001 – 38,000				
> 38,000				

1 - The total of all advanced technology vehicle subsidies, including the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project Base Vehicle Incentive and voucher enhancements identified in Tables III-9 and III-10 may not exceed the assumed vehicle incremental cost.

2 – Plug-in electric or hydraulic hybrid vehicles must demonstrate at least a 40 percent fuel economy benefit relative to their non-hybrid counterpart as part of their Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project eligibility application.

3 - Zero-emission school buses are also eligible for this voucher enhancement.

Eligibility criteria for the fast-charge vehicle voucher enhancement would be based upon factors such as potential vehicle miles per day, technology reliability, and technology incremental cost, and would be developed in consultation with the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project Work Group.

Goods Movement Program Set-Aside

The Goods Movement Program has established criteria for co-funding of electric trucks that are also eligible for Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project vouchers. To help ensure vouchers will be available for participating vehicles at the end of the Goods Movement Program solicitation and grant agreement process, staff recommends setting aside a portion of the fiscal year 2013-14 Hybrid and

Zero-Emission Truck and Bus Voucher Incentive Project funding allocation for vehicles that also receive Goods Movement Program co-funding. Since staff won't know Goods Movement Program demand for zero-emission trucks until after the June 27, 2013 Board meeting, staff recommends determining what percentage of Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project funds to set aside through the public work group stakeholder process prior to fiscal year 2013-14 project launch this Fall.

Should Goods Movement Program demand exceed Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project funds set-aside, staff recommends allocating Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project set-aside funds regionally in a manner consistent with the relative Goods Movement Program trade corridor funding allocations approved by the Board on February 28, 2008. To ensure funds are not set aside indefinitely while Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project demand from other fleets remains unmet, fleets requesting Goods Movement Program set-aside funds must have a signed contract with the applicable air district and have requested a voucher for the zero-emission truck by January 15, 2014, or by the time Hybrid and Zero-Emission Vehicle Truck and Bus Voucher Incentive Project funds are exhausted, whichever is later.

#### *First Three Vehicles' Voucher Enhancement to Include Previous Year Purchases*

Current voucher enhancements of up to \$10,000 per vehicle for the first three vouchers per fleet are intended to further encourage a diversity of fleets to purchase a hybrid or zero-emission truck or bus. In previous funding years, a fleet would be eligible for the additional voucher amount for the first three vehicles in each funding year, even if it had received this incentive in previous funding years. To help funding stretch further and better serve new and smaller fleets, staff proposes that only the first three vouchers per fleet inclusive of all funding years would be eligible for the additional voucher enhancement beginning in fiscal year 2013-14. For example, if a fleet had received three or more vouchers in a previous funding year, it would be ineligible to receive the voucher enhancement for the first three vouchers in the fiscal year 2013-14 program.

Staff also proposes allowing the voucher enhancement of up to \$10,000 per vehicle to be applied on a technology specific basis (hybrid, zero-emission plug-in electric, or zero-emission fuel cell), since one purpose of this project is to encourage fleets to consider new, advanced technologies when buying a new truck or bus. For example, fleets that had previously received vouchers for its first three hybrid vehicles would still be eligible for the voucher enhancement for its first three zero-emission plug-in electric or fuel cell vehicles.

#### *Require Stronger Three-Year Warranty*

Staff proposes strengthening warranty requirements to specify that the manufacturer warranty must cover not just the vehicle battery but the entire vehicle, including the engine (if applicable), motor, drive train, battery, parts and labor for a full three year

period. The requirement that eligible vehicles have a minimum 50,000 mile warranty would also be evaluated and strengthened as needed. Enhanced vehicle and component warranty requirements for the project would be developed in coordination with the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project work group prior to launch of fiscal year 2013-14 project funding.

#### Enhanced Voucher for Extended Warranties

Staff also recommends an additional incentive amount for extended vehicle warranties that would provide purchasing fleets with certainty regarding vehicle reliability, maintenance costs, and battery life. Staff recommends an additional \$2,000 voucher amount for each year of warranty coverage from years six to ten and/or mileage coverage above a certain threshold. For example, a hybrid or zero-emission truck with a 6-year manufacturer warranty would receive an additional \$2,000 voucher, a 7-year warranty would translate into an additional \$4,000 voucher. This additional incentive reflects about half the cost of extended warranty coverage, and was developed with manufacturer input regarding what additional voucher amount would motivate them to offer extended warranties. Staff will evaluate and discuss minimum warranty requirements – such as minimum mileage per additional warranty year, warranty terms, and responsible entity or entities – during a Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project work group meeting prior to launch of fiscal year 2013-14 project funding.

#### Determine Hybrid Vehicle Incremental Cost on a Case-by-Case Basis

Staff recommends that the assumed project incremental cost for a hybrid vehicle make/model reflect the actual specific vehicle manufacturers' incremental cost, rather than an assumed industry-wide average. Incremental cost is defined as the cost difference between a conventional new truck or bus and its hybrid or zero-emission counterpart. The existing project utilizes fixed incremental costs based on vehicle weight range and technology type, ranging from \$15,000 for a 14,000 lbs GVWR truck to up to \$120,000 for 38,000 lbs GVWR or heavier. Fixed incremental costs are no longer appropriate given range of costs for the variety of hybrid trucks now on the market. This recommended change would help ensure the project Base Voucher Amount plus voucher enhancements identified in Table III-10 do not exceed a hybrid vehicle's actual incremental cost.

#### Maintain Existing Voucher Enhancement for Early On-Board Diagnostics (OBD) Compliance

Functioning and integrated OBD systems are critical to ensure that hybrid heavy-duty vehicle emission controls work in-use as intended. Compliance with ARB's amended heavy-duty truck OBD regulation requires a progressively greater level of vehicle, engine, and drivetrain integration beginning with the 2013 engine model year. Hybrid vehicle OBD compliance requires significant cooperation and coordination between

vehicle, engine, and drivetrain manufacturers in what has typically not been a vertically integrated industry. In order to incentivize early compliance with the amended heavy-duty truck OBD regulation and encourage a growing and robust California hybrid truck market, staff recommends the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project maintain the existing incentive amounts identified below in Table III-11 for each eligible hybrid truck or bus with an ARB-certified OBD system for the engine and powertrain combination.

**Table III-11: Voucher Enhancements for Hybrid Vehicles with ARB-Certified OBD<sup>1</sup>**

Vehicle GVWR	Total Number of Hybrid-Related Deficiencies <sup>2</sup>				
	2013 /2014 MY		2015 MY		
	10+	<10	9-14	5-8	≤4
<b>14,001 - 26,000 lbs</b>	\$12,000	\$16,000	\$8,000	\$12,000	\$16,000
<b>26,001+ lbs</b>	\$16,000	\$20,000	\$12,000	\$16,000	\$20,000

1 - Vehicles and engines certified to Title 13, CCR section 1971.1 (d)(7.6) do not qualify for these voucher enhancements.

2 – The number of deficiencies for each OBD certified hybrid vehicle is determined pursuant to the procedures identified in Title 13, CCR, section 1971.1, *On-Board Diagnostic System Requirements for 2010 and Subsequent Model Year Heavy-Duty Engines*.

*Grantee Solicitation*

ARB staff proposes issuing the fiscal year 2013-14 Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project grantee solicitation shortly after Board approval of this Funding Plan in order to ensure new project funds are available by Fall 2013. Staff anticipates, as in prior years, that the project solicitation will be open to individuals, federal, state and local government entities and agencies, and organizations with California heavy-duty vehicle, vehicle incentive, or air quality expertise or experience. Consistent with previous years, staff recommends allowing up to 10 percent of project funds to be used for project administrative costs.

## Advanced Technology Demonstration Projects



**Minimum Funding Target:** \$3 million

**Synopsis:** Demonstrate the viability of advanced technology vehicles, equipment or emission controls.

### **Project Benefits:**

- Accelerate commercialization and deployment of cleaner technologies in the California marketplace.
- Support California's goals for criteria pollutant, air toxics, and greenhouse gas emission reductions.

**Overview:** Advanced Technology Demonstration Projects accelerate the introduction of advanced emission reducing technologies that are on the cusp of commercialization into the California marketplace. A public investment in these technologies helps to achieve significant emission reductions of criteria pollutants and toxic air contaminants, as well as greenhouse gases, sooner than would be possible otherwise. This commitment from the State encourages industry to expeditiously invent, develop, test, and introduce cutting edge emission reducing technologies. Finally, Advanced Technology Demonstration Projects leverage public investment with private capital and ingenuity to go beyond what is currently at the technological forefront.

Advanced Technology Demonstration Projects carry inherent complexities and engineering challenges. ARB mitigates this potential by requiring a competitive selection process to award funding to the most promising technologies, requiring a significant cost share from technology demonstrators, and requiring that project applicants be a California-based public agency with expertise in the project category. Grants are awarded to public agencies to manage the day-to-day administration of the projects with ARB oversight. Typically, public agencies are local air districts, port authorities, or public school districts, but other agencies are eligible. The team concept for demonstration projects, with technology demonstrators partnering with a local public agency and one or more end-users, has proven to be effective and is planned to continue for future projects.

**Status Update:** Throughout the first 4 years of Advanced Technology Demonstration Projects (fiscal year 2009-10 through fiscal year 2012-13), AQIP has funded 13 separate projects totaling \$5.6 million, ranging from locomotive retrofits to hybrid marine demonstrations. AQIP investment has leveraged \$6.3 million in match funding from grantee and technology demonstrators resulting in a total of \$12 million of demonstration funding.

The following Advanced Technology Demonstration Projects are expected to be completed before the adoption of this Funding Plan:

- *Retrofit of a Line-Haul Locomotive with a Diesel Particulate Filter:* Completed in the summer of 2012 this project was administered by the Sacramento Metropolitan Air Quality Management District who partnered with Electro-Motive Diesel (EMD) and Union Pacific Railroad. The project demonstrated that a diesel particulate filter could be installed and operated on a 2 stroke diesel-fueled medium horsepower line-haul locomotive and reduces emissions of Particulate Matter (PM) to levels significantly below US EPA Tier-4 standards. The result, Union Pacific's UP 9900, is currently in revenue operation in California, primarily between the Port of Oakland and the Roseville railyard.

Railroads are starting to see the advantage in utilizing medium horsepower locomotives like UP 9900, for use in regional-haul, switcher service, short-haul and helper service due to their flexible nature and lower repower costs compared to new capitol purchases. Currently, the candidate population of medium horsepower locomotives in the State is potentially over 400 locomotives, with about 250 units in service with Class-One railroads, 50 or more in service with short lines and up to 130 being utilized in passenger rail, many if not most in non-attainment areas. All the above referenced locomotives could be candidates for the PM reducing retrofit once the engines have been repowered with EMD's new ECO710 engine, which employs exhaust gas recirculation to reduce Oxides of Nitrogen (NOx) emissions approaching Ultra Low Emitting or ULEL level of 3.0 g NOx per brake horsepower-hour. So far, about 20 locomotives have been upgraded with the new engine, one of which was the subject of this demonstration. One goal of the proposed Advanced Technology Demonstration Projects found in this year's Funding Plan is to build upon the advances made with UP 9900 and demonstrate reductions in NOx emissions to Tier-4 levels in medium horsepower locomotives. The Advocated Technology Demonstration Project is focusing on this horsepower segment because its power range and functionality is appropriate for the California marketplace with the goal of reaching Tier-4 in-use emission while in revenue service.

- *Hybrid Tugboat Retrofit:* This project was administered by the Port of Long Beach in conjunction with Foss Maritime Company to retrofit the tugboat, *Campbell Foss*, as a hybrid tugboat. That vessel has demonstrated significant emission reductions and is currently in operation at the Ports of Los Angeles and Long Beach. Foss Maritime has capitalized on what was learned from this project to successfully compete for funding from the United States Maritime Administration to retrofit Foss' tugboat, *Alta June*. Currently there are about 10 tugboats in the same class as the *Campbell Foss* or *Alta June* in operation that could be retrofitted with the hybrid technology, though all those tugs are not in California. The *Campbell Foss* hybrid retrofit was extremely cost effective at less than \$2000 per weighted ton of criteria pollutants reduced, with emission reductions in the magnitude of 0.17 tons per day NOx, 1.7 tons per year PM, and

fuel savings of about 140,000 gallons per year. Currently there are only 3 or 4 tugboats in operation, worldwide, that are utilizing this hybrid technology. There is potential for the demonstrated hybrid technology to be transferred into the other 160 tugboats in the State and further into the approximately 4,200 other harborcraft that operate in California once the technology has fully penetrated the commercial harborcraft market.

- *Retrofit of a Genset Switcher with Diesel Particulate Filter:* This project was administered by the Bay Area Air Quality Management District, with GT Exhaust as the technology demonstrator and BNSF as the railroad partner. This project is ending at the mid-point of the durability testing due to the manufacturer of the filter body, Dow Chemical, ending production of the filter. However, the locomotive with filters installed has completed its mid-point emission testing showing that the retrofit is technologically sound and reduces emissions of diesel particulate matter to below Tier-4 locomotive emission levels. Staff anticipates that other manufacturers will leverage the information gained from this project to develop more robust filter products.
- *Commercial Zero-Emission Cordless Lawn and Garden Demonstration Projects:* In June 2011, funding was awarded to three local air districts to demonstrate zero-emission lawn and garden equipment in a commercial setting. The South Coast Air Quality Management District, Mojave Desert Air Quality Management District, and the San Joaquin Valley Unified Air Pollution Control District partnered with several lawn and garden equipment manufacturers and local project participants to test a variety of lawn and garden equipment to evaluate performance. Results from the Commercial Zero-Emission Cordless Lawn and Garden Demonstration Project reported insufficient battery technology and equipment performance when compared to gas powered equipment. However, other lawn and garden equipment evaluation criteria such as noise pollution and weight were reported more favorably. As a result of this project, ARB and district staff concluded that improvements in battery technology is key to full commercialization and market acceptance of commercial zero-emission cordless lawn and garden equipment.

For fiscal year 2012-13, \$2 million was allocated for demonstration projects, with a focus on zero-emission off-road equipment and zero-emission transit vehicles. The Zero-Emission Off-Road Equipment solicitation resulted in the selection of a battery-electric yard truck project for demonstration at the Port of Los Angeles and Port of Long Beach. The Ports of Los Angeles and Long Beach project is focused on demonstrating zero-emission technology in a yard hostler application with enough battery power to perform a complete shift and utilizing 2 separate trucks for back to back shifts while meeting the needs of Eagle Marine Services' port terminal. The goal of this project is to demonstrate this zero-emission technology in revenue service, with the eye on penetrating further in other port equipment with this and other zero-emission technology in future solicitations.

The Zero-Emission Transit demonstration project solicitation is proposed to be rolled over into the fiscal year 2013-14 Funding Plan due to insufficient fiscal year 2012-13 revenues. The goal of this project is to advance the pace of fuel-cell development, battery bus technology, or expand zero emission vehicles into the paratransit and shuttle bus market.

**Funding Needs:** AQIP investments in Advanced Technology Demonstration Projects have been modest thus far. Staff believes that substantially higher investments, starting at a minimum of \$10 million and ranging potentially upwards from \$100 million per year, are needed to demonstrate larger-scale technology durability and efficacy to foster confidence such that industry invests private capital to bring these technologies to the marketplace sooner than they would otherwise. Larger public investments also help encourage the acceleration of advanced technologies in new sectors.

**Staff Proposal:** ARB staff proposes at least one pilot project and 2 demonstration project categories for the fiscal year 2013-14 funding cycle, in addition to carrying out the Zero-Emission Transit demonstration project identified last year. Staff proposes to focus \$2 million in demonstration project funds for this year on efforts that can build upon technologies that have proven to be effective in past AQIP demonstration projects. These categories are Tier-4 emission levels in locomotives and further hybridization of marine vessels. Specifically:

- *Locomotives Nearing Tier-4 Emission Levels for NOx and/or PM:*
  - *Genset Switcher Retrofit Pilot:* Retrofitting a group of genset switcher locomotives with diesel particulate filters
  - *Reduce NOx Emissions from Medium Horsepower Locomotives:* Demonstrate reduced NOx emission levels from medium horsepower locomotives
- *Marine Vessel Hybridization:* Expand marine vessel hybridization into additional vessel types.

If additional funds become available for Advanced Technology Demonstration projects beyond the minimum target identified, staff proposes the option of funding additional demonstration projects based on Board priority and available funds. Staff proposes the following demonstration project categories to consider through a public process if additional funds become available:

- Advanced Freight Transport
- Hybrid and Other Advanced Locomotive Technologies
- Advanced Ferries
- Ground Support Equipment
- Advanced Distribution Center Equipment
- Advanced Off-Road Equipment Demonstration

- Advanced Agricultural Equipment
- School Buses

Pursuing all the above proposed projects for inclusion in the Funding Plan is not possible with the current level of AQIP funds. Details on project selection will be vetted through the AQIP Advanced Technology Demonstration Project Work Group. Information on this work group may be found on the Advanced Technology Demonstration Projects webpage at: <http://www.arb.ca.gov/msprog/aqip/demo.htm> .

### Grantee Solicitation

Following Board approval of the proposed Funding Plan and after the State Budget is signed, staff will release solicitations for demonstration projects in order to select a grantee. The solicitations will include all programmatic details potential grantees need to apply for funds, in addition to the criteria upon which the applications will be evaluated and scored.

In accordance with AQIP Guidelines, ARB will begin issuing project solicitation after the Board approves the funding plan. Public work groups will continue to be the primary avenue for seeking input and feedback on solicitations and implementation manuals.

## Truck Loan Assistance Program



**Minimum Funding Target:** \$2 million

**Synopsis:** Assists small business truck owners in obtaining affordable financing for necessary truck upgrades ahead of regulatory compliance schedules.

### **Project Benefits:**

- Supports California's diesel emission reduction goals through early compliance with ARB's diesel vehicle regulations.
- Provides financing opportunities to small business truck owners that are experiencing challenges obtaining financing in California's tight credit market.

**Overview:** In 2008, the California Legislature directed a one-time appropriation of AQIP funds for use in establishing a loan assistance program to aid small business truck owners affected by ARB's In-Use Truck and Bus Regulation and the Tractor-Trailer Greenhouse Gas Regulation. Formally known as the Providing Loan Assistance for California Equipment Program, about \$35 million was allocated to assist truckers. To date, ARB has developed and implemented 2 components of the Providing Loan Assistance for California Equipment Program: a small Pilot Revolving Loan/Lease-to-Own Program, and the Truck Loan Assistance Program.

Launched in April 2009, the successful and ongoing Truck Loan Assistance Program utilizes AQIP funds to aid smaller fleets in obtaining financing for clean truck upgrades ahead of regulatory compliance schedules. This program has been a successful incentive option for leveraging private dollars. Based on the California Pollution Control Financing Authority's California Capital Access Program, the Truck Loan Assistance Program enables lenders to provide affordable financing to small business owners that fall just outside conventional underwriting standards and that may not qualify for traditional financing, particularly in California's tight credit market. In the current program, AQIP funds are set aside in each participating lender's loan loss reserve account for eligible loans (based on a percentage of each enrolled loan amount) to cover potential losses resulting from defaults.

The California Capital Access Program model, a form of loan portfolio insurance, is advantageous for 2 primary reasons. First, by reducing the financial risk to lenders, it creates opportunities for small business truck owners that fall below normal lending criteria and may not qualify for any financing. Second, it provides an inherent benefit of fund leveraging to significantly increase the overall amount of financing available to truck owners. To date, for every \$1.00 ARB has spent in the program for loan assistance, participating lenders have provided about \$6.50 in financing to a trucker.

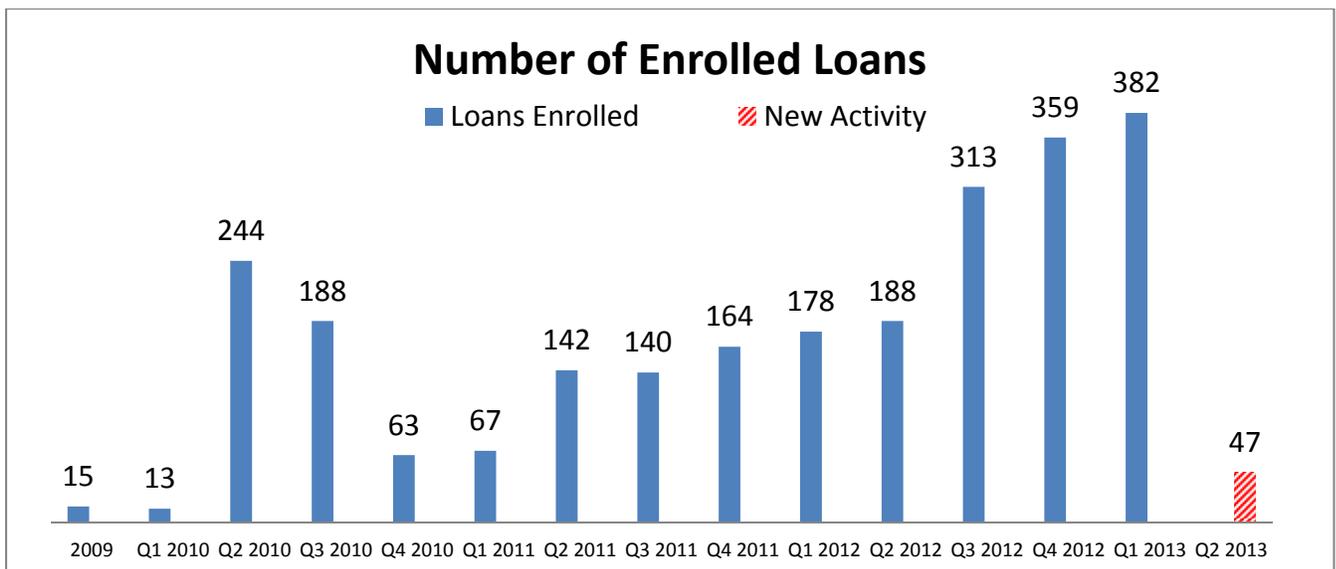
The Truck Loan Assistance Program makes up the largest portion of the Providing Loan Assistance for California Equipment Program, with \$34.3 million allocated to date. This program funding includes a recent addition of \$4 million as a result of the Board’s direction at its March 21, 2013, public meeting to reallocate up to \$4 million from the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project for fiscal year 2012-13 to the Truck Loan Assistance Program. More information regarding the small Pilot Revolving Loan/Lease-to-Own Program can be found in Appendix A of the fiscal year 2012-13 AQIP Funding Plan.

**Status Update:** Over the past year, participation in the Truck Loan Assistance Program has grown rapidly as regulatory compliance deadlines near. As of April 9, 2013, approximately \$25.6 million in Truck Loan Assistance Program funding has been leveraged to provide about \$168 million in financing to small business truckers for the purchase of over 2,900 cleaner trucks, exhaust retrofits, and trailers. Table III-12 below provides the breakdown of loans offered, and Figure III-3 illustrates the program’s activity since 2009. To date, over 79 percent of all enrolled loans are issued to owner operators with one truck and 94 percent are issued to fleet owners with 10 or fewer employees.

**Table III-12: Truck Loan Assistance Program Status**

Vehicles/Equipment Financed as of April 9, 2013					
Program	Number of Loans Issued	Number of Projects Financed	Project Type	\$ Spent	Total Amount Financed
ARB/CPCFA Truck Loan Assistance Program	2,496	2,712	Truck Purchases	\$25.6M	\$168M
		193	Exhaust Retrofits		
		15	Trailers		

**Figure III-3: Truck Loan Assistance Program Activity through April 9, 2013**



### Funding Status

Although the program began in mid-2009, nearly 60 percent of the total loans issued through the program occurred since the start of 2012, as can be seen in Figure III-3 above. As of the end of January 2013, about \$6 million remained in program funding. Based on current activity trends and program conditions, those remaining funds were projected to be depleted in the mid-June timeframe. ARB's current Interagency Agreement with the California Pollution Control Financing Authority to implement the program and fund loan assistance runs through December 2013. At its March 21, 2013, public meeting, the Board approved authority for the Executive Officer to reallocate up to \$4 million from the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project for fiscal year 2012-13 to the Truck Loan Assistance Program. This additional \$4 million in funding (along with a minor program change to slightly decrease ARB's loan loss reserve contribution for each eligible loan) will potentially extend the program through the September timeframe. However, funding will still be depleted before the end of 2013.

**Funding Needs:** With ongoing regulatory deadlines in the 2014 – 2016 timeframe for ARB's diesel vehicle regulations, ARB staff expects a continued strong demand for program funding to assist the small business trucking sector in financing truck upgrades ahead of compliance schedules. Current activity trends reflect a recent acceleration in program participation and staff expects that to continue throughout the remainder of 2013 and throughout 2014.

Staff estimates an additional \$14 million in funding is necessary to extend the program through the 2013-14 fiscal year. Of that, roughly \$4 million is needed to extend the program until the end of December and complete the term of ARB's current Interagency Agreement with the California Pollution Control Financing Authority.

**Staff Proposal:** Staff is proposing to establish a minimum funding target of \$2 million, but recognizes that twice that amount is needed to extend the program through the end of the year. Staff is not proposing any modifications to the Truck Loan Assistance Program at this time. If administrative changes are necessary in the future to ensure the program's success, the current interagency agreement between ARB and the California Pollution Control Financing Authority for program implementation includes the flexibility to incorporate modifications.

### C. Other AQIP Project Categories

In fiscal years 2009-10 and 2010-11, AQIP supported additional project categories, of which only a few remain active. These remaining active categories include Lawn and Garden Equipment Replacement Projects and the Off-Road Hybrid Equipment Pilot Project. For information on projects that have closed, please see Appendix A from the fiscal year 2012-13 Funding Plan. Although staff is not proposing funding for these projects this year, an update on their status is below.

**Lawn and Garden Equipment Replacement Project:** AQIP provided a total of \$2.6 million in fiscal years 2009-11 to expand local air district lawn mower replacement programs for rebates to consumers who scrap old gasoline powered lawn mowers and replace them with zero-emission models. These district programs have been popular with consumers and successful in reducing emissions. To date, over 12,700 lawn mower replacements have been funded via AQIP. While most district programs have concluded, the Bay Area Air Quality Management District and Yolo Solano Air Quality Management District are in the process of completing their programs. ARB staff has since shifted all new zero-emission lawn mower replacement projects from AQIP to the Carl Moyer Program in part based on the success of AQIP Lawn and Garden Equipment Replacement Project. The Board approved this change in April 2011 as part of the 2011 revisions to the Carl Moyer Guidelines.

**Hybrid Off-Road Equipment Pilot Project:** The Hybrid Off-Road Equipment Pilot Project is intended to accelerate deployment of commercialized hybrid construction equipment, while evaluating the emissions benefits of the equipment in real world applications. The \$2 million in project funds from fiscal year 2012-13 were evenly divided between: 1) vouchers to accelerate hybrid equipment deployment and, 2) duty cycle development and real-world emissions testing. The University of California at Riverside, Center for Environmental Research and Technology (CE-CERT) administered both the deployment and testing elements of the project.

#### Equipment Deployment

As shown in Table III-13, the Hybrid Off-Road Equipment Pilot Project provided \$901,578 to help California fleets purchase ten Caterpillar D7E hybrid dozers and 6 Komatsu HB215-LC-1 hybrid excavators. The dozer's and excavator's respective \$73,000 and \$28,500 voucher amounts reflect approximately one-half of the hybrid equipment's incremental cost. The deployment element of this project was completed in March 2013.

**Table III-13: Vouchers Issued By Equipment Make/Model**

<b>Vehicle Type</b>	<b>Vouchers Issued</b>	<b>Total Voucher Funds</b>	<b>Average Voucher Amount</b>	<b>Average Equipment Purchase Price</b>
Caterpillar Hybrid D7E Dozer	10	\$730,578	\$73,000	\$552,943
Komatsu Hybrid HB215-LC-1 Excavator	6	\$171,000	\$28,500	\$288,389
<b>Total</b>	<b>16</b>	<b>\$901,578<sup>1</sup></b>	<b>--</b>	<b>--</b>

1 - An additional \$98,842 was provided to CE-CERT for project administration.

### Equipment Testing

CE-CERT, in consultation with ARB staff, is in the process of completing the testing element of the Hybrid Off-Road Equipment Pilot Project.

Activity Characterization, Sequence of Operations/Test Cycle development, and In-Use Emissions Testing were completed on three hybrid Komatsu HB215-LC-1 excavators and three hybrid Caterpillar D7E dozers in participating public and private fleets. Fleet vocations included landfill, rock quarry, and river maintenance vocations (dozer) and general construction and demolition vocations (excavator). Equipment duty cycles for this equipment were developed utilizing a combination of hundreds of hours of time-lapse video, electronic control modules (ECM), and global positioning system (GPS) devices. Project equipment was then tested utilizing portable emissions measurement system (PEMS), comparing the relative emissions per typical duty cycle for the hybrid equipment and its non-hybrid counterpart.

Data analysis and the Final Report are forthcoming. Preliminary emissions testing data suggest a carbon dioxide (CO<sub>2</sub>) benefit of 5 to 25 percent for the Caterpillar D7E hybrid dozer and 15 to 30 percent for the Komatsu HB215-LC-1 hybrid excavator relative to their non-hybrid counterparts. However, the data also suggest a 5 to 15 percent NO<sub>x</sub> increase for the hybrid dozer, while data for the Komatsu excavator was still being evaluated as of April 18, 2013. PM, total hydrocarbon, and carbon monoxide emission data were below detectable levels. This preliminary data indicates that the next generation of hybrid construction equipment will need additional technological advances to ensure it achieves substantial greenhouse gas benefits while also delivering NO<sub>x</sub> and other criteria pollutant emission benefits. The project methodology and initial results were presented and discussed at an April 23, 2013, public Hybrid Off-Road Equipment Pilot Project Work Group meeting. CE-CERT is expected to complete its emissions testing evaluation and provide a final project report in June 2013.

## D. Contingency Plans

The proposed Funding Plan is based upon the latest available information. However, circumstances may change between the time the proposed Funding Plan is released for public comment (such as pending changes in the fiscal year 2013-14 State Budget or lower than anticipated revenues), and when the Board approves the funding plan, project solicitations are issued, project funds awarded, or as projects are implemented. This section describes staff's proposed contingency plans should mid-course corrections be needed to ensure that AQIP funds are spent expeditiously and efficiently. Under these provisions, the Board would grant the Executive Officer authority to make the necessary mid-course adjustments to address the cases described below.

**Available AQIP Funds:** In recent years, revenues in the Air Quality Improvement Fund have been nearly 30 percent lower than the amount appropriated in the State Budget, so ARB had to scale back its AQIP project funding accordingly. As a result, ARB has awarded about \$28 million in funding each year rather than the \$40 million annual total included in each of the prior year Board-approved Funding Plans. Additionally, in fiscal year 2012-13, revenues were even less than the "realistic" estimate, which resulted in the delay and ultimate reassignment of a demonstration project into this year's Funding Plan.

Based on this experience, ARB staff is proposing a Funding Plan that establishes minimum allocations for each project category totaling *less* than both the Governor's Proposed Budget allocation of \$35 million and the projected available funding for projects. ARB staff forecasts that AQIP fees could generate up to \$25 million in project revenue, after accounting for various state administrative costs. Staff is proposing minimum funding targets for each category totaling \$20 million, which should leave roughly \$5 million unallocated and subject to the contingency provisions outlined below. Establishing minimum targets for each category based on a "realistic" funding scenario reduces the risk of over-obligating funds beyond available revenues, and avoids disproportionately affecting projects that start later in the fiscal year if revenue projections are lowered, as was experienced in fiscal year 2012-13 with the Zero-Emission Transit Demonstration Project.

ARB staff plans to release initial grant solicitations based on the minimum allocations in Table III-1. However, the solicitations and grant agreements will be written with provisions to allow an increase in awarded funding if there are sufficient revenues and project demand. Potential additional funding for each project category would be identified using the following transparent public process:

Once half of the initial minimum funding allocation for a deployment project is spent, staff will:

- project the short term (1-, 3- or 6-month as appropriate) and long term (remaining fiscal year) need for the project;

- evaluate total projected revenue remaining for all AQIP projects;
- propose whether unallocated funds should be allocated to the project; and
- post projections and the funding recommendation for the project being evaluated on the AQIP webpage and hold a conference call or working group meeting to seek public input no less than 10 days prior to allocating money to any project.

This process may be repeated once half of the remaining funds are spent. Additionally, if money remains available after the needs for each of the deployment projects have been met, then remaining funds may be allocated toward demonstration projects.

For example, once \$5 million of the \$10 million minimum allocation for the Clean Vehicle Rebate Project is spent, staff would evaluate short and long term needs for the project, consider AQIP revenue projections, and make a recommendation for allocating additional funding for the project. If staff were to propose allocating an additional \$3 million to the project, then \$8 million would be available from that point forward. Once \$4 million of the \$8 million remaining funding is spent, staff would repeat the evaluation process to determine if more money is available or appropriate to allocate into the project.

With regard to demonstration projects, staff proposes to conduct a mid-year evaluation of revenues and deployment project needs in order to determine if additional demonstration projects should be funded. Similar with the transparent process identified above, staff will evaluate short and long term needs of the deployment projects, consider AQIP revenue projections, and make a recommendation for allocating funding for demonstration projects. Projections and recommendations would be posted on the AQIP webpage, and staff would hold a conference call or working group meeting to seek public input no less than 10 days prior to allocating money to any project.

If funding from other sources is provided for AQIP projects, funds will be allocated as indicated above or as specifically required by the authorizing entity. Additionally, AQIP projects may be altered to accommodate any conditions placed upon the use of alternative sources of funding. ARB staff will consult with project workgroups prior to making any changes to AQIP projects.

Conversely, ARB staff proposes the ability to reallocate funding from any project in the event that demand for a specific project does not materialize. Any changes in funding for a particular project category would be publicly vetted through AQIP project work groups.

**Minor Technical/Administrative Changes:** The proposed Funding Plan specifies all policy-related details regarding the projects to be funded. However, technical or administrative changes in implementation procedures may be needed from time to time to ensure these projects are successful. Staff proposes a transparent process in which minor changes to a project category would be publicly vetted through the AQIP project

work groups that have been established to discuss the implementation details of each project. These changes would be within the Funding Plan parameters approved by the Board.

#### **E. Fiscal Year 2013-14 Project Solicitations**

Following Board approval of the proposed Funding Plan and after the final State Budget is signed; staff will release solicitations for each of the project categories in order to select a grantee to implement the projects in fiscal year 2013-14. The solicitations will include all the programmatic details potential grantees need to apply for funds, in addition to the criteria upon which the applications will be evaluated and scored.

In accordance with AQIP Guidelines, ARB will begin issuing project solicitations after the Board approves the funding plan. The public work groups established for each project category will continue to be the primary avenue for seeking input and feedback on solicitations and implementation manuals. Staff will monitor and evaluate AQIP projects over the course of the fiscal year and share project data with the work groups.

#### IV. References

In developing the proposed Funding Plan, ARB staff relied on information from previous Board approved AQIP Funding Plans, AQIP Guidelines, and the CEC's Assembly Bill 118 Investment Plans . Links to this reference material are listed below:

Air Resources Board. Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Proposed AB 118 Air Quality Guidelines for the Air Quality Improvement Program and the Alternative and Renewable Fuel and Vehicle Technology Program, Released August 8, 2008.

<http://www.arb.ca.gov/regact/2008/aqipfuels08/aqipfuels08.htm>

Air Resources Board. Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Proposed AB 118 Air Quality Improvement Guidelines, Released March 6, 2009. <http://www.arb.ca.gov/regact/2009/aqip09/aqip09.htm>

Air Resources Board. Proposed AB 118 Air Quality Improvement Program Funding Plan For Fiscal Year 2009-10. Approved April 24, 2009.

[http://www.arb.ca.gov/msprog/aqip/fundplan/aqip\\_FY09-10\\_approved.pdf](http://www.arb.ca.gov/msprog/aqip/fundplan/aqip_FY09-10_approved.pdf)  
[http://www.arb.ca.gov/msprog/aqip/fundplan/aqip\\_FY09-10\\_FP\\_appendix.pdf](http://www.arb.ca.gov/msprog/aqip/fundplan/aqip_FY09-10_FP_appendix.pdf)

Air Resources Board. Proposed AB 118 Air Quality Improvement Program Funding Plan For Fiscal Year 2010-11. Approved June 24, 2010.

[http://www.arb.ca.gov/msprog/aqip/fundplan/AQIP\\_FP\\_JUNE%202010-FINAL.pdf](http://www.arb.ca.gov/msprog/aqip/fundplan/AQIP_FP_JUNE%202010-FINAL.pdf)

Air Resources Board. Proposed AB 118 Air Quality Improvement Program Funding Plan For Fiscal Year 2011-12. Approved July 21, 2011.

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Air Resources Board. 2011 Biennial Report to the Legislature on AB 118 Air Quality Improvement Program. January 11, 2011.

[http://www.arb.ca.gov/msprog/aqip/leg\\_reports.htm](http://www.arb.ca.gov/msprog/aqip/leg_reports.htm)

California Energy Commission, 2007. State Alternative Fuels Plan. Publication Number: CEC-600-2007-011-CMF.

<http://www.energy.ca.gov/2007publications/CEC-600-2007-011/CEC-600-2007-011-CMF.PDF>

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<http://www.energy.ca.gov/2011publications/CEC-100-2011-001/CEC-100-2011-001-CMF.pdf>

- McKinney, Jim, Charles Smith, Andre Freeman, Pilar Magaña, Darcie Chapman. 2011. Benefits Report for the Alternative and Renewable Fuel and Vehicle Technology Program, Staff Draft Report. California Energy Commission, Fuels and Transportation Division. Publication number: CEC-600-2011-008-SD  
<http://www.energy.ca.gov/2011publications/CEC-600-2011-008/CEC-600-2011-008-SD.pdf>
- Smith, Charles, Jim McKinney. 2012. 2012-2013 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program Lead Commissioner Report. California Energy Commission, Fuels and Transportation Division. Publication Number: CEC-600-2012-001-LCR  
<http://www.energy.ca.gov/2012publications/CEC-600-2012-001/CEC-600-2012-001-LCF.pdf>
- Smith, Charles, Jim McKinney. 2013. 2013-2014 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program Lead Commissioner Report. California Energy Commission, Fuels and Transportation Division. Publication Number: CEC-600-2012-008-CMF  
<http://www.energy.ca.gov/2012publications/CEC-600-2012-008/CEC-600-2012-008-CMF.pdf>